

# GRADUATE CATALOG 2015-2016



## UNIVERSITY OF FLORIDA

THE GRADUATE SCHOOL



## **Graduate Catalog Home**

### **A Message from Our Dean**

We welcome you to explore the many offerings of our graduate programs here at the University of Florida. The reputation of a research university is, in large part, measured not only by the excellence of its graduate faculty and graduate students, but also, importantly, by the quality of its academic graduate programs. Through its chosen graduate faculty members, the University of Florida is able to offer graduate programs of the highest quality.

Our catalog is intended to provide information and resources to those interested in graduate education programs at the University of Florida and also is here for our current students, by helping them to make the best decisions, in order to maintain and continue their academic progress, while on the way to their professional and personal goals.

Henry T. Frierson, PhD  
Associate Vice President and Dean of the Graduate School

### **Equity and Diversity**

The University encourages applications from all qualified candidates. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status.\*

Refer to the Office of Institutional Equity & Diversity within UF's Human Resource Services for additional information. For more information regarding UF's commitment to equity and diversity, visit The Office of Institutional Equity & Diversity's website at <http://www.hr.ufl.edu/eo/default.htm>.

### **Accreditation**

The University of Florida is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award bachelor, master, specialist, engineer, doctoral and professional degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of the University of Florida.

Notes:

\*As protected under the Vietnam Era Veterans' Readjustment Assistance Act

### **Commitment to Diversity**

The University of Florida is committed to creating a community that reflects the rich racial, cultural and ethnic diversity of the state and nation. No challenge that exists in higher education has greater importance than the challenge of enrolling students and hiring faculty and staff who are members of diverse racial, cultural or ethnic groups. This pluralism enriches the university community, offers opportunity for robust academic dialogue and contributes to better teaching and research. The university and its components benefit from the richness of a multicultural student body, faculty and staff who can learn from one another. Such diversity will empower and inspire respect and understanding among us. The university does not tolerate the actions of anyone who violates the rights of another person.

Through policy and practice, the university strives to embody a diverse community. Our collective efforts will lead to a university that is truly diverse and reflects the state and nation.

## **Graduate School**

*The information in this catalog is current as of June 2015. Please contact individual departments or programs for any additional information or changes.*

### **Graduate School**

#### **Organization**

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#### **Graduate Council**

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#### **Florida State Board of Education**

#### **Florida Board of Governors**

#### **UF Board of Trustees**

#### **UF President and VPs**

#### **UF Deans and Other Administrators**

#### **Purpose and Mission of the University**

#### **Vision, Mission, and Values of the Graduate School**

### **Organization**

The Graduate School currently consists of the Dean, a Senior Associate Dean, an Assistant Dean, the Graduate Council, the Graduate Faculty, and the Graduate School staff. The Graduate School is responsible for establishing, monitoring and enforcing minimum general standards of graduate work in the University and for coordinating the graduate programs of the various colleges and divisions of the University. Responsibility for detailed operation of graduate programs is vested in individual colleges, schools, divisions, and academic units. In most colleges an associate dean or other administrator is directly responsible for graduate studies in that college. General policies and standards of the Graduate School are established by the Graduate Faculty as represented by the Graduate Council.

Policy changes must be approved by the graduate dean(s) and the Graduate Council. The Graduate Council (chaired by the Graduate Dean) considers petitions, policy changes, and creation of or revisions to graduate degree programs, concentrations, and certificates. All faculty members who serve on supervisory committees or who direct master's theses and doctoral dissertations must first be appointed to the Graduate Faculty. A graduate program's academic unit nominates faculty members for appointment to the Graduate Faculty. Nominations must be approved by the Department Chair/Director, the College Dean, and a vote of the current graduate faculty members in the nominating unit. The appointment is formally made by the Graduate Dean. The academic unit determines the level of duties for each Graduate Faculty member, though it is expected that all Graduate Faculty members should be available and willing to serve as external members of doctoral dissertation committees throughout the University of Florida.

### **Graduate Deans**

HENRY T. FRIERSON,

*Ph.D. (Michigan State University), Dean of the Graduate School, Associate Vice President, and Professor of Research and Evaluation Methodology*

R. PAUL DUNCAN

*Ph.D. (Purdue University), Senior Associate Dean of the Graduate School and Malcom and Christine Randall Professor of Health Services Research, Management and Policy*

## **Graduate Council (2015-2016)**

HENRY T. FRIERSON

*Chair, Ph.D. (Michigan State University), Dean of the Graduate School and Associate Vice President*

ADEGBOLA ADESOGAN

*Ph.D. (University of Reading), Associate Professor, Department of Animal Sciences*

NANCY FICHTMAN DANA

*Ph.D. (Florida State University), Professor, Teaching and Learning*

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*Ph.D. (University of California--Santa Barbara), Professor, School of Natural Resources and Environment*

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CONSTANCE SHEHAN

*Ph.D. (Pennsylvania State University), Professor, Women's Studies and Gender Research*

DIETMAR W. SIEMANN

*Ph.D. (University of Toronto), Professor and Associate Chair for Research, Radiation Oncology*

PAMELA SOLTIS

*Ph.D. (University of Kansas), Distinguished Professor, Botany*

JANE SOUTHWORTH

*Ph.D. (Indiana University), Professor, Department of Geography*

NATHAN BLINN

*Graduate Student Council Representative*

## **History**

Graduate study at UF existed while the University was still on its Lake City campus. However, the first graduate degrees, two Master of Arts with a major in English, were awarded on the Gainesville campus in 1906. The first Master of Science was awarded in 1908, with a major in entomology. The first programs leading to the Ph.D. were approved in 1930, and the first degrees were awarded in 1934, one with a major in chemistry and the other with a

major in pharmacy. The first Ed.D. was awarded in 1948. Graduate study has grown phenomenally at UF. In 1930, 33 degrees were awarded in 12 fields. In 1940, 66 degrees were awarded in 16 fields. In 2014-15, UF awarded 4418 graduate degrees in more than 100 fields, including 746 Ph.D. degrees.

## **Graduate Deans and Years of Service**

|                             |                                   |
|-----------------------------|-----------------------------------|
| May 2007 to Present         | Henry T. Frierson, Dean           |
| 2004-2007                   | Kenneth J. Gerhardt, Interim Dean |
| 1999-2004                   | Winfred M. Phillips, Dean         |
| 1998-1999                   | M. Jack Ohanian, Interim Dean     |
| 1993-1998                   | Karen A. Holbrook, Dean           |
| July-September 1993         | Gene W. Hemp, Acting Dean         |
| 1985-1993                   | Madelyn M. Lockhart, Dean         |
| 1983-1985                   | Donald R. Price, Acting Dean      |
| September 1982-January 1983 | Gene W. Hemp, Acting Dean         |
| 1980-1982                   | Francis G. Stehli, Dean           |
| 1979-1980                   | F. Michael Wahl, Acting Dean      |
| 1973-1979                   | Harry H. Sisler, Dean             |
| 1971-1973                   | Alex G. Smith, Acting Dean        |
| 1969-1971                   | Harold P. Hanson, Dean            |
| 1952-1969                   | L. E. Grinter, Dean               |
| 1951-1952                   | C. F. Byers, Acting Dean          |
| 1938-1951                   | T. M. Simpson, Dean               |
| 1930-1938                   | James N. Anderson, Dean           |

## **Governance**

Florida State Board of Education  
Florida Board of Governors  
UF Board of Trustees  
UF President and VPs  
UF Deans and Other Administrators  
Mission of the University  
Vision, Mission, and Values of the Graduate School

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*Winter Garden*

JOHN R. PADGET, VICE CHAIR  
*Key West*

GARY CHARTRAND  
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JOHN A. COLON  
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Contact a member of the Board of Governors:

Board of Governors  
State University System of Florida  
325 West Gaines Street, Suite 1614  
Tallahassee, Florida 32399-0400

## **University of Florida Board of Trustees**

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*Ph.D., M.Div., M.S., and B.S., President of the University*

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*Ph.D., Provost and Senior Vice President for Academic Affairs*

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*M.Ed., Vice President for Development and Alumni Affairs*

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*B.S., Vice President and Chief Financial Officer*

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CURTIS REYNOLDS,  
*M.S.E.E and M.B.A., Vice President for Business Affairs*

JEREMY FOLEY  
*M.S., Director, UF Athletics*

ED JIMENEZ  
*M.B.A., Interim CEO, Shands HealthCare*

TJ VILLAMIL  
*M.S., Special Assistant to the President and Board of Trustees Liaison*



## Deans and Other Administrators

CAMMY ABERNATHY,  
*Ph.D., Dean, College of Engineering*

MILLIE FERRER-CHANCY,  
*Ph.D., Interim Dean and Director for Cooperative Extension Services, Institute of Food and Agricultural Sciences*

HENRY T. FRIERSON,  
*Ph.D., Dean, Graduate School, and Associate Vice President, Academic Affairs*

GLENN GOOD,  
*Ph.D., Dean, College of Education*

MICHAEL L. GOOD,  
*M.D., Dean, College of Medicine*

JOHN HAYES,  
*Ph.D., Interim Dean for Research, Institute of Food and Agricultural Sciences*

JULIE A. JOHNSON  
*Pharm.D., Dean, College of Pharmacy*

DOUGLAS S. JONES,  
*Ph.D., Director, Florida Museum of Natural History*

JOHN KRAFT,  
*Ph.D., Dean, Warrington College of Business Administration*

LUCINDA LAVELLI,  
*M.F.A., M.N.O., Dean, College of Fine Arts*

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*Ph.D., R.N., F.A.A.N., Dean, College of Nursing*

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*Ph.D., Dean, College of Journalism and Communications*

REBECCA M. NAGY,  
*Ph.D., Director, Harn Museum of Art*

MICHAEL PERRI,  
*Ph.D., Dean, College of Public Health and Health Professions*

STEPHEN J. PRITZ, JR.,  
*B.S., Assistant Vice President for Enrollment Management & University Registrar*

MICHAEL B. REID,  
*Ph.D., Dean, College of Health and Human Performance*

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*Ph.D., Dean, College of Liberal Arts and Sciences*

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*J.D., Dean, Levin College of Law*

JUDITH RUSSELL,  
*M.S., Dean, University Libraries*

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*Ph.D., Dean, International Center*

JEN DAY SHAW,  
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ELAINE TURNER,  
*Ph.D., Dean, College of Agricultural and Life Sciences*

RICHARD D. WILDER  
*B.S.B.A., Director of Student Financial Affairs*

## **Mission of the University**

The University of Florida is a comprehensive learning institution built on a land-grant foundation. We are The Gator Nation, a diverse community dedicated to excellence in education and research and shaping a better future for Florida, the nation and the world.

Our mission is to enable our students to lead and influence the next generation and beyond for economic, cultural and societal benefit.

The university welcomes the full exploration of its intellectual boundaries and supports its faculty and students in the creation of new knowledge and the pursuit of new ideas.

- Teaching is a fundamental purpose of this university at both the undergraduate and graduate levels.
- Research and scholarship are integral to the educational process and to the expansion of our understanding of the natural world, the intellect and the senses.
- Service reflects the university's obligation to share the benefits of its research and knowledge for the public good. The university serves the nation's and the state's critical needs by contributing to a well-qualified and broadly diverse citizenry, leadership and workforce.

The University of Florida must create the broadly diverse environment necessary to foster multi-cultural skills and perspectives in its teaching and research for its students to contribute and succeed in the world of the 21st century.

These three interlocking elements—teaching, research and scholarship, and service—span all the university's academic disciplines and represent the university's commitment to lead and serve the state of Florida, the nation and the world by pursuing and disseminating new knowledge while building upon the experiences of the past. The university aspires to advance by strengthening the human condition and improving the quality of life.

# Vision, Mission, and Values of the University of Florida Graduate School

## Vision

Excellence in all aspects of graduate education at the University of Florida

## Mission

The UF Graduate School is committed to providing services to the campus community that maintain integrity and excellence in graduate education through clear and consistent policies, high standards, efficient procedures and direct student support. We seek to support all graduate students, faculty and staff by fostering relationships, increasing communications and collaborations, and delivering comprehensive research and data resources to inform graduate education. The Graduate School:

- **Partners** with academic units in providing international and underrepresented minority outreach and support in recruiting potential students
- **Provides** opportunities through funding support, professional development activities, support for student groups, awards, and fellowships to enhance recruitment, further retention, and doctoral degree completion
- **Promotes** efficiency and effectiveness in graduate education, so UF graduate students can achieve their educational potential and make contributions to the university, the state, the nation and the world

## Values

- Excellence in graduate education
- Recruitment and graduation of outstanding students
- Ethical conduct in graduate studies and research
- Diversity among students, faculty, and staff
- Communication and collaboration throughout the graduate community
- Graduate student professional development
- Preservation of academic standards
- Maintaining accurate data and records

## Graduate Degrees

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

Definitions

Listing of Degrees and Programs

Requirements for Master's Degrees

General Regulations for Master's Degrees

Master of Arts and Master of Science

Other Master's Degrees

Requirements for Doctoral Degrees

Doctor of Philosophy

Doctor of Audiology

Doctor of Education

Doctor of Plant Medicine  
Specialized Graduate Degrees  
Engineer  
Specialist in Education  
Nontraditional Programs  
Concurrent Graduate Programs  
Joint Degree Programs  
State University System Programs

## Definitions

**Degree** is the title conferred by the University on completing the academic program, for example, Doctor of Philosophy. Some degrees include the name of the field of study (Master of Architecture, Master of Education). Others (Master of Arts, Master of Science) do not.

**Program (also referred to as the major)** is the student's primary field of study. Programs offered at UF are approved by the Graduate Council, Faculty Senate, Board of Trustees, and Florida Board of Governors (specialist and doctoral degrees). The degree and program name appear on the student's transcript. Available programs are identified under the degree name in the list of graduate degrees and programs.

**Catalog year** refers to the rules in effect during the first year a degree-seeking student enrolls in a program; the set of requirements a student must fulfill. If the student takes time off, then the catalog year is the academic year of readmission.

**Co-major** is a course of study allowing two majors for one Ph.D. degree. Each co-major must be approved by the Graduate Council.

**Combined degree program** is a combined bachelor's and master's degree program allowing an academically advanced undergraduate student to take graduate courses before completing the bachelor's degree and to count 12 graduate credits toward both degrees. Students admitted into a combined program will normally have above average GPAs and superior scores on the verbal, quantitative, and analytical writing portions of the GRE. Individual academic units determine whether a combined degree program is appropriate. Combined degree programs established before January 1, 2003, may have other requirements.

**Concentration** is a subprogram in a major. Concentrations offered at UF are approved by the Graduate Council. The concentration, degree, and program may appear on the student transcript.

**Concurrent degree program** is simultaneous study on an individualized basis that leads to two master's degrees in two different graduate programs or two master's degrees in the same major. Such a program is initiated by the student and requires prior approval of each academic unit and the Graduate School. Graduate School approval for participation in a concurrent degree program must be obtained prior to the published midpoint deadline of the term in which the first degree is to be awarded. Retroactive requests will not be considered. Ultimately, it the student's responsibility to follow up with the academic units to verify that all Graduate School approvals and deadlines have been met. If the student is approved to pursue two master's degrees, no more than 9 credits of course work from one degree program may be applied toward the second master's degree.

**Cooperative degree program** leads to a graduate degree awarded by UF with more than one institution authorized to provide course work.

**Graduate certificate** is a formal collection of courses that form a coherent program of study offered through an academic unit. They are certified by the college, approved by the Graduate Council, and listed on the transcript.

**Jointly conferred degree program** leads to a graduate degree awarded jointly by UF and another institution.

**Joint degree program** is a course of study that leads simultaneously to a graduate degree and a professional degree (i.e., D.M.D., D.V.M., J.D., M.D., Pharm.D.). Normally 12 credits of professional courses are counted toward the graduate degree and 12 credits of graduate courses are counted toward the professional degree. Individual academic units determine whether a joint degree program is appropriate. Joint programs established before January 1, 2003, may have other requirements.

**Lockstep programs** are defined as cohorts who move together in the same enrollment sequence with courses taught in a particular order, on a particular schedule. Students have no flexibility in their program or sequence, and may not drop in and out of courses independently.

**Minor** is a block of course work completed in any academic unit outside the major. The minor must be approved by the student's academic unit and the academic unit offering the minor. If a minor is chosen, the supervisory committee must include a representative from the minor field. A minor requires at least 6 to 15 credits depending on the degree level. The minor appears on the student's transcript along with the program name and the degree awarded.

**Multi-college program** is a degree program offered through more than one college.

**Specialization** is an informal designation used by academic units to indicate areas of research or scholarly strength, and has no formal significance. Track and emphasis are similar unofficial terms. No tracks, emphases, or specializations appear in official lists in this catalog or on the student transcript.

**Supervisory Committee (thesis and dissertation degrees):** All graduate degrees must have graduate faculty oversee the student's program of study and progress. For thesis and dissertation degrees, this oversight authority is accomplished by a formal committee. These committees have slightly different criteria based on the particular degree. Thesis and dissertation committees are monitored by the Graduate School as part of degree certification using information entered into the Graduate Information Management System (GIMS).

**Supervisory Committee (non-thesis degrees):** For non-thesis degree programs, the oversight is at the academic unit/department/college level only. Non-thesis programs may choose to have a formal committee or an alternate structure as determined by the program's graduate faculty and consistent with academic unit policies. The oversight authority will be considered as the supervisory committee. Units are able to enter their internal information into GIMS as a convenience. Regardless of degree program, any student with a minor must have the name of the graduate faculty member overseeing the minor entered into GIMS.

**All other degree combinations** that involve a graduate degree as at least one component (not addressed in the above definitions) require a formal approval process through the academic units offering the degree programs and the Graduate School.

Taking multiple courses within a discipline does not constitute admission to that discipline's graduate programs.

The primary/home academic unit must contact the Graduate School's Student Records Unit for procedural details and deadlines. In all cases, each academic unit must submit appropriate programs of study to the Graduate School for review. Graduate School approval for participation must be obtained prior to the published Midpoint deadline of the term in which the first degree is to be awarded. Retroactive requests will not be considered.

Ultimately, it is the student's responsibility to follow up with the academic units to verify that all Graduate School approvals and deadlines have been met.

## **Listing of Degrees and Programs**

See the Majors Section of this catalog for specializations in the approved programs.

T=thesis or dissertation N=non-thesis or no dissertation.  
Degree names and correct abbreviations are listed in bold.  
Majors are listed in standard type.  
Concentrations are listed under the major in italics.

## **Graduate Degrees Offered by the University of Florida**

**Master of Accounting (M.Acc.)<sup>N</sup>**  
**Accounting<sup>N</sup>**

**Master of Advertising (M.Adv.)<sup>T</sup>**  
**Advertising<sup>T</sup>**

**Master of Agribusiness (M.AB.)<sup>N</sup>**  
**Food and Resource Economics<sup>N</sup>**  
***Tropical Conservation and Development<sup>N</sup>***

**Master of Architecture (M.Arch.)<sup>T</sup>**  
**Architecture<sup>T</sup>**  
***Historic Preservation<sup>T</sup>***  
***Sustainable Architecture<sup>T</sup>***  
***Sustainable Design<sup>T</sup>***

**Master of Arts (M.A.)<sup>T/N</sup>**  
**Anthropology <sup>T/N</sup>**  
***Historic Preservation<sup>T/N</sup>***  
***Tropical Conservation and Development<sup>T/N</sup>***  
**Art <sup>T</sup>**  
***Digital Arts and Sciences<sup>T</sup>***  
**Art Education <sup>T/N</sup>**  
**Art History <sup>T</sup>**  
**Arts in Medicine<sup>N</sup>**  
**Business Administration<sup>T/N</sup>**  
***Marketing <sup>T/N</sup>***  
**Classical Studies <sup>T</sup>**  
**Communication Sciences and Disorders<sup>T/N</sup>**  
**Criminology, Law, and Society<sup>T/N</sup>**  
**Digital Arts and Sciences<sup>T</sup>**  
**Economics<sup>T/N</sup>**  
**English<sup>T/N</sup>**  
**French and Francophone Studies<sup>T/N</sup>**  
**Geography <sup>T</sup>**  
***Applications of Geographic Technologies <sup>T</sup>***  
***Geographic Information Systems<sup>T</sup>***  
***Tropical Conservation and Development<sup>T</sup>***  
***Wetland Sciences<sup>T</sup>***  
**German<sup>T/N</sup>**  
**History<sup>T/N</sup>**  
***Historic Preservation<sup>T/N</sup>***  
***Jewish Studies<sup>T/N</sup>***  
**Latin <sup>T</sup>**

Latin American Studies <sup>T/N</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
Linguistics <sup>T/N</sup>  
Museology<sup>T</sup>  
*Historic Preservation*<sup>T</sup>  
Philosophy <sup>T/N</sup>  
Political Science - International Relations<sup>T/N</sup>  
Political Science <sup>T/N</sup>  
*International Development Policy and Administration*<sup>T/N</sup>  
*Political Campaigning*<sup>T/N</sup>  
*Public Affairs*<sup>T/N</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
Psychology<sup>T/N</sup>  
Religion <sup>T/N</sup>  
*Jewish Studies*<sup>T/N</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
*Women's/Gender Studies*<sup>T/N</sup>  
Sociology<sup>T/N</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
Spanish <sup>T/N</sup>  
Women's Studies<sup>T/N</sup>

Master of Arts in Education (M.A.E.)<sup>T</sup>  
Curriculum and Instruction<sup>T</sup>  
Early Childhood Education <sup>T</sup>  
Educational Leadership <sup>T</sup>  
Elementary Education <sup>T</sup>  
English Education <sup>T</sup>  
Marriage and Family Counseling <sup>T</sup>  
Mathematics Education <sup>T</sup>  
Mental Health Counseling <sup>T</sup>  
Reading Education <sup>T</sup>  
Research and Evaluation Methodology <sup>T</sup>  
School Counseling and Guidance <sup>T</sup>  
School Psychology <sup>T</sup>  
Science Education <sup>T</sup>  
Social Studies Education <sup>T</sup>  
Special Education <sup>T</sup>  
Student Personnel in Higher Education <sup>T</sup>

Master of Arts in Mass Communication (M.A.M.C.)<sup>T/N</sup>  
Mass Communication<sup>T/N</sup>

Master of Arts in Teaching (M.A.T.)<sup>N</sup>  
Anthropology <sup>N</sup>  
*Tropical Conservation and Development*<sup>N</sup>  
French and Francophone Studies<sup>N</sup>  
Latin <sup>N</sup>  
Mathematics <sup>N</sup>  
Political Science - International Relations<sup>N</sup>  
Spanish <sup>N</sup>

**Master of Arts in Urban and Regional Planning (M.A.U.R.P.)<sup>T</sup>**

**Urban and Regional Planning<sup>T</sup>**

***Geographic Information Systems<sup>T</sup>***

***Historic Preservation<sup>T</sup>***

***Sustainable Design<sup>T</sup>***

***Tropical Conservation and Development<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Master of Business Administration (M.B.A.)<sup>N</sup>**

**Business Administration<sup>N</sup>**

***Competitive Strategy<sup>N</sup>***

***Entrepreneurship<sup>N</sup>***

***Finance<sup>N</sup>***

***Global Management<sup>N</sup>***

***Graham-Buffett Security Analysis<sup>N</sup>***

***Human Resource Management<sup>N</sup>***

***Information Systems and Operations Management<sup>N</sup>***

***International Studies<sup>N</sup>***

***Latin American Business<sup>N</sup>***

***Management<sup>N</sup>***

***Marketing<sup>N</sup>***

***Real Estate<sup>N</sup>***

***Sports Administration<sup>N</sup>***

**Master of Construction Management (M.C.M.)<sup>N</sup>**

**Construction Management<sup>N</sup>**

***Historic Preservation<sup>N</sup>***

***Sustainable Construction<sup>N</sup>***

***Sustainable Design<sup>N</sup>***

**Master of Education (M.Ed.)<sup>N</sup>**

**Curriculum and Instruction<sup>N</sup>**

**Early Childhood Education<sup>N</sup>**

**Educational Leadership<sup>N</sup>**

**Elementary Education<sup>N</sup>**

**English Education<sup>N</sup>**

**Marriage and Family Counseling<sup>N</sup>**

**Mathematics Education<sup>N</sup>**

**Mental Health Counseling<sup>N</sup>**

**Reading Education<sup>N</sup>**

**Research and Evaluation Methodology<sup>N</sup>**

**School Counseling and Guidance<sup>N</sup>**

**School Psychology<sup>N</sup>**

**Science Education<sup>N</sup>**

**Social Studies Education<sup>N</sup>**

**Special Education<sup>N</sup>**

**Student Personnel in Higher Education<sup>N</sup>**

**Master of Engineering (M.E.)<sup>T/N</sup>**

**Aerospace Engineering<sup>T/N</sup>**

**Agricultural and Biological Engineering<sup>T/N</sup>**

***Geographic Information Systems<sup>T/N</sup>***



*Hydrologic Sciences*<sup>T/N</sup>  
*Wetland Sciences*<sup>T/N</sup>  
Biomedical Engineering<sup>T/N</sup>  
Chemical Engineering<sup>T/N</sup>  
Civil Engineering<sup>T/N</sup>  
*Geographic Information Systems*<sup>T/N</sup>  
*Hydrologic Sciences*<sup>T/N</sup>  
*Structural Engineering*<sup>T/N</sup>  
*Wetland Sciences*<sup>T/N</sup>  
Coastal and Oceanographic Engineering<sup>T/N</sup>  
Computer Engineering<sup>T/N</sup>  
Electrical and Computer Engineering<sup>T/N</sup>  
Environmental Engineering Sciences<sup>T/N</sup>  
*Geographic Information Systems*<sup>T/N</sup>  
*Hydrologic Sciences*<sup>T/N</sup>  
*Wetland Sciences*<sup>T/N</sup>  
Industrial and Systems Engineering<sup>T/N</sup>  
Materials Science and Engineering<sup>T/N</sup>  
Mechanical Engineering<sup>T/N</sup>  
Nuclear Engineering Sciences<sup>T/N</sup>

Master of Fine Arts (M.F.A.)<sup>T</sup>  
Art <sup>T</sup>  
Creative Writing <sup>T</sup>  
Theatre <sup>T</sup>

Master of Fisheries and Aquatic Sciences (M.F.A.S.)<sup>N</sup>  
Fisheries and Aquatic Sciences<sup>N</sup>  
*Ecological Restoration*<sup>N</sup>  
*Geographic Information Systems*<sup>N</sup>  
*Natural Resource Policy and Administration*<sup>N</sup>  
*Wetland Sciences*<sup>N</sup>

Master of Forest Resources and Conservation (M.F.R.C.)<sup>N</sup>  
Forest Resources and Conservation<sup>N</sup>  
*Agroforestry*<sup>N</sup>  
*Ecological Restoration*<sup>N</sup>  
*Geographic Information Systems*<sup>N</sup>  
*Geomatics*<sup>N</sup>  
*Natural Resource Policy and Administration*<sup>N</sup>  
*Tropical Conservation and Development*<sup>N</sup>  
*Wetland Sciences*<sup>N</sup>

Master of Health Administration (M.H.A.)<sup>N</sup>  
Health Administration<sup>N</sup>

Master of Health Science (M.H.S.)<sup>T/N</sup>  
Environmental and Global Health<sup>N</sup>  
*One Health*<sup>N</sup>  
Occupational Therapy<sup>T/N</sup>

Master of Historic Preservation (M.H.P.)<sup>T</sup>Historic Preservation<sup>T</sup>

**Master of Interior Design (M.I.D.)<sup>T</sup>**

**Interior Design<sup>T</sup>**

***Historic Preservation<sup>T</sup>***

***Sustainable Design<sup>T</sup>***

**Master of International Business (M.I.B.)<sup>N</sup>**

**International Business<sup>N</sup>**

**Master of International Construction Management (M.I.C.M.)<sup>N</sup>**

**International Construction Management<sup>N</sup>**

***Historic Preservation<sup>N</sup>***

**Master of Landscape Architecture (M.L.A.)<sup>T</sup>**

**Landscape Architecture<sup>T</sup>**

***Geographic Information Systems<sup>T</sup>***

***Historic Preservation<sup>T</sup>***

***Sustainable Design<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Master of Latin (M.L.)<sup>N</sup>**

**Latin <sup>N</sup>**

**Master of Laws in Comparative Law (LL.M.Comp.Law)<sup>N</sup>**

**Comparative Law<sup>N</sup>**

***Tropical Conservation and Development<sup>N</sup>***

**Master of Laws in Environmental and Land Use Law (LL.M.E.L.U.)<sup>N</sup>**

**Environmental and Land Use Law<sup>N</sup>**

**Master of Laws in International Taxation (LL.M.Int)<sup>N</sup>**

**International Taxation<sup>N</sup>**

**Master of Laws in Taxation (LL.M.Tax.)<sup>N</sup>**

**Taxation<sup>N</sup>**

**Master of Music (M.M.)<sup>T/N</sup>**

**Music <sup>T</sup>**

***Choral Conducting<sup>T</sup>***

***Composition <sup>T</sup>***

***Electronic Music<sup>T</sup>***

***Ethnomusicology<sup>T</sup>***

***Instrumental Conducting <sup>T</sup>***

***Music Education<sup>T</sup>***

***Music History and Literature <sup>T</sup>***

***Music Theory <sup>T</sup>***

***Performance <sup>T</sup>***

***Sacred Music <sup>T</sup>***

**Music Education <sup>T/N</sup>**

***Choral Conducting<sup>T/N</sup>***

***Composition <sup>T/N</sup>***

***Electronic Music<sup>T/N</sup>***

*Ethnomusicology*<sup>T/N</sup>  
*Instrumental Conducting*<sup>T/N</sup>  
*Music History and Literature*<sup>T/N</sup>  
*Music Theory*<sup>T/N</sup>  
*Performance*<sup>T/N</sup>  
*Piano Pedagogy*<sup>T/N</sup>

Master of Occupational Therapy (M.O.T.)<sup>N</sup>  
Occupational Therapy<sup>N</sup>

Master of Public Health (M.P.H.)<sup>N</sup>  
Public Health<sup>N</sup>  
*Biostatistics*<sup>N</sup>  
*Environmental Health*<sup>N</sup>  
*Epidemiology*<sup>N</sup>  
*Health Management and Policy*<sup>N</sup>  
*Public Health Practice*<sup>N</sup>  
*Social and Behavioral Sciences*<sup>N</sup>

Master of Science (M.S.)<sup>T/N</sup>  
Aerospace Engineering<sup>T/N</sup>  
Agricultural and Biological Engineering<sup>T/N</sup>  
*Geographic Information Systems*<sup>T/N</sup>  
*Hydrologic Sciences*<sup>T/N</sup>  
*Wetland Sciences*<sup>T/N</sup>  
Agricultural Education and Communication<sup>T/N</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
Agronomy<sup>T/N</sup>  
*Agroecology*<sup>T/N</sup>  
*Geographic Information Systems*<sup>T</sup>  
*Tropical Conservation and Development*<sup>T/N</sup>  
Animal Molecular and Cellular Biology<sup>T</sup>  
Animal Sciences<sup>T/N</sup>  
Applied Physiology and Kinesiology<sup>T/N</sup>  
*Athletic Training/Sports Medicine*<sup>T/N</sup>  
*Biobehavioral Science*<sup>T/N</sup>  
*Clinical Exercise Physiology*<sup>T/N</sup>  
*Exercise Physiology*<sup>T/N</sup>  
*Human Performance*<sup>T/N</sup>  
Astronomy<sup>T/N</sup>  
Biochemistry and Molecular Biology<sup>T</sup>  
Biomedical Engineering<sup>T/N</sup>  
*Medical Physics*<sup>T/N</sup>  
Biostatistics<sup>N</sup>  
Botany<sup>T</sup>  
*Tropical Conservation and Development*<sup>T</sup>  
*Wetland Sciences*<sup>T</sup>  
Business Administration<sup>T/N</sup>  
*Marketing*<sup>T/N</sup>  
*Retailing*<sup>T/N</sup>  
Chemical Engineering<sup>T/N</sup>  
Chemistry<sup>T/N</sup>

Civil Engineering<sup>T/N</sup>  
 Geographic Information Systems<sup>T/N</sup>  
 Hydrologic Sciences<sup>T/N</sup>  
 Structural Engineering<sup>T/N</sup>  
 Wetland Sciences<sup>T/N</sup>  
 Coastal and Oceanographic Engineering<sup>T/N</sup>  
 Computer Engineering<sup>T/N</sup>  
 Digital Arts and Sciences<sup>T/N</sup>  
 Computer Science<sup>T/N</sup>  
 Dental Sciences<sup>T</sup>  
 Endodontics<sup>T</sup>  
 Orthodontics<sup>T</sup>  
 Periodontics<sup>T</sup>  
 Prosthodontics<sup>T</sup>  
 Digital Arts and Sciences<sup>T</sup>  
 Electrical and Computer Engineering<sup>T/N</sup>  
 Entomology and Nematology<sup>T/N</sup>  
 Environmental Engineering Sciences<sup>T/N</sup>  
 Geographic Information Systems<sup>T/N</sup>  
 Hydrologic Sciences<sup>T/N</sup>  
 Wetland Sciences<sup>T/N</sup>  
 Epidemiology<sup>T</sup>  
 Family, Youth and Community Sciences<sup>T/N</sup>  
 Community Studies<sup>T/N</sup>  
 Family and Youth Development<sup>T/N</sup>  
 Nonprofit Organization Development<sup>T/N</sup>  
 Finance<sup>T/N</sup>  
 Fisheries and Aquatic Sciences<sup>T</sup>  
 Ecological Restoration<sup>T</sup>  
 Geographic Information Systems<sup>T</sup>  
 Natural Resource Policy and Administration<sup>T</sup>  
 Wetland Sciences<sup>T</sup>  
 Food and Resource Economics<sup>T/N</sup>  
 Agribusiness<sup>T/N</sup>  
 Hydrologic Sciences<sup>T/N</sup>  
 Toxicology<sup>T/N</sup>  
 Tropical Conservation and Development<sup>T/N</sup>  
 Food Science and Human Nutrition<sup>T/N</sup>  
 Nutritional Sciences<sup>T/N</sup>  
 Forest Resources and Conservation<sup>T/N</sup>  
 Agroforestry<sup>T/N</sup>  
 Ecological Restoration<sup>T/N</sup>  
 Geographic Information Systems<sup>T/N</sup>  
 Geomatics<sup>T/N</sup>  
 Hydrologic Sciences<sup>T/N</sup>  
 Natural Resource Policy and Administration<sup>T/N</sup>  
 Tropical Conservation and Development<sup>T/N</sup>  
 Wetland Sciences<sup>T/N</sup>  
 Geography<sup>T</sup>  
 Applications of Geographic Technologies<sup>T</sup>  
 Geographic Information Systems<sup>T</sup>  
 Hydrologic Sciences<sup>T</sup>

*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*  
*Geology<sup>T</sup>*  
*Hydrologic Sciences<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*  
*Health Education and Behavior<sup>T/N</sup>*  
*Horticultural Sciences<sup>T/N</sup>*  
*Environmental Horticulture<sup>T/N</sup>*  
*Horticultural Sciences<sup>T/N</sup>*  
*Industrial and Systems Engineering<sup>T/N</sup>*  
*Interdisciplinary Ecology<sup>T/N</sup>*  
*Agricultural and Biological Engineering<sup>T/N</sup>*  
*Agricultural Education and Communication<sup>T/N</sup>*  
*Agronomy<sup>T/N</sup>*  
*Anthropology<sup>T/N</sup>*  
*Architecture<sup>T/N</sup>*  
*Biochemistry and Molecular Biology<sup>T/N</sup>*  
*Botany<sup>T/N</sup>*  
*Business Administration<sup>T/N</sup>*  
*Chemistry<sup>T/N</sup>*  
*Civil Engineering<sup>T/N</sup>*  
*Climate Science<sup>T/N</sup>*  
*Coastal and Oceanographic Engineering<sup>T/N</sup>*  
*Economics<sup>T/N</sup>*  
*English<sup>T/N</sup>*  
*Entomology and Nematology<sup>T/N</sup>*  
*Environmental Engineering Sciences<sup>T/N</sup>*  
*Family, Youth and Community Sciences<sup>T/N</sup>*  
*Farming Systems<sup>T/N</sup>*  
*Fisheries and Aquatic Sciences<sup>T/N</sup>*  
*Food and Resource Economics<sup>T/N</sup>*  
*Food Science<sup>T/N</sup>*  
*Forest Resources and Conservation<sup>T/N</sup>*  
*Foundations of Education<sup>T/N</sup>*  
*Geographic Information Systems<sup>T/N</sup>*  
*Geography<sup>T/N</sup>*  
*Geology<sup>T/N</sup>*  
*Health and Human Performance<sup>T/N</sup>*  
*Horticultural Sciences<sup>T/N</sup>*  
*Hydrologic Sciences<sup>T/N</sup>*  
*Landscape Architecture<sup>T/N</sup>*  
*Mathematics<sup>T/N</sup>*  
*Microbiology and Cell Science<sup>T/N</sup>*  
*Nuclear and Radiological Engineering<sup>T/N</sup>*  
*Philosophy<sup>T/N</sup>*  
*Political Science<sup>T/N</sup>*  
*Religion<sup>T/N</sup>*  
*Sociology<sup>T/N</sup>*  
*Soil and Water Science<sup>T/N</sup>*  
*Statistics<sup>T/N</sup>*  
*Tropical Conservation and Development<sup>T/N</sup>*

**Urban and Regional Planning**<sup>T/N</sup>  
**Veterinary Medical Sciences**<sup>T/N</sup>  
**Wetland Sciences**<sup>T/N</sup>  
**Wildlife Ecology And Conservation**<sup>T/N</sup>  
**Women's/Gender Studies**<sup>T/N</sup>  
**Zoology**<sup>T/N</sup>  
**Management**<sup>T/N</sup>  
**Health Care Risk Management**<sup>T/N</sup>  
**Materials Science and Engineering**<sup>T/N</sup>  
**Mathematics** <sup>T/N</sup>  
**Mechanical Engineering**<sup>T/N</sup>  
**Medical Sciences**<sup>T</sup>  
**Aging and Geriatric Practice**<sup>T</sup>  
**Clinical and Translational Science**<sup>T</sup>  
**Health Outcomes and Policy**<sup>T</sup>  
**Translational Biotechnology**<sup>T</sup>  
**Microbiology and Cell Science** <sup>T/N</sup>  
**Medical Microbiology and Biochemistry**<sup>T/N</sup>  
**Nuclear Engineering Sciences**<sup>T/N</sup>  
**Physics** <sup>T/N</sup>  
**Plant Molecular and Cellular Biology** <sup>T</sup>  
**Plant Pathology**<sup>T/N</sup>  
**Psychology**<sup>T/N</sup>  
**Real Estate**<sup>T/N</sup>  
**Recreation, Parks, and Tourism**<sup>T/N</sup>  
**Historic Preservation**<sup>T/N</sup>  
**Natural Resource Recreation** <sup>T/N</sup>  
**Therapeutic Recreation** <sup>T/N</sup>  
**Tourism** <sup>T/N</sup>  
**Tropical Conservation and Development**<sup>T/N</sup>  
**Soil and Water Science** <sup>T/N</sup>  
**Agroecology**<sup>T/N</sup>  
**Climate Science**<sup>T/N</sup>  
**Geographic Information Systems**<sup>T/N</sup>  
**Hydrologic Sciences**<sup>T/N</sup>  
**Tropical Conservation and Development**<sup>T/N</sup>  
**Wetland Sciences**<sup>T/N</sup>  
**Sport Management**<sup>T/N</sup>  
**Historic Preservation**<sup>T/N</sup>  
**Tropical Conservation and Development**<sup>T/N</sup>  
**Veterinary Medical Sciences**<sup>T/N</sup>  
**Forensic Toxicology**<sup>T/N</sup>  
**Shelter Medicine**<sup>T/N</sup>  
**Veterinary Forensic Sciences**<sup>T/N</sup>  
**Wildlife Ecology and Conservation**<sup>T/N</sup>  
**Geographic Information Systems**<sup>T/N</sup>  
**Tropical Conservation and Development**<sup>T/N</sup>  
**Wetland Sciences**<sup>T/N</sup>  
**Zoology** <sup>T/N</sup>  
**Tropical Conservation and Development**<sup>T/N</sup>  
**Wetland Sciences**<sup>T/N</sup>

**Master of Science in Architectural Studies (M.S.A.S.)<sup>T</sup>**

**Architecture<sup>T</sup>**

***Historic Preservation<sup>T</sup>***

***Sustainable Architecture<sup>T</sup>***

***Sustainable Design<sup>T</sup>***

**Master of Science in Construction Management (M.S.C.M.)<sup>T</sup>**

**Construction Management<sup>T</sup>**

***Historic Preservation<sup>T</sup>***

***Sustainable Construction<sup>T</sup>***

***Sustainable Design<sup>T</sup>***

**Sustainable Construction<sup>T</sup>**

**Master of Science in Entrepreneurship (M.S.E.)<sup>N</sup>**

**Entrepreneurship<sup>N</sup>**

**Master of Science in Fire and Emergency Services (M.F.E.S.)<sup>N</sup>**

**Fire and Emergency Services<sup>N</sup>**

**Master of Science in Information Systems and Operations Management (M.S.I.S.O.M.)<sup>N</sup>**

**Information Systems and Operations Management<sup>N</sup>**

**Master of Science in Nursing (M.S.Nsg.)<sup>T/N</sup>**

**Nursing<sup>T/N</sup>**

**Master of Science in Pharmacy (M.S.P.)<sup>T/N</sup>**

**Pharmaceutical Sciences<sup>T/N</sup>**

***Clinical Pharmacy<sup>T/N</sup>***

***Clinical Toxicology<sup>T/N</sup>***

***Forensic DNA and Serology<sup>T/N</sup>***

***Forensic Drug Chemistry<sup>T/N</sup>***

***Forensic Science<sup>T/N</sup>***

***Medication Therapy Management<sup>T/N</sup>***

***Medicinal Chemistry<sup>T/N</sup>***

***Pharmaceutical Chemistry<sup>T/N</sup>***

***Pharmaceutical Outcomes and Policy<sup>T/N</sup>***

***Pharmacodynamics<sup>T/N</sup>***

***Pharmacy<sup>T/N</sup>***

**Master of Science in Statistics (M.S.Stat.)<sup>T</sup>**

**Statistics<sup>T</sup>**

**Master of Science in Teaching (M.S.T.)<sup>N</sup>**

**Astronomy<sup>N</sup>**

**Botany<sup>N</sup>**

***Tropical Conservation and Development<sup>N</sup>***

***Wetland Sciences<sup>N</sup>***

**Chemistry<sup>N</sup>**

**Geology<sup>N</sup>**

***Tropical Conservation and Development<sup>N</sup>***

***Wetland Sciences<sup>N</sup>***

Mathematics <sup>N</sup>

Physics <sup>N</sup>

Zoology <sup>N</sup>

*Tropical Conservation and Development<sup>N</sup>*

*Wetland Sciences<sup>N</sup>*

Master of Statistics (M.Stat.)<sup>N</sup>

Statistics<sup>N</sup>

Master of Sustainable Development Practice (M.D.P.)<sup>N</sup>

Sustainable Development Practice<sup>N</sup>

Master of Urban and Regional Planning (M.U.R.P.)<sup>T</sup>

Urban and Regional Planning<sup>T</sup>

*Geographic Information Systems<sup>T</sup>*

*Historic Preservation<sup>T</sup>*

*Sustainable Design<sup>T</sup>*

*Tropical Conservation and Development<sup>T</sup>*

*Wetland Sciences<sup>T</sup>*

Engineer (Engr.)<sup>T/N</sup>

Industrial and Systems Engineering<sup>T/N</sup>

Specialist in Education (Ed.S.)<sup>N</sup>

Curriculum and Instruction<sup>N</sup>

Educational Leadership <sup>N</sup>

Marriage and Family Counseling <sup>N</sup>

Mental Health Counseling <sup>N</sup>

School Counseling and Guidance <sup>N</sup>

School Psychology <sup>N</sup>

Special Education <sup>N</sup>

Doctor of Audiology (Au.D.)<sup>N</sup>

Audiology<sup>N</sup>

Doctor of Education (Ed.D.)<sup>T</sup>

Counseling and Counselor Education<sup>T</sup>

*Marriage and Family Counseling<sup>T</sup>*

*Mental Health Counseling<sup>T</sup>*

*School Counseling and Guidance<sup>T</sup>*

Curriculum and Instruction<sup>T</sup>

Educational Leadership <sup>T</sup>

*Educational Policy<sup>T</sup>*

Higher Education Administration <sup>T</sup>

*Educational Policy<sup>T</sup>*

Marriage and Family Counseling <sup>T</sup>

Mental Health Counseling <sup>T</sup>

Research and Evaluation Methodology <sup>T</sup>



School Counseling and Guidance <sup>T</sup>  
School Psychology <sup>T</sup>  
Special Education <sup>T</sup>

Doctor of Philosophy (Ph.D.)<sup>T</sup>  
Aerospace Engineering<sup>T</sup>  
Agricultural and Biological Engineering<sup>T</sup>  
*Geographic Information Systems<sup>T</sup>*  
*Hydrologic Sciences<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*

Agricultural Education and Communication<sup>T</sup>  
*Tropical Conservation and Development<sup>T</sup>*

Agronomy<sup>T</sup>  
*Toxicology<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*

Animal Molecular and Cellular Biology<sup>T</sup>

Animal Sciences<sup>T</sup>  
*Animal Molecular and Cellular Biology<sup>T</sup>*

Anthropology <sup>T</sup>  
*Historic Preservation<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*  
*Women's/Gender Studies<sup>T</sup>*

Art History <sup>T</sup>

Astronomy <sup>T</sup>

Biomedical Engineering<sup>T</sup>  
*Clinical and Translational Science<sup>T</sup>*  
*Medical Physics<sup>T</sup>*

Biostatistics<sup>T</sup>

Botany <sup>T</sup>  
*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*

Business Administration<sup>T</sup>  
*Accounting <sup>T</sup>*  
*Finance <sup>T</sup>*  
*Information Systems and Operations Management<sup>T</sup>*  
*Insurance <sup>T</sup>*  
*Management <sup>T</sup>*  
*Marketing <sup>T</sup>*  
*Quantitative Finance<sup>T</sup>*  
*Real Estate and Urban Analysis<sup>T</sup>*

**Chemical Engineering<sup>T</sup>**

**Chemistry <sup>T</sup>**

***Clinical and Translational Science<sup>T</sup>***

***Imaging Science and Technology<sup>T</sup>***

**Civil Engineering<sup>T</sup>**

***Geographic Information Systems<sup>T</sup>***

***Hydrologic Sciences<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Classical Studies <sup>T</sup>**

**Coastal and Oceanographic Engineering<sup>T</sup>**

**Communication Sciences and Disorders<sup>T</sup>**

**Computer Engineering<sup>T</sup>**

**Computer Science<sup>T</sup>**

**Counseling and Counselor Education<sup>T</sup>**

***Marriage and Family Counseling<sup>T</sup>***

***Mental Health Counseling<sup>T</sup>***

***School Counseling and Guidance<sup>T</sup>***

**Counseling Psychology <sup>T</sup>**

**Criminology, Law, and Society<sup>T</sup>**

**Curriculum and Instruction<sup>T</sup>**

**Design, Construction, and Planning<sup>T</sup>**

***Construction Management<sup>T</sup>***

***Geographic Information Systems<sup>T</sup>***

***Historic Preservation<sup>T</sup>***

***Interior Design<sup>T</sup>***

***Landscape Architecture<sup>T</sup>***

***Urban and Regional Planning<sup>T</sup>***

**Economics<sup>T</sup>**

**Educational Leadership <sup>T</sup>**

***Educational Policy<sup>T</sup>***

**Electrical and Computer Engineering<sup>T</sup>**

**English<sup>T</sup>**

**Entomology and Nematology<sup>T</sup>**

**Environmental Engineering Sciences<sup>T</sup>**

***Geographic Information Systems<sup>T</sup>***

***Hydrologic Sciences<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Epidemiology<sup>T</sup>**

***Clinical and Translational Science<sup>T</sup>***

**Fisheries and Aquatic Sciences<sup>T</sup>**

***Ecological Restoration<sup>T</sup>***

***Geographic Information Systems<sup>T</sup>***

***Natural Resource Policy and Administration<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Food and Resource Economics<sup>T</sup>**

***Hydrologic Sciences<sup>T</sup>***

***Toxicology<sup>T</sup>***

***Tropical Conservation and Development<sup>T</sup>***

**Food Science<sup>T</sup>**

***Toxicology<sup>T</sup>***

**Forest Resources and Conservation<sup>T</sup>**

***Agroforestry<sup>T</sup>***

***Geographic Information Systems<sup>T</sup>***

***Geomatics<sup>T</sup>***

***Hydrologic Sciences<sup>T</sup>***

***Natural Resource Policy and Administration<sup>T</sup>***

***Toxicology<sup>T</sup>***

***Tropical Conservation and Development<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Genetics and Genomics<sup>T</sup>**

***Clinical and Translational Science<sup>T</sup>***

**Geography <sup>T</sup>**

***Geographic Information Systems<sup>T</sup>***

***Hydrologic Sciences<sup>T</sup>***

***Tropical Conservation and Development<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**Geology <sup>T</sup>**

***Hydrologic Sciences<sup>T</sup>***

***Tropical Conservation and Development<sup>T</sup>***

***Wetland Sciences<sup>T</sup>***

**German<sup>T</sup>**

***Women's/Gender Studies<sup>T</sup>***

Health and Human Performance <sup>T</sup>  
*Applied Physiology and Kinesiology*<sup>T</sup>  
*Biobehavioral Science*<sup>T</sup>  
*Clinical and Translational Science*<sup>T</sup>  
*Exercise Physiology*<sup>T</sup>  
*Health Behavior* <sup>T</sup>  
*Historic Preservation*<sup>T</sup>  
*Recreation, Parks, and Tourism*<sup>T</sup>  
*Sport Management* <sup>T</sup>

Health Services Research <sup>T</sup>

Higher Education Administration <sup>T</sup>  
*Educational Policy*<sup>T</sup>

History<sup>T</sup>  
*Historic Preservation*<sup>T</sup>  
*Women's/Gender Studies*<sup>T</sup>

Horticultural Sciences<sup>T</sup>  
*Environmental Horticulture* <sup>T</sup>  
*Horticultural Sciences*<sup>T</sup>  
*Toxicology*<sup>T</sup>

Industrial and Systems Engineering<sup>T</sup>  
*Quantitative Finance*<sup>T</sup>

Interdisciplinary Ecology<sup>T</sup>  
*Agricultural and Biological Engineering*<sup>T</sup>  
*Agricultural Education and Communication*<sup>T</sup>  
*Agronomy*<sup>T</sup>  
*Anthropology*<sup>T</sup>  
*Architecture*<sup>T</sup>  
*Biochemistry and Molecular Biology* <sup>T</sup>  
*Botany*<sup>T</sup>  
*Business Administration*<sup>T</sup>  
*Chemistry*<sup>T</sup>  
*Civil Engineering*<sup>T</sup>  
*Climate Science*<sup>T</sup>  
*Coastal and Oceanographic Engineering*<sup>T</sup>  
*Economics*<sup>T</sup>  
*English*<sup>T</sup>  
*Entomology and Nematology*<sup>T</sup>  
*Environmental Engineering Sciences*<sup>T</sup>  
*Family, Youth and Community Sciences*<sup>T</sup>  
*Farming Systems* <sup>T</sup>  
*Fisheries and Aquatic Sciences*<sup>T</sup>  
*Food and Resource Economics*<sup>T</sup>  
*Food Science* <sup>T</sup>  
*Forest Resources and Conservation*<sup>T</sup>  
*Foundations of Education*<sup>T</sup>  
*Geographic Information Systems*<sup>T</sup>

**Geography<sup>T</sup>**  
**Geology<sup>T</sup>**  
**Health and Human Performance<sup>T</sup>**  
**Horticultural Sciences<sup>T</sup>**  
**Hydrologic Sciences<sup>T</sup>**  
**Landscape Architecture<sup>T</sup>**  
**Mathematics<sup>T</sup>**  
**Microbiology and Cell Science<sup>T</sup>**  
**Nuclear and Radiological Engineering<sup>T</sup>**  
**Philosophy<sup>T</sup>**  
**Political Science<sup>T</sup>**  
**Religion<sup>T</sup>**  
**Sociology<sup>T</sup>**  
**Soil and Water Science<sup>T</sup>**  
**Statistics<sup>T</sup>**  
**Tropical Conservation and Development<sup>T</sup>**  
**Urban and Regional Planning<sup>T</sup>**  
**Veterinary Medical Sciences<sup>T</sup>**  
**Wetland Sciences<sup>T</sup>**  
**Wildlife Ecology And Conservation<sup>T</sup>**  
**Women's/Gender Studies<sup>T</sup>**  
**Zoology<sup>T</sup>**

**Linguistics <sup>T</sup>**

**Marriage and Family Counseling <sup>T</sup>**

**Mass Communication<sup>T</sup>**  
***Clinical and Translational Science<sup>T</sup>***

**Materials Science and Engineering<sup>T</sup>**  
***Clinical and Translational Science<sup>T</sup>***

**Mathematics <sup>T</sup>**  
***Imaging Science and Technology<sup>T</sup>***  
***Quantitative Finance<sup>T</sup>***

**Mechanical Engineering<sup>T</sup>**

**Medical Sciences<sup>T</sup>**  
***Biochemistry and Molecular Biology <sup>T</sup>***  
***Cancer Biology<sup>T</sup>***  
***Clinical and Translational Science<sup>T</sup>***  
***Genetics <sup>T</sup>***  
***Health Outcomes and Policy<sup>T</sup>***  
***Imaging Science and Technology<sup>T</sup>***  
***Immunology and Microbiology <sup>T</sup>***  
***Molecular Cell Biology <sup>T</sup>***  
***Neuroscience <sup>T</sup>***  
***Physiology and Pharmacology <sup>T</sup>***  
***Toxicology<sup>T</sup>***

**Mental Health Counseling** <sup>T</sup>

**Microbiology and Cell Science** <sup>T</sup>  
*Toxicology*<sup>T</sup>

**Music** <sup>T</sup>  
*Composition* <sup>T</sup>  
*Music History and Literature* <sup>T</sup>

**Music Education** <sup>T</sup>

**Nuclear Engineering Sciences**<sup>T</sup>  
*Imaging Science and Technology*<sup>T</sup>

**Nursing Sciences** <sup>T</sup>  
*Clinical and Translational Science*<sup>T</sup>

**Nutritional Sciences**<sup>T</sup>  
*Clinical and Translational Science*<sup>T</sup>

**Pharmaceutical Sciences**<sup>T</sup>  
*Clinical and Translational Science*<sup>T</sup>  
*Clinical Pharmaceutical Sciences*<sup>T</sup>  
*Medicinal Chemistry* <sup>T</sup>  
*Pharmaceutical Outcomes and Policy*<sup>T</sup>  
*Pharmacodynamics* <sup>T</sup>  
*Pharmacy* <sup>T</sup>  
*Toxicology*<sup>T</sup>

**Philosophy** <sup>T</sup>

**Physics** <sup>T</sup>  
*Imaging Science and Technology*<sup>T</sup>

**Plant Molecular and Cellular Biology** <sup>T</sup>  
*Toxicology*<sup>T</sup>  
**Plant Pathology**<sup>T</sup>  
*Toxicology*<sup>T</sup>

**Political Science** <sup>T</sup>  
*Educational Policy*<sup>T</sup>  
*Tropical Conservation and Development*<sup>T</sup>

**Psychology**<sup>T</sup>  
*Clinical and Health Psychology* <sup>T</sup>  
*Clinical and Translational Science*<sup>T</sup>  
*Women's/Gender Studies*<sup>T</sup>

**Public Health**<sup>T</sup>  
*Environmental Health*<sup>T</sup>  
*One Health*<sup>T</sup>  
*Social and Behavioral Sciences*<sup>T</sup>

Rehabilitation Science <sup>T</sup>  
*Clinical and Translational Science<sup>T</sup>*

Religion <sup>T</sup>  
*Tropical Conservation and Development<sup>T</sup>*  
*Women's/Gender Studies<sup>T</sup>*

Research and Evaluation Methodology <sup>T</sup>

Romance Languages<sup>T</sup>  
*French and Francophone Studies<sup>T</sup>*  
*Spanish <sup>T</sup>*

School Counseling and Guidance <sup>T</sup>

School Psychology <sup>T</sup>  
Sociology<sup>T</sup>  
*Tropical Conservation and Development<sup>T</sup>*  
*Women's/Gender Studies<sup>T</sup>*

Soil and Water Science <sup>T</sup>  
*Climate Science<sup>T</sup>*  
*Geographic Information Systems<sup>T</sup>*  
*Hydrologic Sciences<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*

Special Education <sup>T</sup>

Statistics<sup>T</sup>  
*Quantitative Finance<sup>T</sup>*  
Veterinary Medical Sciences<sup>T</sup>  
*Animal Molecular and Cellular Biology<sup>T</sup>*  
*Clinical and Translational Science<sup>T</sup>*  
*Toxicology<sup>T</sup>*

Wildlife Ecology and Conservation<sup>T</sup>  
*Geographic Information Systems<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*

Zoology <sup>T</sup>  
*Animal Molecular and Cellular Biology<sup>T</sup>*  
*Tropical Conservation and Development<sup>T</sup>*  
*Wetland Sciences<sup>T</sup>*

Doctor of Plant Medicine (D.P.M.)<sup>N</sup>

Plant Medicine<sup>N</sup>  
*Tropical Conservation and Development<sup>N</sup>*

## Requirements for Master's Degrees

The master's degree is conferred only on completing a coherent and focused program of advanced study. Each academic unit sets its own minimum degree requirements beyond the minimum required by the Graduate Council.

### General Regulations for Master's Degrees

Graduate School regulations are as follows. Colleges and academic units may have additional regulations beyond those stated below. **Unless otherwise indicated in the next sections on master's degrees, these general regulations apply to all master's degree programs at the University.**

**Course requirements:** Graduate credit is awarded for courses numbered 5000 and above. The program of course work for a master's degree must be approved by the student's adviser, supervisory committee, or faculty representative of the academic unit. No more than 9 credits from a previous master's degree program may apply toward a second master's degree. These credits are applied only with the written approval of the Dean of the Graduate School.

**Major:** Work in the major must be in courses numbered 5000 or above. For work outside the major, 6 credits of courses numbered 3000 or above may be taken if part of an approved plan of study.

**Minor:** Minor work must be in an academic unit other than the major. If an academic unit contributes more than one course (as specified in the curriculum inventory and/or the Graduate Catalog) to the major, the student is not eligible to earn a minor from the contributing academic unit. If a minor is chosen, at least 6 credits of work are required in the minor field. Two 6-credit minors may be taken with the major academic unit's permission. A 3.00 (truncated) GPA is required for minor credit.

**Degree requirements:** Unless otherwise specified, for any master's degree, the student must earn at least 30 credits as a graduate student at UF. No more than 9 of the 30 credits (earned with a grade of A, A-, B+, or B) may be transferred from institutions approved for this purpose by the Dean of the Graduate School. At least half of the required credits (not counting 6971) must be in the major.

**Transfer of credit:** Only graduate-level (5000-7999) work with a grade of B or better, is eligible for transfer of credit. A maximum of 15 transfer credits are allowed. These can include no more than 9 credits from institution/s approved by UF, with the balance obtained from postbaccalaureate work at the University of Florida. Credits transferred from other universities are applied toward the degree requirements, but grades earned are not computed in the student's grade point average. Acceptance of transfer of credit requires approval of the student's supervisory committee and the Dean of the Graduate School.

Academic units must submit petitions for transfer of credit for a master's degree during the student's first term of enrollment in the Graduate School.

The supervisory committee is responsible for using established criteria to ensure the academic integrity of course work before accepting graduate transfer credits.

**Supervisory committee:** The student's supervisory committee must be appointed as soon as possible after the student is admitted to the Graduate School and no later than the second term of graduate study.

Supervisory committees for graduate degree programs are initiated by the student, nominated by the respective academic unit chair, approved by the college dean, and appointed by the Dean of the Graduate School. The Dean of the Graduate School is an ex-officio member of all supervisory committees. Only Graduate Faculty may serve on a supervisory committee. If a student takes fewer than 12 credits in the first term, the deadline is the end of the term during which the student has accumulated 12 or more credits or the end of the second term. If a minor is designated for any degree, a representative from that minor is needed on the supervisory committee. If two minors are designated, two representatives are needed.



The supervisory committee for a master's degree with a thesis should consist of at least two Graduate Faculty members, unless otherwise specified. If a minor is designated, the committee must include a Graduate Faculty member from the minor department.

For a master's degree without thesis, oversight is at the academic unit/department/college level only. Non-thesis programs may choose to have a formal committee or an alternate structure as determined by the program's graduate faculty and consistent with academic unit policies. The oversight authority will be considered as the supervisory committee. Units are able to enter their internal information into GIMS as a convenience. Any student with a minor must have the name of the graduate faculty member overseeing the minor entered into GIMS.

**Changes to existing supervisory committee:** A student, in consultation with his or her academic unit, may seek changes to an existing supervisory committee. Changes to a student's committee are allowed until midpoint of the term of degree award if the defense has not occurred. No changes are allowed after the defense. For procedural details, contact the major academic unit.

**Language requirements:** (1) Each academic unit determines whether a reading knowledge of a foreign language is required. The requirement varies from one academic unit to another, and the student should check with the appropriate academic unit for specific information. (2) All candidates must be able to use the English language correctly and effectively, as judged by the supervisory committee.

**Examination:** Each candidate must pass a final comprehensive examination. Some programs use different terminology, such as *capstone course*. This examination must cover at least the candidate's field of concentration. It must occur no earlier than the term before the degree is awarded.

**Time limitation:** All work (including transferred credit) counted toward the master's degree must be completed within 7 years before the degree is awarded.

**Leave of absence:** Any student who will not register at UF for a period of more than 1 term needs prior written approval from the supervisory committee chair for a leave of absence for a designated period of time. This approval remains in the student's departmental file. The Graduate School does not require notification. The student must reapply for admission on return. See *Readmission* and *Catalog Year*.

## Master of Arts and Master of Science

The general requirements for the Master of Arts and the Master of Science degrees also apply to the following degrees: Master of Arts in Education, Master of Arts in Mass Communication, Master of Science in Construction Management, Master of Science in Pharmacy, and Master of Science in Statistics. There are additional requirements for specialized degrees.

**Course requirements:** A master's degree with thesis requires at least 30 credits including up to 6 credits of Research for Master's Thesis (6971). All thesis students must register for an appropriate number of credits in 6971.

A non-thesis Master of Arts or Master of Science degree requires at least 30 credits. No more than 6 of those credits can be from S/U courses. Non-thesis students cannot use Research for Master's Thesis (6971).

For all master's programs, at least half the required credits (not counting 6971) must be in the major. One or two minors of at least 6 credits each may be taken, but a minor is not required by the Graduate School. Minor work must be in an academic unit other than the major.

**Non-thesis M.S. engineering programs:** Students in engineering, if working at off-campus centers, must take half the course work from full-time UF faculty members and must pass a comprehensive written examination by a committee recommended by the Dean of the College of Engineering. This written comprehensive examination may be taken at an off-campus site.

**Master's thesis requirements:** Each master's thesis candidate must prepare and present a thesis that shows independent investigation. It must be acceptable, in form and content, to the supervisory committee and to the Graduate School. The work must be of publishable quality and must be in a form suitable for publication, guided by the Graduate School's format requirements. The academic unit is responsible for quality and scholarship. Graduate Council requires the Graduate School Editorial Office, as agents of the Dean of the Graduate School, to briefly review theses and dissertations for acceptable format, and to make recommendations as required.

Format requirements and example pages:  
[graduateschool.ufl.edu/files/etd-guide.pdf](http://graduateschool.ufl.edu/files/etd-guide.pdf)

Checklist:  
<http://graduateschool.ufl.edu/files/checklist-thesis.pdf>

Application Support Center/Electronic Theses and Dissertation Lab:  
<https://asc.helpdesk.ufl.edu/>

Graduate School Editorial Office Information:  
<http://graduateschool.ufl.edu/graduation/thesis-and-dissertation>

**Gatorlink email requirement:** UF requires students to maintain access to their Gatorlink email accounts. Accordingly, the Editorial Office only communicates with students through official Gatorlink email.

**Thesis first submission:** When first presented to the Graduate School Editorial Office, the thesis must be successfully defended. Therefore, the final examination data must be posted in Graduate Information Management System (GIMS), prior to the student attempting to submit their thesis document for review by the Graduate School's editorial staff. Directly after the oral defense, the Academic Unit must submit the Final Exam Form and the UF Publishing Agreement through (GIMS) . Before presentation to the Editorial Office, the thesis should be virtually complete and completely formatted (not in a draft format). Students must be completely familiar with the format requirements of the Graduate School and should work with one of the consultants in the Application Support Center, to troubleshoot the thesis, before attempting to make submission to the editors in the Graduate School Editorial Office. Students who fail to first meet with one of the Lab Consultants often find their document rejected upon First Submission to the Editorial Office, for not meeting the minimum submission standards required for an editorial review.

Should the document pass the submission requirements and appear acceptable for review, the Editorial Office will email the student, using their Gatorlink email address, confirming the submission, and responding with an acceptance email. Should the document not pass first submission requirements, a denial email will instead be sent, advising the student of their options at that time. This notice must be addressed immediately. Once a successful first submission has been achieved and the document has been reviewed by one of the Graduate School's editors, another email is sent, providing editorial feedback to the student and committee chair. The student is responsible for retrieving the thesis, review comments, and resolving any deficits related to the format requirements. Students should promptly make all required changes.

**Uploading and submitting the final pdf for Editorial Final Submission:** After changes have been made to the satisfaction of the supervisory committee, the Electronic Thesis or Dissertation (ETD) Signature Page is submitted electronically to the Graduate School Editorial Office, via the Graduate Information Management System (GIMS). This must be completed by the Editorial Office's Final Submission Deadline. Once submitted, the student should upload and submit the final pdf of the electronic thesis, using the Editorial Document Management (EDM) portal found within GIMS. Once submitted, the document will undergo a final review by one of the Graduate School Representatives. The Editorial Office ensures that the format is acceptable, that all indicated changes were made, and that all of the hyperlinks work within the document. The Graduate School Representative then emails the student regarding the status of the ETD. If accepted, no further changes are allowed. If changes are still required, the student should resubmit the corrected document as soon as possible. All documents must be confirmed with final approval emails from the Graduate School Editorial Office by the Final Clearance deadline. This deadline is firm, and no exceptions can be granted. When all changes have been made and approved, the Editorial Office will email the

Committee Chair and the student with a message, indicating the student has achieved Editorial Final Clearance with the Graduate School's Editorial Office.

**Editorial Final Clearance:** Among other requirements (see Checklist above), the final thesis must be confirmed as accepted, by email, by 5:00 p.m. on this deadline. This deadline only applies if all other posted deadlines for the term have been appropriately met. Since there are hundreds of students concurrently completing the process, most students complete all requirements well in advance, in order to ensure they do not face the chance of not graduating within their intended term.

**Copyright:** The student is automatically the copyright holder, by virtue of having written the thesis. A copyright page should be included immediately after the title page to indicate this.

**Thesis language:** Theses must be written in English, except for students pursuing degrees in Romance or Germanic languages and literatures. Students in these disciplines, with the approval of their supervisory committees, may write in the topic language. A foreign language thesis should have the Acknowledgments, Abstract, and Biographical Sketch written in English. All page titles before Chapter 1 should also be in English.

**Journal articles:** A thesis may include journal articles as chapters, if all copyright considerations are addressed appropriately. In such cases, Chapter 1 is a general introduction, tying everything together as a unified whole. The last chapter contains the general conclusions, once again tying everything together into a unified whole. Any chapter representing a journal article requires a footnote at the bottom of the first page of the chapter: "Reprinted with permission from . . ." giving the source, just as it appears in the list of references. The thesis must have only 1 abstract and 1 reference list.

**Change from thesis to non-thesis option:** Permission of the supervisory committee is needed to change from thesis to non-thesis option. This permission must be forwarded to the Graduate School by midpoint of the final term via the Graduate Information Management System (GIMS). The candidate must meet all the requirements of the non-thesis option as specified above. A maximum of 3 credits earned with a grade of S in 6971 (Research for Master's Thesis) can be counted toward the degree requirements only if converted to credit as A, A-, B+, or B in Individual Work. The supervisory committee must indicate that the work was productive in and by itself and that the work warrants credit as a special problem or special topic course.

**Supervisory committee:** The student's supervisory committee should be appointed as soon as possible after the student is admitted to the Graduate School and no later than the second term of graduate study. Supervisory committees for graduate degree programs are initiated by the student, nominated by the respective academic unit chair, approved by the college dean, and appointed by the Dean of the Graduate School. The Dean of the Graduate School is an ex-officio member of all supervisory committees. Only Graduate Faculty may serve on a supervisory committee. If a student takes fewer than 12 credits in the first term, the deadline is the end of the term during which the student has accumulated 12 or more credits or the end of the second term. If a minor is designated for any degree, a representative from that minor is needed on the supervisory committee. If two minors are designated, two representatives are needed.

**Thesis final examination:** When most of the student's course work is completed, and the thesis is in final form, the supervisory committee must examine the student orally or in writing on (1) the thesis, (2) the major subjects, (3) the minor or minors, and (4) matters of a general nature pertaining to the field of study.

The candidate and the supervisory committee chair or co-chair must be physically present together at the same location. With approval of the entire committee, other members may attend the defense remotely, using modern communication technology. If a supervisory committee member cannot be present at the student's final defense, a Graduate Faculty member in the same academic unit may substitute for the absent committee member. No substitutions are allowed for the Chair.

The substitute should sign the Final Examination form on the left side, in the space provided for committee members, noting the name of the absent member. The chair of the student's major academic unit also must indicate the reason

for the absence and state that the absent member agreed to this substitution at the final examination. The substitute should not sign the ETD signature page. The original committee member must sign.

The defense date must be fewer than 6 months before degree award. All forms should be signed at the defense: the candidate and the supervisory committee chair sign the UF Publishing Agreement form; and the entire supervisory committee signs the ETD Signature Page and the Final Examination Report. If thesis changes are requested, the supervisory Committee Chair or the Committee's designee may hold the ETD Signature Page, until all requirements are met regarding the thesis. Once all stipulations of the Committee members are satisfied, and before the Editorial Office's Final Submission deadline for the term of intended degree award, verification of completion of this form must be submitted electronically via GIMS.

**Non-thesis final comprehensive examination:** Non-thesis students must pass a comprehensive written or oral examination on the major and on the minor if a minor is designated. This comprehensive examination must be taken no more than 6 months before the degree is awarded.

## Other Master's Degrees

Although the general requirements for the Master of Arts and the Master of Science degrees also apply to the following discipline-specific degrees, there are some important differences. For detailed requirements, see the Programs Section of this catalog. In addition, the Graduate School monitors the following requirements for these specialized degrees.

### Master of Accounting

The Master of Accounting (M.Acc.) is the graduate degree for students seeking professional careers in public accounting, business organizations, and government. The M.Acc. program offers three tracks: Audit, Tax, and Generalist.

The recommended curriculum to prepare for a professional career in accounting is the 3/2 five-year program with a joint awarding of the Bachelor of Science in Accounting and the Master of Accounting degrees on satisfactory completion of the 150-credit program. The entry point into the 3/2 is the start of the senior year.

Students who have already completed an undergraduate degree in accounting may enter the 1-year M.Acc. program, which requires 34 credits of course work. At least 20 credits must be in graduate-level accounting, excluding preparatory courses. All students must take a final comprehensive examination. For details about requirements, see *General Regulations* for master's degrees.

**M.Acc./J.D. program:** This joint program culminates in both the Juris Doctor (J.D.) degree awarded by the College of Law and the Master of Accounting (M.Acc.) degree awarded by the Graduate School. The program is for students with an undergraduate degree in accounting, who are interested in advanced studies in both accounting and law. About 20 credits fewer are needed for the joint program than if the two degrees were earned separately. The two degrees are awarded after completing curriculum requirements for both degrees. Students must take the GMAT (or the GRE), and also the LSAT before admission, and must meet the admission requirements for the College of Law (J.D.) and the Fisher School of Accounting (M.Acc.).

### Master of Advertising

The Master of Advertising (M.Adv.) program develops leaders in the profession by giving students theoretical, research, and decision-making skills essential for strategic advertising and integrated communications planning; and the opportunity to develop expertise in an area such as account management, research, creative strategy, media planning, international and cross cultural advertising, new technology, special market advertising, and advertising sales management.

Students without a basic course or substantial professional experience in marketing or advertising must complete articulation courses before entering the program. All students must complete a basic statistics course before entering. The M.Adv. requires at least 33 credits and a thesis. Some areas allow a terminal project in lieu of thesis (with permission from the academic unit's Graduate Faculty).

Students select a supervisory committee to guide selection of courses, selection of thesis topic (or project in lieu of thesis), and completion of the thesis or project. At least one committee member must be from the Department of Advertising's Graduate Faculty.

Students complete and orally defend their theses or projects. The student's supervisory committee is responsible for evaluating the thesis or project and the final defense.

## **Master of Agribusiness**

The Master of Agribusiness (M.AB.) is a one-year, thirty-credit hour non-thesis degree program designed for students with no educational background in economics and offers advanced study for students seeking careers in sales, marketing, and management with organizations that operate mainly in the food industry and agribusiness sector. The courses complement the student's undergraduate education and prepare them for careers in private industry, state and federal government, education at secondary and post-secondary institutions, entrepreneurial pursuits, professional schools, financial analysis, agricultural production and marketing, food and consumer goods, and sales firms. The program includes a diversity of students from areas such as Animal Science, Food Science, Horticulture, Agricultural Education and Communication, Wildlife Ecology and Conservation, Agricultural and Biological Engineering, Turfgrass Management, Business Administration and Agronomy.

Contact the Graduate Program in 1170 McCarty Hall for information.

## **Master of Architecture**

The Master of Architecture (M.Arch.) is an accredited graduate degree meeting the professional requirements of the National Architectural Accrediting Board for students who wish to qualify for registration and practice as architects. Candidates are admitted from architectural, related, and unrelated undergraduate backgrounds; professional experience is encouraged but not required.

The M.Arch. requires at least 52 credits, including no more than 6 credits in ARC 6971 or 6979. Course sequences in design history and theory, structures, technology, and practice must be completed. Students are encouraged to propose individual programs of study (outside of required courses), and interdisciplinary work is encouraged.

## **Master of Arts in Teaching and Master of Science in Teaching**

These degrees (M.A.T., M.S.T.) combine graduate study in a discipline with selected education courses and a teaching internship, providing flexible curricula that prepare students for a variety of options including teaching and further graduate work.

Requirements for the degrees are as follows:

- A reading knowledge of one foreign language if required by the student's major.
- Satisfactory completion of at least 36 credits while registered as a graduate student, with work distributed as follows:
  - At least 18 credits in the major and 6 credits in the minor.
  - Six credits in an academic unit internship in teaching (6943 Internship in College Teaching). Three years of successful teaching experience in a state-certified school may be substituted for the internship requirement, and credits thus made available may be used for further work in the major, the minor, or in education.

- At least one course selected from three or more of the following: social and/or psychological foundations of education; education technology; counselor education; special education, and community college curriculum. Other areas may be added or substituted at the discretion of the supervisory committee. These courses may be used to comprise a minor.
- Off-campus work: At least 8 to 16 credits (at the academic unit's discretion), including at least 6 credits in one term, must be earned on the Gainesville campus. Beyond that, credits earned in off-campus UF courses approved by the Graduate School are accepted if they are appropriate to the student's degree program as determined by the supervisory committee.
- At degree completion, the student needs at least 36 credits in the major for certification purposes.
- The student must pass a final comprehensive examination (written, oral, or both). This examination covers the field of concentration and the minor.

## Master of Arts in Urban and Regional Planning

The degree of Master of Arts in Urban and Regional Planning (M.A.U.R.P.) is a graduate degree for professional urban and regional planners and meets the educational requirements for the American Institute of Certified Planners. The program is accredited by the Planning Accreditation Board. General requirements are the same as for other Master of Arts degrees with thesis, except that the minimum registration required is 52 credits including no more than 6 credits in URP 6971 or 6979. All areas allow a project (requiring 6 credits) in lieu of thesis (with permission from the academic unit's Graduate Faculty). Please note that the Master of Arts in Urban and Regional Planning (M.A.U.R.P.) has been replaced by the Master of Urban and Regional Planning (M.U.R.P.) and is currently being phased out. All newly admitted students will be admitted for the M.U.R.P. program. Existing M.A.U.R.P. students should contact the academic unit for advisement on how to proceed.

**M.A.U.R.P./J.D. joint program:** A 4-year program leading to the Juris Doctor and Master of Arts in Urban and Regional Planning degrees is offered under the joint auspices of the College of Law and the College of Design, Construction, and Planning, Department of Urban and Regional Planning. For students interested in the legal problems of urban and regional planning, this program blends law studies with relevant course work in the planning curriculum. Students receive both degrees at the end of a 4-year course of study whereas separate programs would require 5 years. Students must take the GRE and the LSAT before admission, must be admitted to both programs, and must complete the first year of law school course work before commingling law and planning courses. A thesis is required on completing the course work.

Interested students should apply to both the Holland Law Center and the Graduate School, noting on the application the joint nature of their admission requests. For more information on the program, contact the Holland Law Center and the Department of Urban and Regional Planning.

## Master of Business Administration

The Master of Business Administration (M.B.A.) degree gives students (1) conceptual knowledge for understanding the functions and behaviors common to business organizations and (2) analytical, problem-solving, and decision-making skills essential for effective management. Emphasis is on developing the student's capacities and skills for business decision making.

The traditional MBA curriculum is structured so that students may extend their knowledge in a specialized field. The program offers certificate programs in: financial services, hospitality management, supply chain management, information systems and operations management, entrepreneurship and technology management, and global management; and concentrations in finance, security analysis, real estate, competitive strategy, marketing, entrepreneurship, information systems and operations management, management, global management, human resource management, Latin American business, international studies, and sports administration.

**Admission:** Applicants for admission must submit recent official scores from the Graduate Management Admission Test (GMAT) and official transcripts for all previous academic work. All program options require at least two years of

full-time professional work experience performed after receiving an acceptable bachelor's degree, along with written essays and personal recommendations from employers. All qualified applicants to the full-time (traditional) program are asked to interview as part of the admissions process. Applicants whose native, first language is not English must submit acceptable scores from one of the following: TOEFL (Test of English as a Foreign Language), IELTS (International English Language Testing System), MELAB (Michigan English Language Assessment Battery) or successful completion of the University of Florida English Language Institute program. Admission is competitive and class size is limited.

A diverse student body is seen as an important asset of the program. Accordingly, the backgrounds of students include a wide range of disciplines and cultures. With the exception of the Option B program, the curriculum assumes no previous academic work in business administration; however, enrolling students find introductory course work in statistics, calculus, and financial accounting beneficial.

For more specific information on other aspects of the program, contact the Office of Admissions, UF MBA Program, 310 Hough Hall, P.O. Box 117152, Gainesville FL 32611-7152, or visit the website, <http://www.floridamba.ufl.edu>.

**Course work:** A minimum of 48 qualified credits of course work are required for the two-year option, and one-year Option A. The one-year Option B requires a minimum of 32 credits. Credits cannot be transferred from another institution or program.

## Options

**Traditional MBA Two-Year Option:** This 48 credit program requires 4 terms of full-time study over two academic years. Students are admitted for the fall term only; many students spend the summer between academic years working at internships. This option requires at least two years of full-time, post-undergraduate work experience as well as a bachelor's degree from an accredited four year institution.

**Traditional MBA One-Year, Option A:** This 48 credit program starts in late spring/ early summer and students are expected to complete all coursework within 12 months. Successful candidates are expected to have a bachelor's degree from an accredited four year institution and two years of post-undergraduate work experience.

**Traditional MBA One-Year, Option B:** This 32 credit program starts in mid-summer and students expected to complete all course work within 10 months. Applicants to this program are required to have a bachelor's degree in business from a four-year accredited institution (conferred within the last seven years) and at least two years of post-undergraduate work experience. Students take primarily graduate business electives during summer B, fall, and spring terms and graduate in May.

**Executive MBA Program:** A 20-month program for working professionals, students attend classes one extended weekend per month (Friday-Sunday). The program is divided into five terms each lasting about four months. The program starts in August, and includes a one-week two credit international experience. The international study tour is a program requirement; students travel abroad in May for a week of experiential learning through lectures or discussions with local business and government leaders. The tour will include a combination of lectures, group projects and/or site visits. This option requires eight years of post-undergraduate work experience, and students are expected to have people or project management responsibilities in their current positions.

**Professional Two-Year MBA:** This 27-month program starts in August and January and is designed for professionals who work full time while pursuing their degrees part time. Students attend classes one weekend per month (Saturday-Sunday) and must attend a one-week in-residence elective class. This option requires two years of post-undergraduate work experience.

**Professional One-Year MBA:** For students with acceptable undergraduate degrees in business (completed within seven years before starting the program), this 16-month option starts in January. Students attend classes one weekend per month (Saturday-Sunday) and must attend a one-week in-residence elective class. The first meeting

includes a one-week, on-campus foundations review of basic course work. This option requires two years of post-undergraduate work experience.

**Internet Two-Year MBA:** This 27-month program starts in September and February and allows students to earn their MBA primarily through class lectures downloaded to their laptops or iPads. Students interact with faculty and classmates via email, synchronous group discussion software, asynchronous class presentation software, and multimedia courseware. Students visit campus one weekend (Saturday-Sunday) every four months. This option requires two years of post-undergraduate work experience.

**Internet One-Year MBA:** For students with acceptable undergraduate degrees in business (completed within seven years before starting this program), this 16-month option starts in January and August and gives students and faculty the same interactive technology as the Internet Two-Year MBA. Students visit campus one weekend (Saturday-Sunday) every four months. The first meeting includes a one week, on-campus foundations review of basic course work. This option requires two years of post-undergraduate work experience.

**Professional MBA in South Florida:** This 24 month program starts during the late summer, and is designed for professionals who wish to continue working full time while pursuing their degrees part time. This program includes a one-week two credit international experience. The international study tour is a program requirement; students travel abroad in November for a week of experiential learning through lectures or discussions with local business and government leaders. The tour will include a combination of lectures, group projects, and/or site visits. Students attend classes once every three weeks (Saturday-Sunday) at the UF MBA Sunrise Center in Sunrise, Florida. This option requires two years of post-undergraduate work experience.

**M.B.A./M.S. in medical sciences (biotechnology) program:** Concurrent studies leading to the Master of Business Administration and Master of Science degrees, offered in cooperation with the College of Medicine, are in response to the needs of businesses engaged in biotechnological sciences. Both degrees can be obtained in 3 years. The program requires 1 year of science courses, 1 year of business courses, and a year devoted to research and electives in business and science. Research is done in one of the Interdisciplinary Center for Biotechnology Research core laboratories. Students must meet the admission and curriculum requirements of both degrees. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. A student must at all times remain in good standing in both degree programs to remain in the M.B.A. program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./Ph.D. in medical sciences program:** Concurrent studies leading to the Master of Business Administration and Doctor of Philosophy degrees are offered in cooperation with the College of Medicine. This 120-credit program trains research scientists to assume responsibilities as managers of biotechnical industries. Estimated time to complete both degrees is 5 to 7 years. Students must meet the admission and curriculum requirements of both programs. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**MBA/J.D. program:** A program of joint studies leading to the Master of Business Administration and Juris Doctor degrees is offered under the joint auspices of the Warrington College of Business Administration and the Levin College of Law. Current M.B.A. or J.D. students must declare their intent to apply for the second degree during their first year. Applications are then due according to admission schedules for that year. Both degrees are awarded after a 4-year course of study. Students must take both the LSAT and the GMAT before admission and meet the admission and curriculum requirements of both degrees. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./Pharm.D. program in management and pharmacy administration:** A program of concurrent studies culminating in both the Master of Business Administration and Doctor of Pharmacy degrees allows students interested in both management and pharmacy administration to obtain the appropriate education in both areas. Candidates must meet the entrance requirements and follow the entrance procedures of both the Warrington College of Business Administration and the College of Pharmacy. The degrees may be granted after 5 years of study.



Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./M.I.M. program in international management:** A dual degree program between the University of Florida (UF) and the American Graduate School of International Management (Thunderbird) makes it possible to earn both degrees after 3 years of study. Students start the program at UF and apply to Thunderbird in their first year. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. This program requires 2 years of post-undergraduate work experience.

**Exchange programs:** The M.B.A. program offers second-year students exchange opportunities at numerous international universities. Currently, exchange programs exist with schools in Australia, Belgium, Brazil, Chile, China, Canada, Denmark, England, Finland, France, Germany, Italy, Japan, Korea, Liechtenstein, the Netherlands, Norway, Poland, Spain, Sweden, Taiwan, Thailand, and Turkey. For a complete list of exchange partners, see <http://warrington.ufl.edu/graduate/academics/maib/exchange.asp>.

## **Master of Construction Management**

The Master of Construction Management (M.C.M.) degree is for students pursuing advanced work in construction management, construction techniques, and research problems in the construction field.

General requirements are the same as for the Master of Science in Construction Management degree except that the M.C.M. requires at least 36 graduate credits. A thesis is not required. All candidates are required to pass a comprehensive examination at the completion of course work.

**Joint Program:** The M.C.M./J.D. program is offered in conjunction with the Levin College of Law.

## **Master of Education**

The Master of Education (M.Ed.) degree program meets the need for professional personnel to serve a variety of functions required in established and emerging educational activities of modern society. A thesis is not required.

All M.Ed. programs require at least 36 credits, with at least half of these credits earned in courses in the College of Education. Up to 6 credit earned from 3000- and 4000-level courses taken outside the academic unit may be counted toward the minimum requires for the degree provided they are part of an approved plan of study. (See also *General Requirements for Master's Degrees*.)

At least 16 credits must be earned while the student is enrolled as a graduate student in courses offered on the Gainesville campus of the University of Florida including registration for at least 6 credits in a single term. This requirement may deviate where distance education programs are considered.

## **Master of Engineering**

Students may choose a thesis or non-thesis option for the Master of Engineering (M.E.) degree. To be eligible for admission to the M.E. program, students must have earned a bachelor's degree from an ABET-accredited college or they must complete articulation work for equivalence. Admission requirements of the Graduate School must be met. The College of Engineering may use the Fundamentals of Engineering examination in lieu of the GRE for admitting students into the non-thesis master's degree programs. Students who do not meet the ABET requirement may be admitted to the Master of Science program (see section on Master of Arts and Master of Science).

The non-thesis M.E. degree is a 30-credit course-work-only degree (practice-oriented project or capstone course may be included in the 30 credits). At least 15 credits must be in the student's major at the 5000 level or higher. For work outside the major, courses numbered 3000 or above (not to exceed 6 credits) may be taken if they are part of an

approved plan of study. If a minor is chosen, at least 6 credits are required. Two 6-credit minors may be taken. At the discretion of individual engineering academic units, an oral or written examination may be required.

The thesis option requires 30 credits of course work, including up to 6 credits of 6971 (Research for Master's Thesis). At least 12 credits (not counting 6971) must be in the student's major. Courses in the major must be at the 5000 level or higher. For work outside the major, up to 6 credits of courses numbered 3000 or above may be taken if part of an approved plan of study. If a minor is chosen, at least 6 credits are required. Two 6-credit minors may be taken at the discretion of the academic unit. A comprehensive oral and/or written final examination is required.

An off-campus (distance learning) student who is a candidate for the non-thesis M.E. degree must take half the course work from full-time UF faculty members and must pass a comprehensive written examination administered by a committee from the academic unit. If the student has a minor, the committee must include a member representing that minor.

## Master of Fine Arts

The Master of Fine Arts (M.F.A.) degree is offered with majors in art, creative writing, and theatre. Requirements are the same as for the Master of Arts with thesis, except the M.F.A. requires at least 60 credits (54 for creative writing), including 6 to 9 credits in 6971 (Research for Master's Thesis). Students in art and theatre substitute 6973 (Individual Project) creative work in lieu of the written thesis.

**Admission:** Applicants requesting admission to any of the programs should have an earned baccalaureate degree in the same or a closely related field from an accredited institution. Students must fulfill the admission requirements of their disciplines and the Graduate School's admission criteria. In cases where the undergraduate degree is not in the area chosen for graduate study, the student must demonstrate a level of achievement fully equivalent to the bachelor's degree in the chosen graduate field. A candidate deficient in certain areas must remove the deficiencies by successfully completing appropriate courses.

Art or theatre candidates also must submit a portfolio of the creative work, or must audition, before being accepted into the program. Creative writing candidates must submit 2 short stories, 2 chapters of a novel, or 6 to 10 poems. Three years of work in residence are usually needed to complete degree requirements. If deficiencies must be removed, the residency could be longer. See the Programs Section of this catalog for Art, English, and Theatre.

**Art:** The M.F.A. degree with a major in art involves advanced visual research for those who wish to attain a professional level of proficiency in studio work. Specialization is offered in the studio areas of art + technology, ceramics, creative photography, drawing, graphic design, painting, printmaking, and sculpture. For studio work, the M.F.A. is generally the terminal degree and is often the required credential for teachers of art in colleges and universities.

In addition to the general requirements above, students must take at least 60 credits. Requirements include 42 credits in studio courses (24 in specialization, 12 in electives, and 6 in ART 6973C); 6 credits in art history; 3 credits in teaching art in higher education (required if the student is to accept a teaching assistantship); 3 credits in aesthetics, criticism, or theory; and 6 credits of electives. The College requires the student to leave documentation of thesis project work for purposes of record, exhibition, or instruction.

**Creative writing:** The M.F.A. in creative writing develops writers of poetry and fiction through series of workshops and other courses, including seminars. Candidates are required to produce a thesis (a manuscript of publishable poetry or fiction) at the end of the 3-year program. The degree requires 11 courses (4 workshops, 3 seminars, 1 forms course, and 3 electives); a reading tutorial; and a thesis, along with 9-18 research/thesis hours: 54 credits in all. Students typically take at least 1 workshop each Fall/Spring term for the first two years. The electives may be seminars, approved independent studies, or additional workshops. No coursework is expected in summer.

**Theatre:** The M.F.A. degree with a major in theatre is for those interested in production-oriented theatrical careers and teaching. Two specializations are offered: acting and design. The craft skills encompassed in the program are

later applied in public and studio productions. The program requires 60 credits, including 18 credits of core classes, 17 credits of specialty training, an internship, and a project in lieu of thesis.

## **Master of Fisheries and Aquatic Sciences**

The non-thesis Master of Fisheries and Aquatic Sciences (M.F.A.S.) program trains students in the technical aspects of fisheries and aquatic sciences emphasizing written and oral communication of scientific information. Requirements are the same as for the Master of Science degree with the non-thesis option, except that the minimum credit requirement is 32 credits, of which at least 26 graduate credits of graded course work (at least 16 in the major), and a technical paper. The final draft of the technical paper must be submitted to all supervisory committee members for approval at least 3 weeks before the scheduled date of the oral and written final examination.

## **Master of Forest Resources and Conservation**

The Master of Forest Resources and Conservation (M.F.R.C.) degree is for additional professional preparation rather than primary research. Requirements are the same as those listed for master's degrees, except that the M.F.R.C. requires GRE scores of at least 500 verbal and 500 quantitative.

**Work required:** At least 30 credits of letter-graded course work with at least 12 credits of graduate course work in the major are required. A thesis is not required, but the student must complete a technical project in an appropriate field. This project may take various forms, such as a literature review, extension publication, video, training manual, or curriculum. The M.F.R.C. requires a final examination covering the candidate's entire field of study. The student must present the work to the supervisory committee in an on-campus public forum before the final examination.

## **Master of Health Administration**

The Master of Health Administration (M.H.A.), offered by the College of Public Health and Health Professions, trains qualified individuals to become managers and leaders of health care organizations. The degree provides a core of business and analytical skills, concepts and knowledge specific to health administration, opportunities for application and synthesis, and exposure to the field of practice. The M.H.A. program admits students only in the fall term and requires full-time study for 2 years, plus a summer internship between the first and second years. The program requires a total of 57 credits.

## **Master of Health Science**

The Master of Health Science (M.H.S.) degree, offered by the College of Public Health and Health Professions, provides exposure to health research and meets the need for leadership personnel in established and emerging health care programs. The College currently offers a program in occupational therapy and a concentration program leading to the M.H.S. degree.

The M.H.S. concentration program in One Health is part of the portfolio of training programs available through the Environmental and Global Health Department in the College of Public Health and Health Professions. The program requires 40 credits to complete.

There are three paths to enter occupational therapy and attain the Master of Health Science degree. The 4-term thesis option emphasizes research and is the appropriate route for (but not limited to) students interested in rehabilitation science. The 3-term non-thesis option emphasizes research and advanced theories related to the practice of occupational therapy. Both options prepare leaders in the profession and require 36 credits. The third option, the distance learning program, is for working professionals to increase knowledge in emerging practice areas and leadership. See the requirements for all master's degrees for additional requirements.

## Master of Interior Design

The Master of Interior Design (M.I.D.) allows students to direct their attention to a variety of topics including design pedagogy and processes; sustainable, safe, and secure environments; creative performance and innovation; and built heritage conservation.

**Work required** includes at least 36 credits (no more than 6 thesis credits). Required preparatory courses are in addition to the minimum credits for graduate work.

## Master of International Business

The Master of International Business (M.I.B) is a non-thesis interdisciplinary graduate business program designed to enhance a student's knowledge and understanding of global business trends and problems.

**Admission:** All admission requirements of the Graduate School must be met. Applicants must have a U.S. Bachelor's degree (or equivalent) from an accredited institution, with a major or minor in Business. In addition, applicants must complete a statement of purpose and submit two letters of recommendation as well as a resume and all official transcripts and admissions scores.

**Work required:** Students must complete the 30-credit curriculum, which consists of 14 core credits and 16 elective credits, with a grade point average (major and overall) of 3.0 or higher. The curriculum includes a mandatory global immersion experience and a non-thesis capstone project.

## Master of International Construction Management

The Master of International Construction Management (M.I.C.M.) is a non-thesis, distance education, advanced degree program with a research report/project requirement offered by the Rinker School of Construction Management. The M.I.C.M. allows students with computer and Internet access to attend classes at any time, any place and to interact with faculty and classmates via the Internet.

**Admissions:** Applicants for admission must have:

- An undergraduate degree,
- At least 5 years of meaningful, supervisory-level construction management experience,
- Acceptable GRE scores
- A grade point average of 3.00 on a 4.0 scale,
- If an international student, an acceptable score on one of the following: TOEFL (Test of English as a Foreign Language: paper=550, Internet=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute program, and
- Sponsorship by the employer.

**Work required:** The M.I.C.M. prepares students to assume upper-level construction management responsibilities in a multinational construction company. Specializations include sustainable construction, information systems, construction safety, and human resource management. In addition to 6 research-oriented graduate credits, the student selects 1 or 2 specializations and then takes the rest of the required 33 credits from the remaining courses and special electives. Students must pass a comprehensive oral and/or written examination on completing course work and the master's research report/project.

## Master of Landscape Architecture

The degree of Master of Landscape Architecture (M.L.A.) is the advanced professional degree for graduates with baccalaureate credentials in landscape architecture and is a first professional degree for the graduate from a non-landscape architectural background. Candidates are admitted from related and unrelated fields and backgrounds. An advanced professional life experience track is available for eligible candidates.

**Work required:** Candidates must complete at least 52 credits, including no more than 6 credits of thesis or project. For students without baccalaureate credentials in landscape architecture, required preparatory courses are in addition to the minimum credits for graduate work. For advanced professional life experience candidates, the minimum requirement is 30 credits, including thesis. At least 50% of all course work must be graduate courses in landscape architecture. Some areas allow a project (requiring 6 credits) in lieu of thesis, with permission of the academic unit's Graduate Faculty.

## Master of Latin

The Classics Department offers the non-thesis Master of Latin (M.L.) degree, a 30-credit program mainly for currently employed and/or certified teaching professionals who wish to widen their knowledge of Latin, broaden their education in the field of Classics, and enhance their professional qualifications. This degree can be attained by students in residence for fall/spring terms or by a program of summer course work at UF and by directed independent study and/or distance learning courses during the regular academic year.

Students registering during summer terms can complete the degree in 4 years by earning 6 graduate credits each summer (total = 24), plus two 3-credit independent study or distance learning courses during the intervening academic years. Those who already have some graduate credit in Latin, or who can take more credits during the year, can complete the degree more quickly.

Unlike the M.A. degree in Latin, the Master of Latin degree has no thesis requirement, does not prepare students for Ph.D. level studies, and is aimed specifically at currently employed and certified Latin teachers.

**Admission:** Contact the Department's Graduate Coordinator or Distance Learning Coordinator before applying. Requirements for the admissions process are:

- Apply to UF's Graduate School,
- Acceptable GRE scores,
- Three letters of recommendation, and
- Transcripts recording undergraduate courses (and graduate courses, if any; students must demonstrate the ability to take Latin courses at the graduate level).

**Degree requirements include** at least 30 credits as a UF graduate student. Of these, no more than 8 credits (grade of A, A-, B+, or B) may be transferred from institutions approved for this purpose by the Dean of the Graduate School. At least half of the 30 credits required should be from Latin language and literature courses (LAT or LNW courses at the 5000 level or above). UF graduate-level courses taken before admission to Graduate School (e.g., in the Latin Summer Institutes) may be applied to the 30 credits if approved by the Graduate School. The Department will work closely with individual students to determine how many previous graduate credits at UF or other institutions may be applied to this program.

The student may elect minor work in other academic units (e.g., history, philosophy, art history, religion) although there is no requirement to do so. If a minor is chosen, at least 6 credits are required in the minor field. Two 6-credit minors may be taken with departmental permission. A GPA of 3.0 is required for minor credit and for all work counted toward the degree. All work in a minor must be approved by the supervisory committee.

**Examination:** The supervisory committee administers a final oral and written comprehensive examination at completion of the course work. This examination includes (1) an oral component on Roman literary tradition and (2) a

written component covering (a) Latin sight translation and grammar, (b) Roman history and civilization, and if applicable (c) the minor, or minors. As preparation for this examination, the student should read the required reading list of secondary works in English.

**Language requirement:** The Department for this degree plan does not require, but strongly recommends, at least a reading knowledge of one (or more) of the following: German, French, Italian, or Spanish. Such study will facilitate reading important secondary works not translated into English, enhance travel, and perhaps lead to teaching opportunities in the chosen language at the secondary school level.

## **Master of Laws in Comparative Law**

The Master of Laws in Comparative Law (LL.M.Comp.Law) degree is for graduates of foreign law schools who want to enhance their understanding of the American legal system and the English common law system. The program starts with Introduction to American Law, a 4-credit summer course that gives students a foundation in the American legal process. It also helps students acclimate to the College of Law and the University community before starting the academic year. During fall and spring terms, and with the director's approval, students choose their remaining 22 credits from more than 100 Juris Doctor and LL.M. in Taxation courses and seminars. For admission information consult the College of Law Catalog or write to the Comparative Law Office, P.O. Box 117643, University of Florida, Gainesville FL 32611-7643.

## **Master of Laws in Environmental and Land Use Law**

The Master of Laws in Environmental and Land Use Law degree is a one-year post-J.D. degree providing an opportunity for experienced attorneys, as well as recent law school graduates, to spend an academic year full-time on the UF campus developing in-depth expertise in environmental and land use law.

For more information about the Environmental and Land Use Law Program, contact  
University of Florida Levin College of Law, Environmental and Land Use Law Office  
P.O. Box 117625  
University of Florida  
Gainesville, FL 32611-7625

Phone (352-273-0777) or  
E-mail to [elulp@law.ufl.edu](mailto:elulp@law.ufl.edu).

## **Master of Laws in International Taxation**

The Master of Laws in International Taxation (LL.M.I.T.) degree program offers advanced instruction for law graduates who plan to specialize in international taxation, in the practice of law. Degree candidates must complete 26 credits. Of these 26 credits, 22 must be graduate-level tax courses, and 13 must be graduate-level international tax courses, including a research and writing course.

## **Master of Laws in Taxation**

The Master of Laws in Taxation (LL.M.T.) degree program offers advanced instruction for law graduates who plan to specialize in federal taxation and particularly federal income taxation, in the practice of law. Degree candidates must complete 26 credits. Of these 26 credits, 22 must be graduate-level tax courses, including a research and writing course.

## Master of Music

The Master of Music (M.M.) degree is offered in music or music education. The music program offers the following concentrations: choral conducting, composition, electronic music, ethnomusicology, instrumental conducting, music education, music history and literature, music theory, performance, and sacred music. The M.M. degree prepares students for careers as teachers in studios, schools, and universities; performers; music historians; music critics; church musicians; composers; conductors; and accompanists.

**Admission:** Applicants should have a baccalaureate degree in music or a closely related area from an accredited institution. Students whose undergraduate degree is in another discipline must demonstrate a level of achievement fully acceptable for master's level work in this discipline. Applicants normally complete at least 4 semesters of music theory, two semesters of music history, and 3-5 semester of performance study.. A candidate deficient in certain undergraduate areas must remove the deficiencies by successfully completing appropriate courses. If remedial work is needed, the residency (usually 4 terms of full-time study) may be longer. An audition or portfolio review is required for all students.

**Work required** includes at least 32 credits of course work (not counting prerequisite or deficiency courses) incorporating a core of 9 credits. The core in all emphases includes MUS 6716 (MUE 6785 in the music education program), MUT 6629, and one MUH or MUL graduate course. A thesis or creative project in lieu of thesis is required.

The College of the Arts reserves the right to retain student work for purposes of record, exhibition, or instruction. For more information, see the Programs Section of this catalog.

## Master of Occupational Therapy

The non-thesis Master of Occupational Therapy (M.O.T.) degree program is for students who do not have a degree in occupational therapy, and who want to enter the field of occupational therapy. The program gives students a holistic perspective including an understanding of the philosophical and theoretical bases for practice in the current health care environment. The M.O.T. program provides a strong background in theory, assessment, and therapeutic intervention.

This 5-term program of graduate study consists of 3 terms of classroom course work and 2 terms (24 weeks) of internship. Students enter the program after completing a bachelor's degree. The M.O.T. degree is awarded after completing 58 credits. Students must receive at least a B (3.00 truncated) on all course work and satisfactory evaluations on all clinical fieldwork.

## Master of Public Health

The Master of Public Health (M.P.H.) is a non-thesis degree program that prepares students to become effective public health practitioners, scientists, and educators. Graduates can contribute to the health of the local, national, and international communities through advancing public health knowledge and by designing, implementing, and evaluating programs and policies that prevent disease and promote health. Students have the opportunity to develop skills in 1 of 6 public health concentration areas:

- Biostatistics: Applying quantitative and analytical methods in public health research and evaluation
- Environmental health: Assessing risk levels and protecting the public from environmental threats to health
- Epidemiology: Studying the distribution and determinants of health in populations and communities
- Public health management and policy: Providing leadership in public health administration and developing policies to promote the public's health
- Public health practice: Developing breadth in the field of public health by studying 2 or more of the other concentration areas

- Social and behavioral sciences: Exploring the unique issues faced by diverse groups and populations and acquiring skills to achieve social and behavioral change.

The M.P.H. degree program is a 48-credit program for individuals with bachelor's degrees. Those with prior terminal degrees in health-related fields may take the M.P.H. in an accelerated 42-credit format. Several collaborative programs with professional and graduate degrees are available, including D.V.M./M.P.H., J.D./M.P.H., and Pharm.D./M.P.H. A combined degree program for seniors and a 15-credit certificate program also are offered. For additional information, visit <http://www.mph.ufl.edu>.

**Admission:** Applicants with any undergraduate major are considered for the program as long as they meet the Graduate School admission requirements and their interests match the program's philosophy and curriculum.

**Work required:** In the 48-credit program, students take 16 credits of core public health course work and 5-8 credits of internship. Internships are designed to promote competency in the concentration area and contribute to the student's career goals. The remaining 24-27 credits include required and elective course work in the concentration area chosen by the student. Specific course requirements vary by concentration area.

Students who have a relevant terminal degree in a health-related field may be eligible for the 42-credit accelerated program, pending M.P.H. admissions committee approval. This program requires completion of 16 credits of core public health course work, 21 credits of concentration course work, and a 5-credit internship.

## Master of Science in Architectural Studies

**Admission:** The Master of Science in Architectural Studies (M.S.A.S.) is a nonprofessional, research degree for students with undergraduate degrees in any field of study who wish to undertake advanced studies and research in architectural specialties. Specialization is offered in environmental technology, architectural preservation, urban design, history, and theory.

**Work required** includes at least 32 credits of course work incorporating up to 6 credits of ARC 6971 (Research for Master's Thesis). Most course work should be in the School of Architecture, but multidisciplinary electives in planning, history, law, engineering, art history, and real estate are encouraged. Students also may enroll in one of the School's off-campus programs in Nantucket, in the Caribbean, in Hong Kong, or in Vicenza. A thesis is required.

Requirements for level and distribution of credits, supervisory committee, and final examination are the same as for the Master of Arts and Master of Science with thesis.

## Master of Science in Entrepreneurship

The Master of Science in Entrepreneurship (M.S.E.) program is a one-year, 36-credit, campus-based program designed for young and aspiring entrepreneurs and change-makers. Offered to both business and non-business majors alike, the program is a combination of classroom delivery and experiential learning activities with a focus on opportunity assessment, feasibility analysis, lean entrepreneurial concept testing, business plan development, entrepreneurial leadership, and the sourcing of capital. Students are exposed to cutting edge entrepreneurial theory, which they apply immediately by consulting for small business, commercializing UF technology, and creating their own businesses. The M.S.E. program is a non-thesis degree requiring a final exam in lieu of thesis.

**Admission:** All admission requirements of the Graduate School must be met. In addition, applicants must complete a statement of purpose, submit two letters of recommendation as well as a resume and all official transcripts and admissions scores, and conduct a program interview. Either a GMAT or GRE score will be accepted.

**Work required:** In order to graduate from the program students must:

- Complete 36 credits with a grade of "C" or better;
- Maintain an overall Graduate GPA of 3.0 or higher;



- Maintain a Major GPA of 3.0 or higher;
- Complete the program final exam: a portfolio of entrepreneurial experiences completed throughout the program demonstrating mastery of entrepreneurial competencies;
- Fulfill all program requirements.

## **Master of Science in Fire and Emergency Services**

The Master of Science in Fire and Emergency Services (M.S.F.E.S.) is a non-thesis, distance education, advanced degree program with a research report/project requirement offered by the Rinker School of Construction Management. The degree focuses on Emergency Services/Disaster Management (ES/DM) and is designed for individuals who are seeking knowledge in emergency planning, hazard mitigation and preparedness, disaster response and recovery, and homeland security. The goal is to create broad experience that includes the many elements of current cases in ES/DM and emphasizes both the critical thinking and leadership skills necessary to advance in the field. Major research topics include interdisciplinary studies in material sciences, suppression systems, advanced planning and geographic systems, pre- and post-disaster mitigation planning, computer applications, and technological innovations.

**Admission:** All admission requirements of the Graduate School must be met. Applicants must have a U.S. Bachelor's degree (or equivalent) from an accredited institution. In addition, applicants must have at least five years of meaningful supervisory and management related experience; a cumulative verbal and quantitative GRE score of 300 or higher; a grade point average of 3.0 on a 4.0 scale (preferred); and for international applicants a TOEFL score of 80 or higher on the Internet-Based exam (550 on the Paper-Based) or a 6 or higher on the IELTS.

**Work required:** At least 33 credits overall (at least 17 credits in the major) with a GPA of 3.0 or higher, a final comprehensive exam, and a research report.

## **Master of Science in Information Systems and Operations Management**

The Master of Science in Information Systems and Operations Management (M.S.ISOM) program provides computing, analytical, and application skills to be used in a business setting. The primary areas of emphasis in the program are business intelligence and analytics, information technology, and supply chain management. Requirements span traditional academic disciplines to produce a multi-discipline focus. The M.S.ISOM program is a non-thesis degree program.

All admission requirements of the Graduate School must be met. There are no prerequisites for the program. However, students without a business background will need additional core business coursework.

Preparedness for graduation is based on:

- Completing a minimum of 36 credits (including 18 in the major) and all course requirements for the designated track. Letter grades of C-, D+, D, D- or E are not considered passing at the graduate level and therefore any required course for which such grades have been assigned must be repeated.
- Being registered for at least two credits in the semester in which the student intends to graduate.
- Completing all degree requirements, including a minimum grade point average of B (3.00 truncated) in the major (i.e. only courses offered under the Department section of the graduate catalog) and in all work attempted in the graduate program, including a minor where appropriate
- Clearing all incompletes or other unresolved grades by the midpoint deadline published on the Graduate School's Critical Dates web page.
- Filing a degree application with the Office of the University Registrar by the deadline published on the Graduate School's Critical Dates web page. The degree application can be accessed on ISIS under "My Record." Check the box "Master of Science" on the application.

## **Master of Science in Nursing**

The master's degree prepares nurses for advanced practice, clinical nurse specialist, or to be a clinical nurse leader. The graduate nursing core includes nursing theory, research, statistics, health policy, ethics, finance, and health promotion. The advanced practice core includes specific theory and clinical courses with relevant clinical experiences.

The College offers the master's degree and post-master's certification for nurse midwifery and the following nurse practitioner roles: adult acute care, adult, family, pediatric, and neonatal.

Additional offerings include

- Psychiatric/mental clinical nurse specialists/nurse practitioners
- Clinical Nurse Leader

Graduates are eligible for Florida licensure and national certification. To be considered for the M.S.N. program, students must meet the following minimum requirements:

- Bachelor of Science in Nursing degree with an upper-division grade point average of 3.0 or higher from a CCNE or NLN AC accredited program
- A score of 500 or higher on each of the verbal and quantitative sections in the prior version of the Graduate Record Examination (GRE) General Test. In the new version of the GRE a minimum score of 153 in the verbal section and 144 in the quantitative section. Analytical writing section is optional.
- Eligibility for licensure to practice as a registered nurse in the state of Florida

For application materials: [http://www.nursing.ufl.edu/prospective/prospective\\_msn\\_application\\_process.shtml](http://www.nursing.ufl.edu/prospective/prospective_msn_application_process.shtml)

## **Master of Statistics**

The Master of Statistics (M.Stat.) degree requires at least 36 credits including at least 30 graduate credits in the major. Courses are selected in consultation with the supervisory committee chair and approved by the supervisory committee. Students must pass two examinations: (1) a first-year examination, given by a committee designated for the purpose, on material covered in statistics courses for first-year graduate students and (2) a final oral examination consisting of a presentation by the student on a statistical topic not covered in depth in the regular course work. The student should consult with his/her adviser to choose a topic, and present a written report on that topic to the supervisory committee at least 1 week before the examination date. A typical report is 8 to 10 pages. During and after the presentation, the student's committee may ask questions related to the topic of the presentation and related to other material covered in the student's program of study.

## **Master of Sustainable Development Practice**

The Master of Sustainable Development Practice (M.D.P.) at the University of Florida prepares development practitioners to address development challenges in creative and dynamic ways. The UF M.D.P. integrates the academic and development pillars of natural sciences, social sciences, health sciences and integrated management skills into a vigorous and innovative program curriculum.

The M.D.P. Degree requires 45 credits of course work, including 24 core credits and 21 elective credits, the latter through which a student focuses on a specialization (for example, entrepreneurship, agriculture, ecotourism, gender, community forest management, nonprofits, or M&E). The M.D.P. Program is a non-thesis degree. Each student must successfully complete a set of requirements, including a summer field practicum, the development of a poster presented in a public poster session, a final practicum report approved by their committee, and a public presentation

and private defense with committee members of the final report. All students will be expected to meet defined learning outcome objectives, integrating knowledge, skills and desired professional behavior.

All admission and graduation requirements of the Graduate School must be met. Students are required to develop a study plan approved by the M.D.P. program Graduate Coordinator and by their supervisory committee. Please visit the M.D.P. Program website for additional information on the M.D.P. degree and curriculum <http://mdp.africa.ufl.edu/>.

## **Master of Urban and Regional Planning**

The Department of Urban and Regional Planning offers the degree of Master of Urban and Regional Planning (M.U.R.P.). The 52-credit graduate program is usually completed in two academic years. Students with a master's degree in a related field may obtain approval from the Department to transfer up to 18 credit hours toward the 52-credit requirement. The Department encourages students with any undergraduate degree who are interested in the field of planning to apply for admission.

The M.U.R.P. degree is accredited by the Planning Accreditation Board, a joint undertaking of the American Institute of Certified Planners and the Association of Collegiate Schools of Planning, for having achieved the highest applicable standards for graduate education in the field of planning. Graduates of the Department are prepared to practice urban and regional planning.

## **Requirements for Doctoral Degrees**

### **Doctor of Philosophy**

The Doctor of Philosophy (Ph.D.) is a research degree and is granted on evidence of general proficiency, distinctive attainment in a special field, and particularly on ability for independent investigation as demonstrated in a dissertation presenting original research with a high degree of literary skill. Consequently, doctoral programs are more flexible and varied than those leading to other graduate degrees. The Graduate Council does not specify what courses are required for the Doctor of Philosophy degree. General requirements: the program should be unified in relation to a clear objective, the program should have the considered approval of the student's entire supervisory committee, and the program should include an appropriate number of credits of doctoral research.

### **Course Requirements**

Course requirements for doctoral degrees vary from field to field and from student to student. In all fields, the Ph.D. degree requires at least 90 credits beyond the bachelor's degree. All master's degrees counted in the minimum must be earned in the last 7 years.

**Transfer of credit:** No more than 30 credits of a master's degree from another institution will be transferred to a doctoral program. If a student holds a master's degree in a discipline different from the doctoral program, the master's work will not be counted in the program unless the academic unit petitions the Dean of the Graduate School. All courses beyond the master's degree taken at another university to be applied to the Ph.D. degree must be taken at an institution offering the doctoral degree and must be approved for graduate credit by the Graduate School of the University of Florida. All courses to be transferred must be graduate-level, letter-graded with a grade of B or better and must be demonstrated to relate directly to the degree being sought. All such transfer requests must be made by petition of the supervisory committee no later than the third term of Ph.D. study. The total number of credits (including 30 for a prior master's degree) that may be transferred cannot exceed 45, and in all cases the student must complete the qualifying examination at the University of Florida. In addition, any prior graduate credits earned at UF (e.g., a master's degree in the same or a different discipline) may be transferred into the doctoral program at the discretion of the supervisory committee and by petition to the Graduate School. The petition must show how the prior course work is relevant to the current degree.

**Major:** A Ph.D. student does the major work in an academic unit specifically approved for offering doctoral courses and supervising dissertations. See Graduate Programs. At least a B (3.00 truncated) is needed for courses included in the major.

**Minor:** Minor work must be in an academic unit other than the major. If an academic unit contributes more than one course (as specified in the curriculum inventory and/or the Graduate Catalog) to the major, the student is not eligible to earn a minor from the contributing academic unit. A 3.00 (truncated) GPA is required for minor credit.

With the supervisory committee's approval, the student may choose one or more minor fields. If one minor is chosen, the supervisory committee member representing the minor suggests 12 to 24 credits of courses numbered 5000 or higher as preparation for a qualifying examination. If two minors are chosen, each must include at least 8 credits. Competency in the minor is demonstrated by written examination by the minor academic unit, or by the oral qualifying examination.

### Leave of Absence

A doctoral student who ceases to be registered at UF for more than 1 term needs prior written approval from the supervisory committee chair for a leave of absence for a stated period of time. This approved leave is kept on file in the student's departmental record. It does not need Graduate School approval. The student must reapply for admission on returning. See *Readmission* and *Catalog Year*.

### Supervisory Committee

Supervisory committees are nominated by the academic unit chair, approved by the dean of the college concerned, and appointed by the Dean of the Graduate School. The committee should be appointed as soon as possible after the student starts doctoral work and no later than the end of the second term of equivalent full-time study. The Dean of the Graduate School is an ex-officio member of all supervisory committees.

Duties and responsibilities of the supervisory committee:

- Inform the student of all regulations governing the degree sought. This does not absolve the student from responsibility for being informed about these regulations. See *General Regulations*.
- Meet immediately after appointment to review the student's qualifications and discuss and approve a program of study.
- Meet to discuss and approve the proposed dissertation project and the plans for carrying it out.
- Give the student a yearly evaluation letter in addition to S/U grades earned for research courses 7979 and 7980. The chair writes this letter after consulting with the supervisory committee.
- Conduct the qualifying examination (or participate in it, if administered by the academic unit).
- Meet when at least half the work on the dissertation is complete, to review procedure, progress, and expected results; and to make suggestions for completion.
- Meet with the student when the dissertation is completed and conduct the final oral examination to assure that the dissertation is a piece of original research and a contribution to knowledge. The supervisory committee chair or co-chair must be present with the candidate for the examination. All other committee members may attend remotely. Only the actual supervisory committee may sign the ETD Signature Page, and they must approve the dissertation unanimously. See *Examinations* in *General Regulations*.

**Membership:** The supervisory committee for a doctoral candidate comprises at least four members selected from the Graduate Faculty. At least two members, including the chair, must be from the academic unit recommending the degree. At least one member serves as external member and should be from a different educational discipline, with no ties to the home academic unit. One regular member may be from the home academic unit or another unit.

If a minor is chosen, the supervisory committee includes at least one Graduate Faculty member representing the student's minor. If the student elects more than one minor, each minor area must be represented on the supervisory committee. Therefore, committees for students with two minors must have a minimum of five members.

**Special appointments:** People without Graduate Faculty status may be made official members of a student's supervisory committee through the special appointment process. Appropriate candidates for special appointments include

- Individuals from outside UF with specific expertise who contribute to a graduate student's program of study
- Tenure-track faculty not yet qualified for Graduate Faculty status
- Non-tenure-track faculty or staff at UF who do not qualify for Graduate Faculty status

Limitations for special appointments:

- They do not hold Graduate Faculty appointments
- They have a special appointment that is specific only to an individual student's committee
- **They may not serve as a supervisory committee chair, co-chair, external member, or minor representative.**

The student's supervisory committee chair requests the special appointment, briefly explaining what the special appointment contributes to the supervisory committee. A special appointment is made for a specific supervisory committee. If a student changes to a new degree or major and the committee chair wishes to include the special member on the new supervisory committee, another request must be submitted to the Graduate School for the new committee.

**External member:**

- Represents the interests of the Graduate School and UF
- Knows Graduate Council policies
- Serves as an advocate for the student at doctoral committee activities.

If the academic unit's committee activity conflicts with broader University policies or practices, the external member is responsible for bringing such conflicts to the attention of the appropriate governing body. Therefore, the external member is prohibited from holding any official interest in the doctoral candidate's major academic unit. Faculty holding joint, affiliate, courtesy, or adjunct appointments in the degree-granting academic unit cannot be external members on a student's committee.

**Minor member:** The Graduate Faculty member who represents a minor on a student's committee may be appointed as the external member if he/she does not have a courtesy graduate appointment in the student's major academic unit.

**Co chair:** To substitute for the chair of the committee at any examinations, the co chair must be in the same academic unit as the candidate.

**Retired faculty:** Graduate Faculty members who retire may continue their service on supervisory committees for 1 year. With approval of the academic unit, retired faculty may continue serving on existing or new committees beyond this period.

**Substituting members at qualifying and final examination:** If a supervisory committee member cannot be present at the student's final defense, a Graduate Faculty member in the same academic area may substitute for the absent committee member. The substitute should sign the Final Examination form on the left side, in the space provided for committee members, noting the name of the absent member.

The chair of the student's major academic unit also must indicate the reason for the absence and state that the absent member agreed to this substitution at the final examination.

The substitute should not sign the ETD signature page. The original committee member must sign.

The student and chair or co chair should be present for the oral defense; however, other committee members may elect to attend remotely, with approval by the other committee members, using modern communication technology to be present rather than being physically present at the defense.

**No substitutes are allowed for the chair or external member of the committee.** Changes to the supervisory committee may be entered online in GIMS before the qualifying examination.

The Graduate Council wants each supervisory committee to function as a University committee (not a departmental committee), applying University-wide standards to the various doctoral degrees. For complete information on the appointment process, consult the Graduate Council Policy Manual, <http://gradschool.ufl.edu/archived-files/policy-manual-archived-copy.html> (Chapter VIII).

## **Language Requirement**

Any foreign language requirement for the Ph.D. is established by the major academic unit with approval of the college. The student should check with the graduate coordinator of the appropriate academic unit for specific information. The foreign language departments offer classes for graduate students starting to study a language. See the current *Schedule of Courses* for available languages. All candidates must be able to use the English language correctly and effectively, as judged by the supervisory committee.

## **Campus Residence Requirement**

Beyond the first 30 credits counted toward the doctoral degree, students must complete 30 credits enrolled at the University of Florida campus or at an approved branch station of the University of Florida Agricultural Experiment Stations or the Graduate Engineering and Research Center. An academic unit or college may establish and monitor its own more-stringent requirement as desired.

## **Qualifying Examination**

All Ph.D. candidates must take the qualifying examination. It may be taken during the third term of graduate study beyond the bachelor's degree.

The student must be registered in the term the qualifying examination is given.

The examination, prepared and evaluated by the full supervisory committee or the major and minor academic units, is both written and oral and covers the major and minor subjects. Except for allowed substitutions, all members of the supervisory committee must attend the oral part. The student and chair or co-chair must be in the same physical location. With approval of the entire committee, other committee members may attend remotely using modern technology. At this time the supervisory committee is responsible for deciding whether the student is qualified to continue work toward a Ph.D. degree.

If a student fails the qualifying examination, the Graduate School should be notified. A re-examination may be requested, but it must be recommended by the supervisory committee. At least one term of additional preparation is needed before re-examination.

**Time lapse:** Between the oral part of the qualifying examination and the date of the degree there must be at least 2 terms. The term the qualifying examination is passed is counted, if the examination occurs before the midpoint of the term.

## **Registration in Research Courses**

Advanced Research (7979) is open to doctoral students not yet admitted to candidacy (classified as 7 and 8). Students enrolled in 7979 during the term they qualify for candidacy will stay in this registration unless the academic unit elects to change their enrollment to Research for Doctoral Dissertation (7980), which is reserved for doctoral students admitted to candidacy (classified as 9).

## Admission to Candidacy

A graduate student becomes a candidate for the Ph.D. degree when the student is granted formal admission to candidacy. Such admission requires the approval of the student's supervisory committee, the academic unit chair, the college dean, and the Dean of the Graduate School. The approval must be based on:

- The academic record of the student
- The supervisory committee's opinion on overall fitness for candidacy
- An approved dissertation topic
- A qualifying examination as described above

The student should apply for admission to candidacy as soon as the qualifying examination is passed and a dissertation topic is approved by the student's supervisory committee.

## Dissertation

Each doctoral candidate must prepare and present a dissertation that shows independent investigation and that is acceptable in form and content to the supervisory committee and to the Graduate School. The work must be of publishable quality and must be in a form suitable for publication, using the Graduate School's format requirements.

**The student and supervisory committee are responsible for level of quality and scholarship.** Graduate Council requires the Graduate School Editorial Office, as agents of the Dean of the Graduate School, to review theses and dissertations for acceptable format, and to make recommendations as needed.

**Doctoral dissertation requirements:** Before presentation to the Editorial Office, the dissertation should be virtually complete and completely formatted (not in a draft format). Students must be completely familiar with the format requirements of the Graduate School and should work with one of the consultants in the Application Support Center, to troubleshoot the dissertation, before attempting to make a first submission to the editors in the Graduate School Editorial Office. Students who fail to first meet with one of the ASC Lab Consultants often find their document rejected upon First Submission to the Editorial Office, for not meeting the minimum submission standards, required for an editorial review.

Format requirements:

[graduateschool.ufl.edu/files/etd-guide.pdf](http://graduateschool.ufl.edu/files/etd-guide.pdf)

Checklist:

<http://graduateschool.ufl.edu/files/checklist-dissertation.pdf>

Graduate School Editorial Office:

<http://graduateschool.ufl.edu/graduation/thesis-and-dissertation>

Application Support Center:

<https://asc.helpdesk.ufl.edu/>

**Gatorlink email requirement:** UF requires all students to maintain access to their Gatorlink email.

**Dissertation First Submission:** Before presentation to the Editorial Office, the thesis should be virtually complete and completely formatted (not in a draft format). Students must be completely familiar with the format requirements of the Graduate School and should work with one of the consultants in the Application Support Center, to troubleshoot the dissertation, before attempting to make submission to the editors in the Graduate School Editorial Office. Students who fail to first meet with one of the Lab Consultants often find their document rejected upon First Submission to the Editorial Office, for not meeting the minimum submission standards required for an editorial review.

Should the document pass the submission requirements and appear acceptable for review, the Editorial Office will email the student, using their Gatorlink email address, confirming the submission, and responding with an acceptance

email. Should the document not pass first submission requirements, a denial email will instead be sent, advising the student of their options at that time. This notice must be addressed immediately. Once a successful first submission has been achieved and the document has been reviewed by one of the Graduate School's editors, another email is sent, providing editorial feedback to the student and committee chair. The student is responsible for retrieving the dissertation, review comments, and resolving any deficits related to the format requirements. Students should promptly make all required changes.

**Uploading and submitting the final pdf for Editorial Final Submission:** After changes have been made to the satisfaction of the supervisory committee, the Electronic Thesis or Dissertation (ETD) Signature Page is submitted electronically to the Graduate School Editorial Office, via the Graduate Information Management System (GIMS). This must be completed by the Editorial Office's Final Submission Deadline. Once submitted, the student should upload and submit the final pdf of the electronic thesis, using the Editorial Document Management (EDM) system. The document will undergo a final review by one of the Graduate School Representatives. The Editorial Office ensures that the format is acceptable, that all indicated changes were made, and that all of the hyperlinks work within the document. The Graduate School Representative then emails the student regarding the status of the ETD. If accepted, no further changes are allowed. If changes are still required, the student should resubmit the corrected document as soon as possible. All documents must be confirmed with final approval emails from the Graduate School Editorial Office by the Final Clearance deadline. This deadline is firm, and no exceptions can be granted. When all changes have been made and approved, the Editorial Office will email the Committee Chair and the student with a message, indicating the student has achieved Editorial Final Clearance with the Graduate School's Editorial Office.

**Editorial Final Clearance:** Among other requirements (see Checklist above), the final thesis must be confirmed as accepted, by email, by 5:00 p.m. on this deadline. This deadline only applies, if all other posted deadlines for the term have been appropriately met. Because there are hundreds of students in this process, most students complete all requirements well in advance.

It is the responsibility of the student to ensure they have achieved Final Clearance status by the Final Clearance Deadline for the term in which they intend to graduate. This can be confirmed via GIMS.

**Publication of dissertation:** All dissertation students must pay a \$25 microfilm fee for traditional publication and microfilming fees through UMI/Proquest, even if they elect not to send the dissertation to UMI for publication. This charge will appear as a hold on the student record in ISIS after making first submission to the Graduate School Editorial Office. All dissertation students also must sign a microfilm agreement form. This form is provided to the student at the defense. This form is signed by the student; it is delivered to the Graduate School Editorial Office by the Final Submission Deadline for the intended term of degree award. Students who began their graduate program in Fall 2001 or later must submit their final dissertations electronically (not on paper).

**Copyright:** The student is automatically the copyright holder, by virtue of having written the dissertation. A copyright page should be included immediately after the title page to indicate this. The Editorial Office does not accept copyright registration requests. Registering copyright is not required and does not benefit most students. Any students who wish to register a copyright can do so themselves (<http://www.copyright.gov>).

**Dissertation language:** Dissertations must be written in English, except for students pursuing degrees in Romance or Germanic languages and literatures. Students in these disciplines, with the approval of their supervisory committees, may write in the topic language. A foreign language dissertation should have the Acknowledgments, Abstract, and Biographical Sketch written in English. All page titles before Chapter 1 should also be in English.

**Journal articles:** Dissertations may include journal articles as chapters, if all copyright considerations are addressed appropriately. In such cases, Chapter 1 should be a general introduction, tying everything together as a unified whole. The last chapter should be general conclusions, again tying everything together into a unified whole. Any chapter representing a journal article needs a footnote at the bottom of the first page of the chapter: "Reprinted with permission from . . ." giving the source, just as it appears in the list of references. The dissertation should have only 1 abstract and 1 reference list.



## Guidelines for Restriction on Release of Dissertations

Research performed at the University can effectively contribute to the education of our students and to the body of knowledge that is our heritage only if the results of the research are published freely and openly. Conflicts can develop when it is in the interests of sponsors of university research to restrict such publication. When such conflicts arise, the University must decide what compromises it is willing to accept, taking into account the relevant circumstances.

## Final Examination

While submitting the dissertation and completing all other work prescribed for the degree, the candidate is given a final examination, oral or written or both, by the supervisory committee, on campus. The candidate and the supervisory committee chair or co chair must be physically present together at the same location. With approval of the entire committee, other members may attend the defense remotely, using modern communication technology. The defense should be no more than 6 months before degree award. All forms should be signed at the defense: the candidate and the supervisory committee chair sign the UF Publishing Agreement Form, while the entire supervisory committee signs the ETD Signature Page and the Final Examination Report. If dissertation changes are requested, the supervisory committee chair or his or her designee may hold the ETD Signature Page until all are satisfied with the dissertation. However, this form must be submitted electronically, via GIMS, by the Final Submission Deadline for the Graduate School Editorial Office, during the term of intended degree award.

Satisfactory performance on this examination and adherence to all Graduate School regulations outlined above complete the requirements for the degree.

**Time limitation:** All work for the doctorate must be completed within 5 calendar years after the qualifying examination, or this examination must be repeated.

## Doctor of Audiology

The College Public Health and Health Professions offers a program leading to the degree of Doctor of Audiology. The Au.D. degree is awarded after a 4-year program of graduate study. Foreign languages are not required. The program leading to the Au.D. degree is administered by the Department of Speech, Language and Hearing Sciences, the college, and the Graduate School.

**Admission:** To be considered for the Au.D. program, students must meet the following minimum requirements:

- A 3.00 junior-senior undergraduate grade point average and a program specific acceptable score on the GRE General Test,
- Evidence of good potential for academic success in at least three letters of recommendation, and
- Evidence of acceptable skills in written expression through a personal statement describing the motivation and skills applicable to graduate study and the profession of audiology.

Course requirements include 110 credits for students entering the program with a bachelor's degree awarded by an accredited institution consisting of at least 70 credits of didactic instruction, 30 credits of applied practicum, and 3 credits of audiology research.

A 70-credit program leading to the Au.D. is offered for applicants holding an earned master's degree in audiology from an accredited institution.

A 45-credit program leading to the Au.D. is offered for applicants holding an earned master's from an accredited institution, certification and/or licensure in audiology, and at least 3 years of full-time experience in audiology.

Comprehensive examination, required for all Au.D. candidates, may be taken during the eighth term of study beyond

the bachelor's degree. Both written and oral, this examination is prepared and evaluated by the supervisory committee, which is responsible for determining whether the student is qualified to continue work toward the degree by completing the clinical residency.

## Doctor of Education

The Doctor of Education (Ed.D.) degree offers advanced professional training and academic preparation for the highest levels of educational practice. Programs are available in the School of Teaching and Learning, the School of Special Education, School Psychology, and Early Childhood Studies, and the School of Human Development and Organizational Studies in Education.

A minimum of 90 credits beyond the bachelor's degree (master's degrees included must be in the last 7 years) is required. Course requirements vary with the academic unit and with the student's plan for research and/or professional pursuit. With the approval of the supervisory committee, the student may choose one or more minor fields of study. The Ed.D. requires a qualifying examination and a dissertation.

See Requirements for the Ph.D. for information on transfer of credit, minors, leave of absence, supervisory committee, language requirement, campus residence requirement, qualifying and final examinations, admission to candidacy, dissertation, and certification. These statements apply to both the Ph.D. and Ed.D. degrees.

## Doctor of Plant Medicine

The College of Agricultural and Life Sciences offers an interdisciplinary program leading to the degree of Doctor of Plant Medicine (D.P.M.). The D.P.M. degree is awarded after a 3- to 4-year program of graduate study. Foreign languages are not required. The program leading to the D.P. M. degree is administered by the Entomology and Nematology Department, College of Agricultural and Life Sciences, and the Graduate School.

**Admission:** Students must meet the following minimum requirements:

- B.S. or B.A. degree, preferably in biological, agricultural, or health science.
- A 3.00 grade point average in upper-division courses.
- A minimum score of 153 in the verbal section and 144 in the quantitative section of the Graduate Record Examination (GRE).
- A program specific acceptable score on the GRE General Test.
- Applicants from countries where English is not the native language must also achieve a satisfactory score on one of the following: TOEFL (Test of English as a Foreign Language: paper=550, web= 80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77) or successful completion of the University of Florida English Language Institute program.
- Evidence of good potential for academic success in at least three letters of recommendation.
- Evidence of acceptable skills in written expression through personal statements briefly describing their backgrounds, reasons, and career goals for studying plant medicine.

**Course requirements:** Students entering the program with a bachelor's degree must earn 100 credits. This includes at least 85-86 credits of course work and 15-16 credits of internship. Students entering the program with a master's degree in a related area may be allowed to transfer up to 30 credits in graduate courses corresponding to those required by the D.P.M. degree program. All D.P.M. students must complete two substantial 3-credit internships. Signed approval by a student's Committee and the D.P.M. Director is required prior to registering for substantial internship credits.

**Comprehensive examination:** Both written and oral comprehensive examinations are required of all D.P.M. students. The written examination has three sections: entomology/nematology, plant pathology, and plant/soil science. Faculty from the appropriate disciplines are appointed by the D.P.M. Program Director and D.P.M. Competency Exam Coordinators to develop and grade the final written examination. The three sections of the written

exam may be taken independently throughout the program at the discretion of the supervisory committee and the D.P.M. Director. Students are encouraged to complete the exam prior to the last full year of the D.P.M. program and his/her anticipated semester of graduation. Students should also complete the D.P.M. Competency Area Exams before the completion of a substantial internship. After a student passes all three sections of the final written examination (80% or higher is considered a passing grade), the supervisory committee administers an oral examination that tests the student's ability to diagnose and manage plant health problems. A student who fails to pass a comprehensive examination may retake an exam once with the recommendation of his/her supervisory committee.

## Specialized Degrees

### Engineer

For those engineers who need additional technical depth and diversification in their education beyond the master's degree, the College of Engineering offers the degree of Engineer (Eng.). This degree requires at least 30 credits of graduate work beyond the master's degree. It is not to be considered as a partial requirement toward the Ph.D. degree. The student's objective after the master's degree should be the Ph.D. or the Engineer degree.

**Admission to the program:** Students must have completed a master's degree in engineering and apply for admission to the Graduate School of the University of Florida. The master's degree is regarded as the foundation for the degree of Engineer. The master's degree must be based on the candidate having a bachelor's degree in engineering from an ABET-accredited curriculum or having taken sufficient articulation course work to meet the minimum requirements specified by ABET.

**Course and residence requirements:** Total registration in an approved program must include at least 30 graduate credits beyond the master's degree. This minimum requirement must be earned through the University of Florida. The last 30 credits must be completed within 5 calendar years.

**Supervisory committee:** Each student admitted to the program needs a supervisory committee with at least 3 members of the Graduate Faculty (2 from the major academic unit, and at least 1 from a supporting academic unit). In addition, every effort should be made to have a representative from industry as an external adviser for the student's program.

This committee should be appointed as soon as possible after the student is admitted to Graduate School and no later than the end of the second term of study.

This committee informs the student of all regulations pertaining to the degree program. The committee is nominated by the academic unit chair, approved by the Dean of the College of Engineering, and appointed by the Dean of the Graduate School.

The Dean of the Graduate School is an ex-officio member of all supervisory committees. If a thesis or report is required, the committee will approve the proposed thesis or report and the plans for carrying it out. The thesis must be submitted to the Graduate School. The committee will also conduct the final examination on campus when the plan of study is completed.

**Plan of study:** Each plan of study is developed on an individual basis for each student. Thus, there are no specific requirements for the major or minor; each student is considered individually. If the plan of study includes a thesis, the student may register for 6 to 12 credits of 6972 (Research for Engineer's Thesis).

**Thesis:** The thesis should represent performance at a level above that ordinarily associated with the master's degree. It should clearly be an original contribution; this may take the form of scientific research, a design project, or an industrial project approved by the supervisory committee. Work on the thesis may be conducted in an industrial or governmental laboratory under conditions stipulated by the supervisory committee.

**Final examination:** After the student completes all work on the plan of study, the supervisory committee conducts a final comprehensive oral and/or written examination (for thesis students, this also involves defending the thesis).

## **Specialist in Education**

An Ed.S. program develops competencies needed for a professional specialization. Specializations are offered in the School of Teaching and Learning, the School of Special Education, School Psychology, and Early Childhood Studies, and the School of Human Development and Organizational Studies in Education. Ed.S. applicants must apply and be admitted to UF's Graduate School. All work for the degree, including transferred credit, must be completed within 7 years before the degree is awarded.

The Ed.S. degree is awarded on completing a planned program with at least 72 credits beyond the bachelor's degree or at least 36 credits beyond the master's degree. All credits accepted for the program must contribute to the unity and the stated objective of the total program.

Students are tested (no more than 6 months before graduation) by written and oral examination. A thesis is not required; however, each program includes a research component relevant to the intended profession. With the academic unit's approval, course work taken as part of the specialist program may count toward a doctoral degree.

Students who enter the program with an appropriate master's degree from another accredited institution must complete at least 36 credits of post-master's study to meet the following requirements:

- At least 36 credits in graduate-level courses
- At least 12 credits in graduate-level professional education courses

Students who enter the program with a bachelor's degree only must (during the 72-credit program) meet these requirements in addition to the requirements of the Master of Education degree or its equivalent.

Only graduate-level (5000-7999) work, earned with a grade of B or better, is eligible for transfer of credit. A maximum of 15 transfer credits are allowed. These can include no more than 9 credits from institution/s approved by UF, with the balance obtained from postbaccalaureate work at UF. Credits transferred from other universities are applied toward meeting the degree requirements, but the grades earned are not computed in the student's grade point average. Acceptance of transfer of credit requires approval of the student's supervisory committee and the Dean of the Graduate School.

Petitions for transfer of credit for the Ed.S. degree must be made during the student's first term of enrollment in the Graduate School. The supervisory committee is responsible for basing acceptance of graduate transfer credits on established criteria for ensuring the academic integrity of course work.

Students are tested (no more than 6 months before graduation) by written and oral examination. A thesis is not required; however, each program includes a research component relevant to the intended profession. With the academic unit's approval, course work taken as part of the specialist program may count toward a doctoral degree.

## **Nontraditional Programs**

### **Concurrent Graduate Programs**

Any student interested in pursuing two master's degrees in two different programs or two master's degrees in the same program concurrently should discuss the proposed study with Graduate Student Records (392-4643, 106 Grinter) before applying. Written approval is needed from each academic unit and the Graduate School Dean. The student must be officially admitted to both programs through regular procedures. No more than 9 credits from the first program may be applied toward the second. Contact the academic unit(s) for details.

## Joint Degree Programs

A joint degree program leads to a graduate degree and a professional degree. Normally 12 credits of professional courses count toward the graduate degree and 12 credits of graduate courses count toward the professional degree. Individual academic units determine whether a joint degree program is appropriate. Joint programs established before January 1, 2003, may have other requirements.

To participate in a joint program, a student must be admitted to both programs. Enrollment in one program may precede enrollment in the other according to timelines set by the program. During the term the student is graduating, registration is required (at least 3 credits fall or spring, or 2 credits summer). This course work must be credit that applies toward the graduate degree requirements. See graduate coordinator for details.

## Combined Bachelor's/Master's Degree Programs

UF offers a number of bachelor's/master's programs for superior students. In these programs, 12 credits of graduate-level courses are counted for both degrees. See Transfer of Credit for requirements. For admission requirements and available programs, contact the academic unit.

## State University System Programs

**Traveling Scholar program:** By mutual agreement of the appropriate academic authorities in both the home and host institutions, traveling scholars' admission requirements are waived and their earned credits are guaranteed acceptance. Traveling scholars are normally limited to 1 term on the host campus, and it cannot be their final term. The program offers special resources on another campus that are not available on the student's home campus. To participate, graduate students need prior approval from their graduate coordinator, their supervisory committee chair, and the Dean of the Graduate School. Interested students should contact Graduate Student Records, 106 Grinter Hall.

**Cooperative degree programs:** In certain degree programs, faculty from other universities in the State University System hold Graduate Faculty status at UF. In those approved areas, the intellectual resources of these Graduate Faculty members are available to students at UF.

## Admission

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

- How to Apply
- Admissions Examinations
- Required Immunizations
- Computer Requirement
- Conditional Admission
- International Students
- Students with Disabilities
- Postbaccalaureate Students
- Nondegree Registration
- Readmission
- Faculty Members as Graduate Students
- Residency for Tuition

## How to Apply

To apply for admission, go online to the Office of Admissions Graduate Admissions website (<http://www.admissions.ufl.edu/applygraduate.html>) for basic information and contact the academic unit of interest for specific deadlines, requirements and procedures. To find websites for academic units, go online to <http://www.graduateschool.ufl.edu/academics/colleges-schools-and-departments>. The Office of Admissions refers applications that meet minimum standards to the graduate admission committees of the pertinent academic units for approval or disapproval. Applicants must meet the requirements of both the academic unit and the Graduate School to be admitted for graduate study. Admission to some programs is limited by what resources are available.

Requirements for Admission:

- A recognized baccalaureate, graduate or professional degree from a regionally accredited U.S. institution or a comparable degree from an international institution
- For applicants with a bachelor's degree only, a minimum grade point average of B (3.0), calculated from all grades and credits after the semester where the applicant reached 60 semester hours or 90 quarter hours and Graduate Record Examination (GRE) scores that are acceptable to the applicant's intended academic unit or, for select programs, at least 465 on the Graduate Management Admission Test (GMAT). These scores are used in the context of a holistic credential review process.
- For applicants from countries (including Puerto Rico) where English is not the official language, a minimum score on one of these English Language Skills tests: Test of English as a Foreign Language (TOEFL): 550 paper, or 80 Internet; International English Language Testing System (IELTS): 6; Michigan English Language Assessment Battery (MELAB): 77, or documented successful completion of the University of Florida English Language Institute program.
- Graduate study in Law: Applicants must hold the Juris Doctor or equivalent degree. Consult the Levin College of Law catalog, <http://www.law.ufl.edu/programs/>, for the specific programs of interest.

Some academic units require a reading knowledge of at least one foreign language. Exceptions to the above requirements are made only when these and other criteria, including letters of recommendation, are reviewed by the academic unit, recommended by the college, and approved by the Dean of the Graduate School.

Direct admission to the Graduate School requires a baccalaureate degree from an accredited college or university. Applicants must arrange to send official transcripts from each institution attended to the Office of Admissions. Applicants should reference their academic unit's website as some require that applicants submit an official copy of their transcript from each institution attended directly to their attention as well as the Office of Admissions. These transcripts must be received directly from the registrar of the institution where the work was done. Applicants who currently are enrolled at another institution must send updated transcripts as soon as they are available for any work completed after applying for admission.

**Please note:** If admitted without final official transcripts or test scores, final test scores or final credentials must be posted in the UF Office of Admissions database before the end of the first term of enrollment.

**Students failing to meet any admission conditions are barred from continued registration after their first semester.**

Admission requirements of an academic unit are often more rigorous than the minimum requirements set by the Graduate School. Because of resource limitations, most academic units do not accept all qualified applicants.

UF is committed to creating a community that reflects the rich racial, cultural, and ethnic diversity of the State of Florida and the United States of America. The greatest challenge in higher education is to enroll students and hire faculty and staff who are members of diverse racial, cultural, or ethnic minority groups. This pluralism enriches the University community, offers opportunity for robust academic dialogue, and contributes to better teaching and

research. The University and its components benefit from the richness of a multicultural student body, faculty, and staff who can learn from one another. Such diversity empowers and inspires respect and understanding among us. The University does not tolerate the actions of anyone who violates the rights of another. By policy and practice, the University embodies a diverse community. Our collective efforts lead to a University that is truly diverse and a University that reflects the U.S. population.

The University encourages all qualified applicants to apply for admission. See UF's Commitment to Equity and Diversity for more information. Should you feel you have been discriminated against or need further information regarding this policy, feel free to contact the Office of Institutional Equity and Diversity. The Title IX Coordinator's mailing address is Box 115010, Gainesville, FL 32611-5010, and their website can be found here: <http://www.hr.ufl.edu/eeo/default.htm>.

## Admissions Examinations

**Graduate Record Examination (GRE):** Most applicants must submit GRE scores that are acceptable to the program of interest. In addition to the General Test of the GRE, some academic units encourage the applicant to submit scores on one or more advanced subject tests. Scores on all tests taken are considered for admission. Applicants with a previous graduate or professional degree or equivalent from a regionally accredited U.S. institution may be exempt from the GRE and undergraduate GPA requirements. Contact the academic unit for specific requirements.

**Graduate Management Admission Test (GMAT):** All MBA applicants must submit satisfactory scores on the GMAT. GMAT scores may also be accepted by certain MHA, Sport Management and Food and Resource Economics programs.

**Graduate study in Engineering:** Some programs may use the Fundamentals of Engineering (FE) examination in lieu of the GRE for admitting students into the non-thesis master's degree programs.

## Required Immunizations

The University of Florida requires that all new students show proof of certain immunizations prior to attending UF. The official form and instructions for how to complete it successfully are available at <http://shcc.ufl.edu/immunizations>. Once received, your completed form will be reviewed by UF Student Health Care Center staff. PLEASE NOTE: Students will not be cleared to register for classes until all immunization requirements are met.

Should you need to obtain vaccinations, please contact the UF Student Health Care Center's Special Clinics office regarding appointments and any applicable charges: (352) 294-7472.

## Computer Requirement

Access to and on-going use of a computer is required for all students to complete their degree programs successfully. The University of Florida expects each student to acquire computer hardware and software appropriate to his or her degree program. The university maintains general computing requirements which can be located at <http://www.it.ufl.edu/policies/student-computing-requirements/>. However, individual colleges may have specific requirements to ensure students can complete their coursework. A list of each college's requirements, if any, is posted at <http://www.it.ufl.edu/policies/student-computing-requirements/college-specific-requirements/>.

Competency in the basic use of a computer is a requirement for graduation. Class assignments may require use of a computer, academic advising and registration can be done by computer, and official university correspondence is often sent via email.

While the university offers limited access to computers through its computer labs, most students will be expected to purchase or lease a computer that is capable of wireless and wired network connection to the Internet, graphical

access to the World Wide Web, and productivity functions such as word processing and spreadsheet calculation. Costs of meeting this requirement will be included in financial aid considerations.

## **Conditional Admission**

Academic units may, at their discretion, grant conditional admission to up to 10% of an incoming class. Conditional admission candidates must have all application materials submitted: a valid prior degree, admission exam scores, English test scores (if required), transcripts, statement of purpose and recommendation letters, along with records of postbaccalaureate grades or work histories of pertinent prior professional experience, if the academic unit is justifying conditional admission on the basis of either. Academic units granting conditional admission must include the terms of admission in the acceptance letter they send to the student.

Conditional admission cases due to graduate admission grade point averages below 3.0, missing or unofficial test scores, and English test scores (if required) below the required minimums (6 for IELTS, 80 for Internet TOEFL, 77 for MELAB, 550 for Paper TOEFL or 320 [for tests prior to August 1, 2011] or 140 [for tests after August 1, 2011] for verbal GRE) must have final approval from the Graduate School. No acceptance letter can be sent without this final approval from the Graduate School.

In cases of students conditionally admitted with missing official transcripts, final admission is deferred for one semester, until required final credentials are posted in the UF Office of Admissions database.

Registration holds to block next-term pre-registration will remain on the records of conditionally admitted students until their first-semester grades are posted on their UF transcripts and show that they met the terms of their conditional admission. Students failing to meet any admission conditions are subject to being barred from continued enrollment after their first semester.

## **English Language Institute (ELI) Conditional Admission**

International applicants, who require additional English Language training in order to meet the Graduate School's English Language minimum requirements, may be offered English Language Institute (ELI) Conditional Admission. Academic programs will assess an application for ELI Conditional Admission based on all of the materials in an applicant's file. If an applicant has a low or missing score on the IELTS, MELAB or TOEFL test, or does not have a satisfactory score on the GRE Verbal section, but is otherwise academically qualified, a program may grant ELI Conditional Admission.

Such an offer of admission does not guarantee an applicant can enroll in graduate coursework. All ELI Conditionally Admitted students must complete one of the following two options before they can enroll: 1) he/she must complete the ELI Intensive English Program and receive an exit certificate from it, or; 2) he/she must provide verbal GRE and IELTS, MELAB or TOEFL scores that meet the required minimums. An offer of ELI Conditional Admission may also contain additional conditions set by an applicant's prospective academic program. ELI will coordinate with an applicant's academic program, in order to assist in the student's entry into the Intensive English Program, and obtain an appropriate visa.

## **International Students**

All international applicants (including those from Puerto Rico) seeking admission to the Graduate School must submit satisfactory scores on the GRE General Test (with at least 320 [before August 1, 2011] or 140 [After August 1, 2011] on the verbal portion) or GMAT for selected programs.

International applicants (including those from Puerto Rico) must submit a satisfactory score on one of the following: TOEFL (Test of English as a Foreign Language: 550 paper-based version, 80 Internet-based version), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77) or an exit certificate from the University of Florida English Language Institute (UF ELI) program.



Applicants who meet the following conditions may be exempt from the English language test requirements:

- International applicants whose native language is English
- International applicants who have spent at least 1 academic year enrolled full-time in a baccalaureate or postbaccalaureate degree program at a college or university in a country where English is the official language

To be eligible for graduate teaching assistantships, international students whose official first language is not English must score at least 55 on the SPEAK Test or 28 on the Speaking Section of the Internet TOEFL to teach in the classroom, laboratory, or other instructional setting. Those who score 45 to 50 on the SPEAK Test, or 23 to 27 on the Speaking Section of the Internet TOEFL, may teach if they concurrently enroll in EAP 5836 to help their personal interaction and public speaking skills. Those who have scores below these minimums are not eligible to teach.

Applicants should write to the Educational Testing Service, Princeton, NJ 08540, for registration forms and other information on TOEFL, TSE, GMAT, and GRE, or the website at [www.ets.org](http://www.ets.org). Information about IELTS can be found at <http://www.ielts.org>. Information about MELAB can be found at <http://www.lsa.umich.edu/eli/testing/melab/general/>. Information about the University of Florida English Language Institute is available at [www.eli.ufl.edu](http://www.eli.ufl.edu). Students may register for the locally administered SPEAK test with UF Academic Spoken English (<https://ase.ufl.edu/>).

## Students with Disabilities

The Disability Resource Center (DRC) at the University of Florida provides accommodations and services to registered students with disabilities. A disability is defined as a learning, medical, physical, psychological, or sensory condition that substantially limits one or more major life activities (e.g. learning, hearing, seeing). Students are not required to disclose a disability; however, students who would like to access accommodations and services must register with the office. Documentation from a qualified physician or other licensed professional in a field related to the disability is required. At a minimum, the documentation should provide:

- Verification of disability
- Limitations noted as a result of the disability
- Recommendations of possible accommodations

Please call the office at (352) 392-8565 or via email at [accessuf@dso.ufl.edu](mailto:accessuf@dso.ufl.edu) to schedule an appointment or inquire about our services. Please view our website at <http://www.dso.ufl.edu/drc/> for additional information. If you are a graduate student who requires employment-related accommodations, please contact Ken Osfield in the University's ADA Compliance Office at (352) 392-1591 or [osfield@ufl.edu](mailto:osfield@ufl.edu).

## Postbaccalaureate Students

Postbaccalaureate study is for students who have already received a baccalaureate degree and have not been admitted to the Graduate School. Admission for postbaccalaureate enrollment requires a recognized baccalaureate degree (or higher) from a regionally accredited college or university, or an international equivalent based on a 4-year curriculum, a minimum C (2.0) GPA on all junior and senior year undergraduate work, as computed by UF, and a satisfactory conduct record.

International applicants (including those from Puerto Rico) must submit a satisfactory score on one of the following: TOEFL (Test of English as a Foreign Language: paper=550, Internet=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77).

Applicants who meet the following conditions may be exempt from the English language test requirements:

- International students whose native language is English
- International students who have spent at least 1 academic year enrolled full-time in a baccalaureate or postbaccalaureate degree program at a college or university in a country where English is the official language prior to your anticipated term of enrollment at UF.

## **The Postbaccalaureate Application**

Applicants must ensure that official transcripts are sent to the Office of Admissions from each post-secondary institution attended. Applications will not be reviewed until transcripts have been received by the Office of Admissions. Postbaccalaureate applicants may apply for Distance Education programs. Only students who have completed a baccalaureate degree in the College of Education may be admitted to postbaccalaureate status for the purpose of completing a teacher certification program. Other applicants may be admitted to postbaccalaureate status only for a limited time to fulfill prerequisites for admission to a master's program. Applicants with degrees in other fields who are seeking teacher certification, should apply for admission to a master's program in the College of Education.

Postbaccalaureate students may enroll in graduate courses, but graduate credit is not generally accepted by the Graduate School for transfer. It is possible to transfer up to 15 semester credits of graduate course work earned with a grade of A, A-, B+, or B by petition in clearly justified cases and in conformance with regulations on courses and credit.

Proof of immunization for measles and rubella or a tuberculosis skin test is required before registering for coursework.

For more information, visit the Office of Admissions website, <http://www.admissions.ufl.edu/grad/postbacc.html>.

## **Nondegree Registration**

Nondegree enrollment is restricted to participants in special programs, off-campus programs, University-affiliated exchange programs, and those participants with non-degree educational objectives at UF. Students denied admission to UF for any term are not eligible for non-degree registration. Students need prior approval from the academic unit(s) to take courses in a non-degree status. That course work normally is not applied toward the graduate degree if the student is admitted to the Graduate School. By petition in clearly justified cases and in conformance with regulations on courses and credit, it is possible to transfer up to 15 credits of graduate course work earned with the grade of A, A-, B+, or B. A student should not remain in this classification for more than 1 term before being admitted as a postbaccalaureate or graduate student.

For a non-degree registration request form, click on this link: <http://www.isis.ufl.edu/cgi-bin/eaglec?MDASTRAN=nda-intro2>

## **Readmission**

This information applies only to students who have previously been enrolled in a graduate, postbaccalaureate or professional UF program. Former students who do not enroll at the university for two consecutive terms, including any summer term, must apply for readmission at the same level of their previous enrollment.

Students who wish to take a leave of absence for two or more consecutive terms should obtain written approval from their academic units before they leave. Students who skip a single term will be scheduled automatically for a registration appointment for one additional term.

All readmission applicants must meet the current admission requirements of the college or school they expect to enter. Readmission is not guaranteed and is subject to availability at the level, college and major. Consult the appropriate program's admission requirements. Readmission is for a specific term. If you are unable to enroll for the term for which you have been admitted, you must apply for readmission again to a different term.

Applicants must present a satisfactory record of conduct. Regardless of other qualifications, applicants who have experienced major or continuing difficulties with school or other authorities since their last enrollment at the University of Florida may find their application for readmission denied.

The readmission application must be completed via a PDF copy and mailed to the Office of Admissions. A non-refundable \$30.00 application fee is required. The application requires you to indicate the college and program/major of your last enrollment at the university as well as the college and major you want to re-enroll or apply to:

Office of Admissions  
P.O. Box 2946, University of Florida  
Gainesville, FL 32602-2946

For further information:  
[www.admissions.ufl.edu](http://www.admissions.ufl.edu)

## **Faculty Members as Graduate Students**

UF faculty in tenured or tenure-accruing lines, as designated by Regulations of the University of Florida, 7.003, normally may not pursue graduate degrees from this institution. Exceptions are made for the Florida Cooperative Extension Service (IFAS) county personnel, the faculty of the P. K. Yonge Laboratory School, and University Libraries faculty. Under certain restrictions established by the Graduate Council, exceptions have also been established for persons holding faculty positions that do not include tenure or tenure accrual, and for specified degree programs, including the on-line MBA. Any other exceptions to this policy must be approved by the Graduate Council. Such exceptions, if given, are rare and will only be approved if pursuit of the proposed graduate degree program is determined to be in the best interest of the University and the Colleges involved.

## **Residency for Tuition**

### **Policy and the Guidelines on Florida Residency for Tuition Purposes**

Florida Residency for Tuition Purposes is a policy comprised by state statute, and the residency rule adopted by the State Board of Education and the Board of Governors for the State University System. To implement Section 1009.21, Florida Statutes; Rules 6A-10.044 and 6A-20.003, Florida Administrative Code; and 7.005 Board of Governors (BOG) Regulation, the Articulation Coordinating Committee (ACC) adopted a Residency Guidelines document which is maintained by the Statewide Residency Committee; a subcommittee of the ACC. The Guidelines on Florida Residency for Tuition Purposes are used for the determination of Initial Residency Classifications and Residency Reclassifications.

### **Florida Residency for Tuition Purposes Eligibility**

A Florida "resident for tuition purposes" is a person who has, or a dependent person whose parent or legal guardian has, established and maintained legal residence in Florida for at least twelve consecutive months preceding the first day of classes of the term for which Florida residency is sought. Residence in Florida must be as a bonafide domicile rather than for the purpose of maintaining a residence incident to enrollment at an institution of higher education. To qualify as a Florida resident for tuition purposes, you must be a U.S. citizen, permanent resident alien, or legal alien granted indefinite stay by the U.S. Citizenship and Immigration Services (USCIS).

Other persons not meeting the twelve-month legal residence requirement may be classified as Florida resident for tuition purposes only if they fall within one of the limited special categories authorized by the Florida Legislature and State Board of Education. All other persons are ineligible for classification as a Florida "resident for tuition purposes."

Living in or attending school in Florida will not, in itself, establish legal residence. Students who depend on out-of-state parents for support are presumed to be legal residents of the same state as their parents. Residence for tuition purpose requires the establishment of legal ties to the state of Florida. Students must verify that they have broken ties to other states if the student or, in the case for dependent students, his or her parent, has moved from another state.

## **Initial Residency Classification**

The initial residency classification is determined by the Office of Admissions for all new students, and current or former students who have applied for a new level (e.g. undergraduate to graduate or professional programs) and for those submitting a readmission application after a period of non-enrollment. These applicants must complete the Initial Residency Classification form with supporting documentation when requested by the institution.

## **Residency Reclassification**

A student wishing to establish residency reclassification should pick up the Request for Change in Residency Status form from the Office of the University Registrar, 222 Criser Hall, to review the information and items that may be requested when the student files for Florida residency for tuition purposes. The deadline for applying for a change in residency status, including receipt of all documentation, is each term's fee payment deadline. Residency reclassification cannot be applied for retroactively for previous terms.

## **Guidelines on Florida Residency for Tuition Purposes**

You may view the full content of the [Guidelines on Florida Residency for Tuition Purposes](#) online. Excerpts from these guidelines are provided below.

## **Exceptions and Qualifications**

The following categories are statutory exceptions and qualifications for certain applicants who do not meet the twelve month legal residency requirement. Documentation in support of any of the following exceptions will be required.

- Dependent children residing continuously with a legal resident adult relative other than the parent for at least 5 years immediately prior to the first day of classes of the term for which Florida residency is sought.
- Persons married to legal Florida residents and who intend to make Florida their permanent home, and who relinquish their legal ties to any other state.
- Persons who were enrolled as Florida residents for tuition purposes at a Florida public institution of higher education, but who abandon Florida residency and then re-enroll in Florida within 12 months of the abandonment - provided that he/she continuously maintains the re-established domicile during the period of enrollment. (This benefit only applies one time.)
- Active duty members of the Armed Services of the United States residing or stationed in Florida (and spouse/dependent children); active duty members of the Florida National Guard (and spouse/dependent children) who qualify under 250.10(7) and (8); or military personnel not stationed in Florida whose home of record or state of legal residence certificate, DD Form 2058, is Florida (and spouse/dependent children).
- Active duty members of the Armed Services of the United States and their spouses/dependent children attending a public community college or university within 50 miles of the military establishment where they are stationed, if such military establishment is within a county contiguous to Florida.

- United States citizens living on the Isthmus of Panama, who have completed 12 consecutive months of college work at the Florida State University Panama Canal Branch, and their spouses and dependent children.
- Full time instructional and administrative personnel employed by the State public school system, community colleges, and institutions of higher education (and spouse/dependent children).
- Students from Latin America and the Caribbean who receive scholarships from the federal or state government. The student must attend, on a full-time basis, a Florida institution of higher education.
- Southern Regional Education Board's Academic Common Market graduate students attending Florida's state universities.
- Full-time employees of state agencies or political subdivisions of the state when the student fees are paid by the state agency or political subdivision for the purpose of job-related law enforcement or corrections training.
- McKnight Doctoral Fellows and Finalists who are United States citizens.
- United States citizens living outside the United States who are teaching at a Department of Defense Dependent School or in an American International School and who enroll in a graduate level education program which leads to a Florida teaching certificate.
- Active duty members of the Canadian military residing or stationed in this state under the North American Air Defense (NORAD) agreement, and their spouses and dependent children, attending a public community college or university within 50 miles of the military establishment where they are stationed.
- Active duty members of the Armed Services of the United States and their spouses/dependent children attending a public community college or university within 50 miles of the military establishment where they are stationed, if such military establishments is within a county contiguous to Florida.
- Active duty members of a foreign nation's military who are serving as liaison officers and are residing or stationed in this state, and their spouses and dependent children, attending a community college or state university within 50 miles of the military establishment where the foreign liaison officer is stationed.
- Qualified beneficiaries under the Florida Pre-Paid Post-secondary Expense Program per s. 1009.988(2). (Pre-Paid ID Card Required.)
- Linkage Institute participants receiving partial or full exemptions from S. 1009.21, FS, based on criteria approved by the Florida Department of Education per S. 288.8175, FS, which establishes linkage institutes between post-secondary institutions in this state and foreign countries.

## **Eligible Categories for non-U.S. Citizens**

Residency rule 6A-10.044, FAC, and the BOG Residency Regulation Resolution allow certain non-U.S. Citizens such as lawful permanent residents, temporary permanent residents, asylees, parolees, and refugees who have applied for and been approved for such status and who otherwise meet the 12 month legal residence requirements, to be eligible to establish Florida residency for tuition purposes. Provided that the non-U.S. citizen has proof of his or her permanent immigration status, he or she may be classified as a Florida resident 12 months from the time he or she establishes legal Florida residence for tuition purposes (e.g., 12 months from the time he or she purchases a Florida home, obtains a Florida driver's license, etc.). It is not necessary to wait 12 months from the date he or she becomes an eligible alien (e.g., the date of the resident alien card (I-551) is issued).

Review the Guidelines on Florida Residency for Tuition Purposes for a list of nonimmigrant categories which are eligible to establish Florida residency for tuition purposes.

## **Dependent or Independent Student**

The determination of dependent or independent student status is important because it is the basis for whether the student has to submit his/her own documentation for residency (as an independent) or his/her parent's or guardian's documentation of residency (as a dependent). Evidence that the student meets one of the following criteria will be requested by the higher education institution.

### **Independent Student**

A student who meets any one of the following criteria shall be classified as an independent student for the determination of residency for tuition purposes:

- The student is 24 years of age prior to the start of the term for which residency is sought.
- The student is married.
- The student has children who receive more than half of their support from the student.
- The student has other dependents who live with and receive more than half of their support from the student.
- The student is a veteran of the United States Armed Forces or is currently serving on active duty in the U.S. Armed Forces for purposes other than training.
- Both of the student's parents are deceased or the student is or was (until age 18) a ward/dependent of the court of the court or in foster care.
- The student is determined an unaccompanied homeless by a school district homeless liaison, emergency shelter or transitional housing program.
- The student is working on a master's or doctoral degree during the term for which residency status is sought at a Florida institution.

A student who does not meet one of the criteria outlined above may be classified as an independent student only if he or she submits documentation that he or she provides fifty (50) percent or more of the cost of attendance for independent, in-state students as defined by the financial aid office at Florida State University (exclusive of federal, state, and institutional aid or scholarships). When tax returns are collected for the purpose of proving independent status by virtue of providing more than fifty (50) percent of his/her support for the year, the social security number should be blacked out. However, the income information must be provided to show that this requirement has been met.

### **Dependent Student**

A student, whether or not living with his or her parent, who is eligible to be claimed by his or her parent under the federal income tax code shall be classified as a dependent student. When tax returns are collected for the purpose of proving independent status by virtue of providing support to others, the social security numbers and income figures should be blacked out as the only relevant information of this form relates to whether or not an exemption has been claimed for the student.

### **Appeals Process**

In cases where the applicant expresses a desire to appeal the residency classification, the matter will be referred to the designated residency appeal committee at the institution of higher education, in accordance with the institution's official appeals process.

The residency appeal committee will be comprised of at least three members to consider student appeals in accordance with the institution's official appeal policy. The committee will render to the applicant the final residency determination in writing. The college and/or state university will advise the applicant of the reasons for the determination.

### **Tuition payments**

**Florida resident tuition payments** are available to graduate assistants and fellows who meet the eligibility requirements. Any change in the student's academic or employment status after processing a tuition payment will result in the original payment being updated, reduced, or voided as appropriate.

**Non-Florida resident tuition payments** are available to out-of-state students who hold graduate assistantships or fellowships and who meet the eligibility requirements. Any change in the student's academic or employment status

after processing a tuition payment will result in the original payment being updated, reduced, or voided as appropriate.

## General Regulations

*The information in this catalog is current as of June 2015. Please contact individual departments or programs for any additional information or updates.*

The student is responsible for becoming informed and observing all program regulations and procedures. The student must be familiar with Graduate Catalog general regulations and requirements, specific degree program requirements, and offerings and requirements of the major academic unit. *Rules are not waived for ignorance.* Any exceptions to the policies stated in the Graduate Catalog must be approved by the Dean of the Graduate School. After admission to the Graduate School, but before the first registration, the student should consult the college and/or the graduate coordinator in the major academic unit about courses and degree requirements, deficiencies if any, and special regulations of the academic unit. The dean (or representative) of the college where the degree program is located must oversee all registrations. Once a supervisory committee is appointed, registration approval is the responsibility of the committee chair.

Key information is contained or disseminated through several electronic sites. Each student **must** regularly check the Graduate Information Management System (GIMS) for accuracy and currency of the degree program and associated milestones. In addition, each student is required to create, maintain, and regularly check a GatorLink email account. Critical information is sent directly to the address listed as the student's UF Business Email.

Catalog Year  
Classification of Students  
Confidentiality of Student Records  
Academic Integrity  
Student Conduct and Conflict Resolution  
Student Honor Code  
Student Sexual Harassment  
Registration Requirements  
Tuition/Fee Waivers  
Attendance Policies  
Change of Graduate Degree Program  
Courses and Credits  
Grades  
Unsatisfactory Progress or Unsatisfactory Scholarship  
Foreign Language Examination  
Examinations  
Preparation for Final Term  
Verification of Degree Candidate Status  
Awarding of Degrees  
Attendance at Commencement

## Catalog Year

The catalog year determines the set of academic requirements that must be fulfilled for graduation. Students graduate under the catalog in effect when they first enroll as degree-seeking students at UF provided they maintain continuous enrollment. Students who are not registered for 2 or more consecutive terms (including any summer term) must reapply for admission and will be assigned the catalog in effect when enrollment is resumed. With the approval of their college dean's office, students may opt to graduate under the requirements of a later catalog, but they must fulfill all graduation requirements from that alternative year. The University will make every reasonable effort to honor the curriculum requirements appropriate to each student's catalog year. However, courses and programs are

sometimes discontinued and requirements may change as a result of curricular review or actions by accrediting associations and other agencies.

## Classification of Students

|   |  |
|---|--|
| 6 | Postbaccalaureate students:<br>Degree-holding students who have been admitted to postbaccalaureate status  |
| 7 | Graduate students seeking a first master's degree  |
| 8 | Graduate students who have earned a master's degree, or who have earned 36 or more credits while seeking a graduate degree, and who have not been admitted to doctoral candidacy |
| 9 | Graduate students who have been admitted to doctoral candidacy   |

## Confidentiality of Student Records

The University ensures the confidentiality of student educational records in accordance with State University System rules, state statutes, and FERPA, the Family Educational Rights and Privacy Act of 1974, as amended, also known as the Buckley Amendment.

**Student directory information** that can be released to the public is limited to

- Student name
- Local/permanent addresses
- Listed telephone number(s)
- Email address
- Class and college
- Major
- Enrollment status (e.g., undergraduate or graduate level; full time or part time)
- Dates of attendance at UF
- Degree(s) and awards received at UF
- Most recent previous educational institution attended
- Weight and height of university athletes
- Publication titles (theses and dissertations)
- Nature and place of employment at UF

Currently enrolled students must contact the appropriate agency/agencies **to restrict release of directory information**. The Office of the University Registrar, the Department of Housing and Residence Education, and Human Resource Services routinely release directory information to the public. Directory information may also be released by other university departments and/or employees.

- Students who want to restrict directory information must do so at the Office of the University Registrar in 222 Criser Hall.
- Students who live on campus also must request this restriction from the Department of Housing and Residence Education (next to Beaty Towers).



- Students who are university employees also must request this restriction from Human Resource Services.
- Students who do not want their addresses, phones or personal information published on the Web should update their directory profile.

Student **educational records may be released** without your consent to school officials who have a legitimate educational interest in accessing the records. *School officials* shall include:

- An employee, agent or officer of the university or State University System of Florida in an administrative, supervisory, academic, research or support staff position;
- Persons serving on university committees, boards and/or councils; and
- Persons employed by or under contract to the university to perform a special task, such as an attorney or an auditor.

*Legitimate educational interest* shall mean any authorized interest or activity undertaken in the name of the university for which access to an educational record is necessary or appropriate to the operation of the university or to the proper performance of the educational mission of the university.

The university also may disclose information from your educational record without your consent to individuals or entities permitted such access under applicable federal and state law.

You have the right to review your own educational records for information and to determine accuracy. A photo I.D., other equivalent documentation or personal recognition by the custodian of record will be required before access is granted. Parents of dependent students, as defined by the Internal Revenue Service, have these same rights upon presentation of proof of your dependent status. Each spring when the catalog is published, students are notified of their FERPA rights.

If you believe your educational record contains information that is inaccurate, misleading or in violation of your rights, you can ask the institution to amend the record. The UF Student Guide outlines the procedures for challenging the content of a student record, as well as the policies governing access to and maintenance of student records.

If you who believe the university has not maintained the confidentiality of your educational record as required by law, you may file a complaint by contacting the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue SW, Washington, D.C. 20202-5901.

## Academic Integrity

In 1995, the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students. The University of Florida is committed to preserving an open learning environment for all those who participate in the university community. Such an environment requires respect for self-expression, civil discourse in and out of the classroom, and trust, from all members of UF. All students must participate in academic research and learning at the university in a manner consistent (in accordance) with these values. Dishonesty, plagiarism, and other forms of misconduct are serious violations of academic integrity, and should be discouraged by all members of the university community.

Please review the Student Honor Code found at the following site: (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>). All students are expected to follow these expectations.

## Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge

is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g., assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

Academic Integrity requires graduate students to

- Appropriately acknowledge the work of others, in conducting and reporting one's own research;
- Be academically honest, in representing one's academic work according to the research standards and methodology that are appropriate for her field of study;
- Use his or her own work in research and graded coursework, not inappropriate and un-cited materials, or work produced by a third-party
- Conduct responsible research which complies with federal laws, and promotes open and active scientific and knowledge inquiry;
- Treat other students with respect, to ensure their right to pursue their educational goals without interference

To understand the University's expectations regarding academic integrity, view the Dean of Students Academic Integrity Module found at the following site: <https://www.dso.ufl.edu/sccr/seminars-modules/academic-integrity-module>.

## **Research Expectations**

Plagiarism includes but is not limited to quoting oral or written materials including but not limited to those found on the Internet UF expects all of its students to pursue research with integrity and responsibility. All research to be submitted for grade should follow UF's Honor Code. For those students working on research which requires IRB approval, UF provides training throughout the year. For those students supported by NSF funding, you must participate in UF's Responsible Conduct of Research Training.

## **Student Conduct and Conflict Resolution**

### **Student Conduct Code**

Students enjoy the rights and privileges that accrue to membership in a university community and are subject to the responsibilities that accompany that membership. For a system of effective campus governance, it is incumbent upon all members of the campus community to notify appropriate officials of any violations of regulations and to assist in their enforcement. The university's conduct regulations, available to all students, are set forth in Florida administrative code. Questions can be directed to the Dean of Students Office. The University strives to protect and guide the educational community by establishing a Student Conduct Code and student conduct system, which promotes individual and social responsibility. The purpose of the Student Conduct Code is to set forth the specific authority and responsibility of the University in maintaining social discipline, to establish guidelines which facilitate a just and civil campus community, and to outline the educational process for determining student and student organization responsibility for alleged violations of University regulations.

Please review the Student Conduct Code found at the following site: (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>). All students are expected to follow these expectations. The Student Conduct Code provides a list of general student rights and responsibilities (including what is considered inappropriate conduct), the procedural rights of students allegedly involved in Conduct Code violations, and possible sanctions for conduct violations.

## **Incident Reporting**

Use our incident report form found at the following site: (<https://www.dso.ufl.edu/sccr/process/incident-report>) to report a conduct violation. You will be contacted by staff regarding how the conduct process works and your potential role in the outcome after submitting the form. While you can submit information anonymously, if you choose to do so, SCCR staff may be very limited in its ability to address the behavior. If you are concerned about possible retaliation, the University of Florida has a zero tolerance policy for retaliatory behavior. Anyone who retaliates against an individual who files a conduct complaint, will face swift and severe interim action, including a campus ban and interim suspension. This retaliation policy applies to all reported violations of the student conduct code, including but not limited to, sexual harassment, sexual assault, dating violence, domestic violence, stalking, and other forms of harassment and hazing.

## **Hazing & Harassment**

Hazing is defined as any action or situation that recklessly, by design, or intentionally endangers the mental or physical health or safety of a student, embarrasses or demeans an individual, negatively impacts the academic abilities of a student or forces a student to violate state or federal law for any purpose including but not limited to initiation or admission into or affiliation with any student group or organization.

Examples of hazing include but are not limited to, beating, forced calisthenics, forced alcohol consumption, sleep deprivation, and forced servitude. The fact that someone agreed to participate in these hazing activities is not a defense under the Student Conduct Code or state law. Use our hazing report form found at the following site: (<https://www.dso.ufl.edu/sccr/process/student-organizations/hazing/report-form>) to report any potential hazing violation. Online harassment, stalking and bullying can greatly impact a student's UF experience. The UF Student Conduct Code does address these behaviors. If you experience bullying, harassment or stalking either in person or online, please report that behavior to Student Conduct and Conflict Resolution and learn about your options.

## **Conduct Code Process**

If you are accused of violating UF's Conduct Code you may seek out the assistance of the Student Honor Code Administration Advisors. Their contact information can be found at the Dean of Students Student Honor Code Administration Consultation and Advising Services page found at the following site: (<https://www.dso.ufl.edu/sccr/resources/hca-advisor>).

If you have been charged with an alleged violation of the Student Conduct Code, you receive notice of appointment for a preliminary meeting. This preliminary meeting will be held with the Director of Student Conduct and Conflict Resolution or designee. At this initial meeting, you will be notified of your rights and provided a verbal summary of the currently available information and evidence to be presented against you. You will also be provided with an overview of the conduct process and resolution options available to you based on the nature of the incident.

If you have been charged with an alleged violation of the Student Conduct Code, you may choose to have your case resolved through either an administrative review with the Director of Student Conduct and Conflict Resolution or designee, an administrative hearing before the Director of Student Conduct and Conflict Resolution or designee, or a committee hearing before the Student Conduct Committee, which is composed of faculty and students.

An alleged victim and accused student must submit all information and/or a list of witnesses, if any, to SCCR at least 8 University business days prior to the scheduled hearing. No new information or witnesses will be accepted after the 8 day deadline. The list of witnesses should be accompanied by a brief description of what the witnesses are making a statement about. SCCR staff will determine the relevancy of all information and witnesses submitted. Character witnesses are not able to present information during a hearing, but they may submit a written statement on the accused students' behalf. Any information approved for the hearing may be reviewed by the alleged victim and accused prior to the hearing.

Both parties are allowed to appeal the decision. Appeals must be filed in writing and contact must be made with the reviewing authority within 10 University business days from the date of the decision letter. Written appeals must be submitted to the appropriate official in the Dean of Students Office or the Office of the Vice President for Student Affairs

To view our other available resources, please visit the Student Conduct and Conflict Resolution Office Resources page found at the following site: (<https://www.dso.ufl.edu/sccr/resources/>).

## **Conflict Resolution**

The conflict resolution services provide students an avenue to address and resolve interpersonal conflicts which may include but is not limited to conflicts between members of a student organization, roommates, students within a class or study group, faculty/staff and students, and friends. The UF Conflict Resolution program has become nationally recognized for its work at helping parties successfully resolve conflicts. Conflict resolution staff are also available to come to groups, classes and organizations to present workshops on conflict resolution and to provide training on resolving conflicts. The various conflict resolution options include conflict coaching, facilitated dialogue, mediation, and restorative justice practices. SCCR staff are trained in all of these forms of conflict resolution. In addition, they train student peers to help resolve conflict on campus as well. SCCR partners with Gators for Alternative Dispute Resolution and the Conflict Resolution Initiative at the Levin College of Law to assist in providing these services. The conduct process will follow established procedures for insuring fundamental fairness and an educational experience that facilitates the development of the individual and of the organization. Individuals and student organizations are expected to observe the policies, rules, and regulations of the University of Florida and the State of Florida.

For referral or to request conflict resolution services,  
visit <https://www.dso.ufl.edu/sccr/conflict-resolution/mediation-request/>

For further information feel free to contact

Phone Number: (352) 392-1261

Email: [sccr@dso.ufl.edu](mailto:sccr@dso.ufl.edu)

Website: [www.dso.ufl.edu/sccr/](http://www.dso.ufl.edu/sccr/)

## **Student Honor Code**

### **Preamble**

In adopting this Honor Code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the University community. Students who enroll at the University commit to holding themselves and their peers to the high standard of honor required by the Honor Code. Any individual who becomes aware of a violation of the Honor Code is bound by honor to take corrective action. Student and faculty support are crucial to the success of the Honor Code. The quality of a University of Florida education is dependent upon the community acceptance and enforcement of the Honor Code.

### **The Honor Pledge**

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

To review the complete UF Honor Code, please visit <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

## **Plagiarism**

Plagiarism is defined as representing all or any portion of another student's works as one's own. Plagiarism includes but is not limited to quoting oral or written materials including but not limited to those found on the Internet, whether published or unpublished, without proper attribution, as well as submitting a document or assignment which in whole or in part is identical or substantially identical to a document or assignment not authored by the student. All students are encouraged to complete the academic integrity online module and watch the avoiding plagiarism video found online at the Dean of Students Conduct and Conflict Resolution Seminars and Modules found at the following site: <https://www.dso.ufl.edu/sccr/seminars-modules/>

To understand the University's expectations regarding plagiarism and intellectual property, view this video tutorial about Citing Sources and Avoiding Plagiarism found at the following site: <http://mediasite.video.ufl.edu/Mediasite/Play/adaa44500eaf460a84f238e6b9a558f9>.

## **Cheating**

Unauthorized Use of Materials or Resources ("Cheating") is defined as the use of

- any paper or project authored by the student for the satisfaction of any academic requirement if the student previously submitted or simultaneously submits (to UF or any other institution) substantially the same paper or project without authorization;
- any materials or resources prepared by another student and used without that student's express consent or without proper attribution to the other student;
- any materials the faculty member has notified the student or class is prohibited; or
- a cheat sheet or any other resources during an examination, quiz, or other academic activity. This includes, but is not limited to, taking extra time on an exam, using a cell phone during an exam, use of a calculator when not authorized to do so, etc.

## **Collaboration**

Prohibited Collaboration or Consultation is defined as communicating with any other person (student or not) on any academic activity unless the student has the express permission from the faculty member. This includes communication via any means in relation to an exam, take-home test, writing project, assignment, or other course work; or looking at another student's exam during the time of the exam. Examples include working together on take home exams, seeking online assistance via discussion boards to complete problem sets, etc.

It is the responsibility of the student to seek clarification on whether or not use of materials or collaboration or consultation with another person is authorized prior to engaging in any act of such use, collaboration or consultation. If a faculty member has authorized a student to use materials or to collaborate or consult with another person in limited circumstances, the student shall not exceed that authority. If the student wishes to use any materials or collaborate or consult with another person in circumstances to which the authority does not plainly extend, the student shall first ascertain with the faculty member whether the use of materials, collaboration or consultation is authorized.

If you are accused of violating UF's Honor Code, you may seek out the assistance of the Student Honor Code Administration Advisor. Their contact information can be found at the Dean of Students Student Honor Code Administration Consultation and Advising Services page found at the following site: <https://www.dso.ufl.edu/sccr/resources/hca-advisor>.

## **Sexual Harassment, Sexual Assault, Sexual Misconduct, Dating Violence, Domestic Violence, Stalking and other Gender-Based Violence**

The University of Florida has zero tolerance for violations of Title IX such as sexual harassment, which is any unwelcome conduct of a sexual nature, sexual assault/battery, dating violence, domestic violence and stalking. Additional information on resources on these forms of discrimination can be found at the following site: (<https://www.dso.ufl.edu/sccr/resources/sexual-harassment-and-intimate-partner-violence-cases>).

### **Incident Reporting**

You can report any unwelcome conduct of a sexual nature to Chris Loschiavo, Deputy Title IX Coordinator for Students at [chrisl@dso.ufl.edu](mailto:chrisl@dso.ufl.edu) if the offender is a student or to the University Title IX Coordinator, Kim Baxley at [kczap@ufl.edu](mailto:kczap@ufl.edu) if the offender is someone other than a student. If you wish for the University to take action, you can speak with one of these two individuals.

If you wish for your report to be confidential, you can report to the Victim Advocate found at the following site: (<http://www.police.ufl.edu/victim-services/>) or the Counseling and Wellness Center found at the following site: (<http://www.counseling.ufl.edu/cwc/>). Victim Advocates can assist in filing criminal charges with the University of Florida Police Department, Gainesville Police Department, or other law enforcement agency. They can assist you in filing conduct charges if the person who harmed you is a student. They can also serve as your advisor or support person during any proceedings or meetings you have with a University official while addressing the matter or within the legal system. Victim Advocates can help in obtaining restraining orders, no contact orders, finding alternative living arrangements, alternative transportation arrangements, work accommodations, and academic accommodations including changing classes among other things.

You can choose to report anonymously as well. Please note that this may severely limit the University's ability to hold anyone responsible for harming you. If you think at some point, you may wish to pursue any kind of action against the individual that harmed you, please remember the importance of preserving evidence from the very beginning. It is advisable that you talk with law enforcement about evidence collection as soon as possible and before you shower or dispose of anything you were wearing at the time of the incident.

### **Victim Rights**

Many sexual assault cases are decided on the issue of whether or not there was effective consent for the sexual activity. Under the Student Conduct Code, someone is not able to give consent if they are incapacitated due to force, coercion, or become incapacitated due to alcohol or drug use. Someone is incapacitated and thus unable to consent to sexual activity if they do not understand the who, what, where and why of the situation. Typically students who are unable to walk on their own would not be able to consent to sexual activity. The safe choice is that if someone has been drinking and you aren't positive they are able to consent to sexual activity is to not engage in sexual activity with them.

Alleged victims are given the following rights under the Student Conduct Code:

- To be informed of the available resolution options under Student Conduct Code
- To be treated with dignity and respect no matter which resolution option is chosen
- To be informed of campus resources to assist in working through the situation
- To be kept informed of the status of the case throughout the process upon request
- To have an advisor present during the hearing. This person can be a victim advocate, attorney, friend, faculty member, or family member. This person cannot address the witnesses, accused student, committee or any other party but is there as an advisor to students as they participate in the conduct process.
- To have a support person present during the hearing--this person shall play no role other than as emotional support to the alleged victim

- To be able to participate in the hearing from another room
- To submit potential questions to the hearing chair prior to and during the hearing
- To submit a written impact statement to be considered by the committee if the accused is determined responsible for violating the Student Conduct Code but before sanctions are determined
- To have the right to have unrelated sexual behavior excluded from the hearing
- To remain present throughout the remainder of the hearing. With the recommendation of a licensed mental health care provider, the alleged victim may provide testimony from a separate room as long as it does not infringe upon the accused student's right to question the witness.
- To ask relevant questions of witnesses who give statements during the hearing. Repetitive questions are not permitted---all questions will be submitted in writing to the chair of the committee and asked by the committee chair.
- To appeal the decision of the hearing body under the same standards the accused can appeal.

## **Conduct Process**

Below is a general time frame for how the conduct process works:

- Once we have a written statement from you, a decision on charging will be made within 2 business days in most cases.
- Informational meetings are typically scheduled with the accused student within 10 business days.
- The decision on the hearing type is typically determined within 5 days of the informational meeting.
- If there are also pending criminal charges, either party may request up to a 30 day delay in the conduct proceeding to allow for the criminal case to move closer to resolution.
- Once a hearing option has been chosen, a hearing will be scheduled as soon as possible but not sooner than a minimum of 10 business days from this date. Hearings are scheduled based on availability of relevant parties, including the accused student, alleged victim, witnesses, hearing officers, and/or committee members.
- All evidence, witnesses, and information you wish to be considered for the hearing must be submitted to SCCR at least 8 business days prior to the hearing. Submitting information after this time frame may require a rescheduling of the hearing.
- After the final decision is rendered, either party has 10 business days to file a formal appeal. Once one party files an appeal, that appeal will be shared with the other party and they will have 10 days from that notification to file their own appeal or response to the appeal.
- Generally, appeal decisions will be made within 10 days of receipt by the appellate officer.
- We strive to resolve cases within 60 days of confirming your willingness to participate in the hearing process, unless a 30-day postponement is granted for either party.

SCCR staff, including members of the Student Conduct Committee receive a significant amount of training on interpersonal violence including rape myths, victimization, as well as what it is like to be accused prior to hearing these types of cases

For those who make a Title IX complaint, UF will address very seriously any retaliation a student experiences for filing that complaint, including interim suspension and campus bans where necessary and appropriate.

## **Registration Requirements**

The University of Florida operates on a semester system consisting of two 16-week terms and two 6-week summer terms. One semester credit equals 1.5 quarter credits. "Term" is used hereafter, instead of "semester."

## **Required Full-Time Registration**

|   | Fall and Spring | Summer<br>A | Summer<br>B | Summer<br>C |
|---|-----------------|-------------|-------------|-------------|
| Full-time graduate students not on appointments           | 9-12            | 4           | 4           | 8           |
| Fellows receiving \$4,000 or more per term*, and trainees | 12              | 4           | 4           | 8           |
| Assistants on .25 to .74 FTE                              | 9               | 3           | 3           | 6           |
| Assistants on .75 to .99 FTE                              | 6               | 2           | 2           | 4           |
| <b>Full-time assistants:</b>                              |                 |             |             |             |
| 1.00 Fall & Spring  | 3               |             |             |             |
| 1.00 Summer A   |                 | 2           | or          | 2           |
| 1.00 Summer B   |                 |             | 2 or        | 2           |
| 1.00 Summer C   |                 | 1 and       | 1 or        | 2           |

**Graduate students on appointment:** Required registration for fellows and trainees with stipends of \$4,000 or greater per term (\*prorated for summer as \$1,500 for Summer A, or \$1,500 for Summer B, or \$3,000 for Summer C) is 12 credits for fall and spring, 8 credits for summer. Fellows whose stipends are less than \$4,000 must register for at least 3 credits during fall and spring terms, and 2 credits for summer. The full-time registration requirement is reduced for students who are graduate assistants: 9 credits for fall and 9 credits for spring. Summer A appointments must be registered for 3 credits, and Summer B appointments must be registered for 3 credits. For students on appointment for Summer C, registration must equal 6 credits. This may be any combination of A, B or C, but cannot be all in A or all in B. (See Academic Personnel website, <http://www.hr.ufl.edu/academic/regrequirements.asp>, for more specific details for summer terms).

Students on appointment are financially liable for excess credits beyond the required registration. If a student on appointment drops below the required registration at any time in the semester, the student becomes financially liable for the entire registration. Students who do not register properly are not permitted to remain on appointment.

**Full-time registration** is 9 to 12 credits. However, most fellows must be registered for 12 credits in fall or spring and 8 credits in summer. Students not on an appointment may want to enroll full time to finish their degrees in the minimum time frame or may be required to enroll full time by external funding agencies or their academic units.

Registration for fewer than 9 to 12 credits may be considered equivalent to full-time enrollment in specific circumstances, such as internships or fieldwork required for all students within the degree program, or lockstep programs (e.g., M.B.A.). Upon petition by the academic unit and under circumstances directed by Graduate Council policy, the Graduate School may certify specified students as meeting full-time equivalency.

**Part-time registration:** Students not on an appointment and without a specific registration requirement by the academic unit, external funding agency, or government may register as a part-time student. Minimum registration is 3 credits in fall or spring and 2 credits in summer.

**Part-time registration and financial aid:** Graduate students should be aware that in order to qualify for most financial aid programs (federal, state, or institutional), students must be enrolled at least half time. For financial aid



purposes, a grad student must be enrolled for five hours during fall or spring term, four hours during summer term. In addition, due to limited funds, priority is generally given to full-time students.

For more information: <http://www.sfa.ufl.edu/receiving/enrollment-requirements>

**Employee registration:** UF staff employed on a permanent, full-time basis may be permitted to waive fees up to a maximum of 6 credits per term on a space-available basis. Enrollment is limited to courses that do not increase direct costs to the University. Courses that increase direct costs can include TBA (to be arranged), computer courses, individualized courses, distance learning, internships, and dissertation and master's thesis courses. Laboratory courses are permitted on a space available basis.

For updated information: <http://www.hr.ufl.edu/>

**Undergraduate registration in graduate courses:** Upper-division undergraduate students may enroll in 5000-level courses with consent of the instructor. Normally, a student must have a GPA of at least 3.00. To enroll in 6000-level courses, a student must have senior standing, consent of the instructor, and an upper-division GPA of at least 3.00.

After a student is accepted to graduate school, up to 15 credits of graduate-level courses earned with a letter grade of B or better taken under this provision may be applied toward a graduate degree at UF, if credit for the course has not been used for an undergraduate degree, and if the transfer is approved by the academic unit and made as soon as the student is admitted to a graduate program.

**Final term registration:** During the term the final examination is given and during the term the degree is awarded, a student must be registered for at least 3 credits in fall or spring and 2 credits in summer. Thesis students must enroll in 6971 and doctoral students must enroll in 7980. Non-thesis students must enroll in course work that counts toward the graduate degree. Students on a fellowship, traineeship, or assistantship must be registered appropriately for their appointments.

**Clear prior:** Clearing prior status is only possible for thesis and dissertation students who have met all published deadlines for the current term except Final Submission and/or Final Clearance from the Graduate Editorial Office. No other students are eligible. Clear Prior permits students to be exempt from registration for the term in which the degree will be awarded. Although not required to register during the term of degree award, students are required to file a new degree application for that term within all published deadlines for doing so, as degree applications do not carry over from semester to semester and are essential for the degree to be awarded.

A student requesting to clear prior must meet ALL of the following criteria:

- Student has successfully submitted a degree application for the current term within the published deadlines, as confirmed by print screen available from ISIS.
- Student has appropriately satisfied the current term registration.
- Student has successfully met the current term first submission deadlines for the thesis or dissertation, as confirmed by the Editorial Office, via a confirmation email to the student and committee chair.
- Student has successfully met all other degree and administrative requirements, within the published deadlines for the current term, except Final Submission and/or Final Clearance with the Graduate School Editorial Office.
- Student is in the process of finalizing the thesis or dissertation with the Graduate School Editorial Office. No other students are eligible.

**Drop/add:** Courses may be dropped or added during drop/add without penalty. This period usually lasts 5 UF business days in the fall and spring semesters or 2 business days for summer semesters, starting with the first day of the term. Classes that meet for the first time after drop/add may be dropped without academic penalty or fee liability by the end of the next business day after the first meeting. This does not apply to laboratory sections. After this period, a course may be dropped and a W appears on the transcript. Students become financially liable for any course added or dropped after the deadline, including students with tuition waivers. Prior to the last day of classes for

each term, students should personally verify all registration changes and any required adjustments online on ISIS. Retroactive drop/add will not be permitted.

**Retaking courses:** Graduate students may repeat courses in which they earn failing grades. Grade points from both the initial failed attempt and the first attempt earning a grade of C or better are included in computing the grade point average. The student receives credit for the satisfactory attempt only.

## Tuition/Fee Waivers

The appointment must be awarded through the UF payroll system. Each term a payment is received: 1) the appointment must conform with the published academic year appointment calendar dates, 2) an assistant or associate appointment must be a minimum of .25 FTE (quarter-time) but not more than 1.0 FTE (full-time), 3) a fellowship must pay a minimum of \$4,000 per term (prorated for summer term at \$1,500 for Summer A, \$1,500 for Summer B, or \$3,000 for Summer C)

These tuition waivers will apply toward the number of registration credits required for the appointment. Credits to which the tuition waiver applies must count toward the degree and may not include audited courses, correspondence work, DOCE courses, or courses designated as "self-funded" by the Registrar.

## Attendance Policies

Students are responsible for meeting all academic objectives as defined by the instructor. Absences count from the first class meeting. In general, acceptable reasons for absences from class include illness, serious family emergencies, special curricular requirements, military obligation, severe weather conditions, religious holidays, and participation in official University activities. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused. Other reasons also may be approved.

Students may not attend classes unless they are registered officially or approved to audit with evidence of having paid audit fees. After the end of drop/add, the Office of the University Registrar provides official class rolls/addenda to instructors. Students who do not attend at least one of the first 2 class meetings of a course or laboratory in which they are registered and who have not contacted the academic unit to indicate their intent may be dropped from the course. **Students must not assume that they will automatically be dropped if they fail to attend the first few days of class.** The academic unit will notify students dropped from courses or laboratories by posting a notice in the academic unit office. Students may request reinstatement on a space-available basis if documented evidence is presented. The University recognizes the right of the individual professor to make attendance mandatory. After due warning, professors may prohibit further attendance and then assign a failing grade for excessive absences. Students who have registration changes, at any time during the semester, should verify their registrations before the last day of class of the term. Retroactive drop/add or other registration changes will not be permitted.

## Change of Graduate Degree Program

To change majors or degree level (same or different college), the academic unit must add the degree segment for graduate students via the Graduate Information Management System (GIMS). Only an authorized representative of the new academic unit and college can add the degree segment to a graduate student's record in GIMS. In order to do this, pull up the student's record in GIMS and click the green plus button that says "Add Degree Segment". A wizard-like interface will open up that will guide you through the adding segment process.

If the student is no longer pursuing a graduate degree program, an academic unit must drop the degree segment via GIMS. Only an authorized representative of the academic unit and college can drop the degree segment on a graduate student's record. In order to do this, pull up the student's record in GIMS and click the Drop Segment under the Actions icon of the degree segment. A pop-up smaller window will appear that will guide you through the dropping segment process.

**Any changes to degree programs, including thesis/non-thesis/project option, MUST occur before the published midpoint deadline of the student's final term.**

## Courses and Credits

Undergraduate courses (1000-2999) may not be used to satisfy any graduate degree requirements. All 1000- and 2000-level courses may be taken on a satisfactory/unsatisfactory (S/U) basis.

Six credits of undergraduate courses (3000-4999) outside the major may count when taken as part of an approved graduate program. Consult the Academic Unit before registering.

Courses numbered 5000 and above are limited to graduate students, with the exception described under *Undergraduate Registration in Graduate Courses*. Courses numbered 7000 and above are normally for advanced graduate students.

No more than 5 credits each of 6910 (Supervised Research) and 6940 (Supervised Teaching) may be taken by a graduate student at UF. Students who have taken 5 credits of 6910 cannot take 7910; the rule also applies to 6940 and 7940. Courses numbered 7979 and 7980 are not eligible to count toward a master-level degree program.

Audited courses at any level do not count toward any graduate degree requirements.

For a complete list of approved graduate courses, see the Programs Section of this catalog. Academic units decide which of these graduate courses to offer in a given term. Contact the academic unit for information on available courses.

Generally, graduate courses may not be repeated for credit. However, there is no limit on courses numbered 6971 (but the Graduate School will only count a maximum of 6 credits of 6971 toward a thesis master's-level degree), 6972, 6979, 7979, and 7980. Other courses repeated for credit indicate "max" **after the single term credit**, as listed in the Programs Section of this catalog.

**Professional course work:** Graduate students may receive credit toward their degrees for courses in professional programs (e.g., J.D., D.V.M., or M.D.) when their advisers and graduate coordinators certify that the course work is appropriate for their programs and when the students receive permission from the academic units and colleges offering the courses. The courses must be letter-graded and earned with a grade of B or better. However, the associated grades in these professional courses are not included in the calculations of the overall GPA, major GPA, and minor GPA. A list of UF professional courses for each student must be filed with Graduate Student Records (106 Grinter) on or before the midpoint deadline within the intended term of degree award. Professional courses earned at other institutions must be approved by the Graduate School via the transfer credit process. In all cases, these credits are limited to a maximum of 9 credits toward the master's degree and 30 credits toward the doctorate.

## Grades

**Passing, Non-Punitive and Failing Grades:** The Office of the University Registrar records student grades. The word "credit" refers to one semester hour, generally representing one hour per week of lecture or two or more hours per week of laboratory work.

The only passing grades for graduate students are A, A-, B+, B, B-, C+, C, and S. Grades of B-, C+ or C count toward a graduate degree if an equal number of credits in courses numbered 5000 or higher have been earned with grades of B+, A- and A, respectively. Grade points are not given for S and U grades; S and U grades are not used to calculate grade point averages. All letter-graded courses eligible to count toward the graduate degree, except 1000- and 2000-level courses, are used to calculate the cumulative grade-point average. Letter grades of C-, D+, D, D- or E are not considered passing at the graduate level, although the grade points associated with these letter grades are included in grade point average calculations.

**Satisfactory/Unsatisfactory:** Grades of S and U are the only grades awarded in courses numbered 6910 (Supervised Research), 6940 (Supervised Teaching), 6971 (Research for Master's Thesis), 6972 (Engineer's Research), 7979 (Advanced Research), and 7980 (Research for Doctoral Dissertation). Additional courses for which S and U grades apply are noted in the academic unit offerings in the Programs Section of this catalog.

All language courses regardless of level may be taken S/U if the student's major is not a language and the courses are not used to satisfy a minor, with approval from the student's supervisory committee chair and the instructor of the course. S/U approval should be made by the published deadline date. All 1000 and 2000 level courses may be taken S/U. No other courses (graduate, undergraduate, or professional) may be taken for an S/U grade.

**Deferred grade H:** The grade of H is not a substitute for a grade of S, U, or I. Courses for which H grades are appropriate must be so noted in their catalog descriptions, and must be approved by the Graduate Curriculum Committee and the Graduate School. This grade may be used only in special situations where the expected unit of work may be developed over a period of time greater than a single term. All grades of H must be removed before a graduate degree can be awarded.

**Incomplete grades:** Grades of I (incomplete) received during the preceding term should be removed as soon as possible. Grades of I carry zero grade points and become punitive after 1 term. All grades of I must be removed or petitioned before a graduate degree can be awarded.

#### Grades and Grade Points Prior to Summer A 2009

|     |     |     |     |     |     |     |   |    |   |    |     |
|-----|-----|-----|-----|-----|-----|-----|---|----|---|----|-----|
| A   | B+  | B   | C+  | C   | D+  | D   | E | WF | I | NG | S-U |
| 4.0 | 3.5 | 3.0 | 2.5 | 2.0 | 1.5 | 1.0 | 0 | 0  | 0 | 0  | 0   |

#### Grades and Grade Points Effective Summer A 2009

|     |      |      |     |      |      |     |      |      |     |      |   |    |   |    |     |
|-----|------|------|-----|------|------|-----|------|------|-----|------|---|----|---|----|-----|
| A   | A-   | B+   | B   | B-   | C+   | C   | C-   | D+   | D   | D-   | E | WF | I | NG | S-U |
| 4.0 | 3.67 | 3.33 | 3.0 | 2.67 | 2.33 | 2.0 | 1.67 | 1.33 | 1.0 | 0.67 | 0 | 0  | 0 | 0  | 0   |

**Note:** The degree-granting college may require a minimum grade of C in particular courses. GPA calculations are truncated (not rounded) and displayed on the transcript to the hundredths place.

#### Non-Punitive Grades and Symbols:

##### Zero Grade Points--Not Counted in GPA

**W** = Withdrew

**U** = Unsatisfactory

**H** = Deferred grade assigned only in approved sequential courses or correspondence study

**N\*** = No grade reported

**I\*** = Incomplete

#### Failing Grades:

##### Zero Grade Points--Counted in GPA

**E** = Failure

**WF** = Withdrew failing

**NG** = No grade reported

**I** = Incomplete

## Unsatisfactory Progress or Unsatisfactory Scholarship

Any graduate student may be denied further registration if progress toward completing the program becomes unsatisfactory to the academic unit, college, or Dean of the Graduate School. Unsatisfactory scholarship is defined as failure to maintain a B average (3.00) in all work attempted. Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation. Students with less than a 3.00 GPA may not hold an assistantship or fellowship.

## Foreign Language Examination

A foreign language examination is not required for all degree programs. For specific information on foreign language requirements, contact the graduate coordinator of your academic unit.

## Examinations

The student must register for sufficient and appropriate graduate credits during the term any examination is taken. The student's supervisory committee is responsible for administering the written and oral qualifying examinations and the final oral examination for the defense of the thesis, project, or dissertation.

On rare occasion by virtue of scheduling conflicts beyond the control of the student, examinations may occur on days between terms (break period) with the approval of the supervisory committee. This approval does not, by any means, replace existing requirements to meet published registration and deadlines for degree certification in a particular term.

Qualifying Examinations and Final Examinations administered during a break period are only valid if the student was enrolled in at least one of the terms on either side of the break. The examination will always be associated with the term immediately preceding the break, provided the student was enrolled for that term. Otherwise, the examination will be associated with the term immediately following the break.

All members of the supervisory committee must sign the appropriate forms, including the Electronic Thesis and Dissertation (ETD) Signature Page, for the student to meet the requirements of the examination. The signed forms are to remain in the student's folder in the academic unit. Electronic information will be sent to the Graduate School via the Graduate Information Management System (GIMS) for the Final Exam Form and UF Publishing Agreement, once the student successfully defends. The signed ETD Signature Page should be held by the Academic Unit until all Committee stipulations have been met regarding the document; however, it should be posted electronically to GIMS no later than the Final Submission Deadline for the intended term of degree award.

The qualifying and comprehensive oral examinations and the oral defense of a thesis, project or dissertation may be conducted using video and/or telecommunications. It is required that the student and chair or co-chair must be in the same physical location. All other members may participate from remote sites via technological means.

Supervisory Committees or academic units may set their own standards for attendance at oral examinations that exceed the minimum requirement stated above.

Students are responsible for coordinating the scheduling of oral examinations with their committee or academic unit and must follow the policies set by their committee or academic unit, and the Graduate School.

The written comprehensive examination for the non-thesis master's degree may be taken at a remote site.

## Preparation for Final Term

**The student is responsible for meeting all requirements and observing every deadline.** Deadlines are given in this catalog, in the Graduate Student Handbook, and online at the Graduate School website.

**Thesis and Dissertation students:** When the thesis or dissertation is ready to be put in final form for submission to the Graduate School, the student should review the Format Requirements of the Graduate School Editorial Office and should work with the Application Support Center to format the document in order to meet the minimum submission requirements of the Editorial Office. The Application Support Center offers students assistance with troubleshooting their documents free of charge. The Center also provides more extensive formatting and pdf-conversion services for reasonable fees to the student. It is highly recommended that all students writing theses and dissertations use their services, in order to alleviate some of the stress felt during the approval process.

**All students:** Students must submit a Degree Application on ISIS before the published deadline of the term and must meet minimum registration requirements. **Degree Applications do not carry over from one semester to the next.** If the degree is not awarded, the student must 1) request that his or her academic unit remove their name from the current term degree list 2) re-apply for the degree award via ISIS in a subsequent term, by the published deadline for that term; and 3) meet all other requirements for the term the degree will be awarded. These requirements also apply when a thesis or dissertation student has been approved to clear prior by the Graduate School Editorial Office.

## Verification of Degree Candidate Status

This service is provided until 3 weeks before graduation. However, students who before that time have completed all requirements for the degree, filed the fully signed final examination report in GIMS and achieved final clearance of the thesis or dissertation, may request verification to that effect. Verification of Degree Candidate Status Request Forms are filled out by the candidate; signed by the supervisory committee chair, department chair, college dean, and the Graduate School Editorial Office (224 HUB); then given to Graduate Student Records (106 Grinter Hall), for verification and processing.

Although a student may have fulfilled academic requirements, the degree is not awarded until the Graduate School certifies the degree to the University Registrar. That is done at the end of fall, spring, and Summer C terms for all students who completed degree requirements and applied to graduate. Some employers and licensure boards require the degree statement on the transcript, which is available the day after certification in December, May, and August.

## Awarding of Degrees

The Graduate School authorizes a candidate to be awarded the degree appropriate to the course of study under the following conditions (see degree descriptions for details):

- The candidate must have completed all course requirements, including an internship or practicum if required, in the major and minor fields while observing time limits and limitations on transfer credit, on nonresident work, and on level of course work.
- The candidate's grade point averages must be at least B (3.00, truncated) in the major and overall (all courses eligible to count toward the graduate degree), including a minor where appropriate.
- All grades of I, H, and X must be resolved. Grades of I, X, C-, D+, D, D-, E, and U require a written petition from the Academic Unit to the Dean of the Graduate School.
- The candidate must have satisfactorily completed all required examinations (qualifying, comprehensive, and final) and be recommended for the degree by the supervisory committee, major academic unit, and college.

- The dissertation or thesis must have been approved by the supervisory committee and accepted by the Graduate School. Projects must be approved by the academic unit, which then certifies completion to the Graduate School.
- Recommendations for awarding a degree include meeting all academic and professional qualifications as judged by the faculty of the appropriate academic unit.
- All requirements for the degree must be met while the candidate is a registered graduate student. Degrees are certified 3 times per year: December, May, and August.

## Attendance at Commencement

Graduates who are to receive advanced degrees are urged to attend Commencement to accept in person the honor indicated by the appropriate hood. Through the University Bookstore, the student may arrange to rent or buy the proper academic attire to be worn at Commencement.

## Financial Information

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

Fees

General Fiscal Information

Past-Due Student Accounts

## Fees

### Application Fee

An individual who applies for admission to the University of Florida shall pay a non-refundable application fee of \$30.00. Credit card payments will incur an additional \$1.75 service fee, the total application fee is \$31.75. While personal checks or money orders are accepted, please include the cover memo provided within the application and include your full name and UFID on the check or money order. Please refer to the Admission Checklist at <http://admissions.ufl.edu/grad/gradchecklist.html>

### Registration and Tuition Fees Liability

Pursuant to Section UF-3.037(1) Regulations of the University of Florida, registration shall be defined as consisting of two components: a) formal enrollment in one or more credit courses approved and scheduled by the university; and b) fee payment or other appropriate arrangements for fee payment (deferment or third-party billing) for the courses in which the student is enrolled as of the end of drop/add date.

Registration must be completed on or before the date specified in the university calendar. Students are not authorized to attend class unless they are on the class roll or have been approved to audit. Unauthorized class attendance will result in tuition fee liability.

**In addition to the matriculating term, a student must be registered during the terms of the qualifying examination and the final examination, and during the term the degree is awarded.**

**Tuition Fee Liability** – Pursuant to Section UF-3.037(2) Regulations of the University of Florida, a student is liable for all tuition fees associated with all courses for which the student is registered, at the end of the drop/add period or

for which the student attends after that deadline. The fee payment deadline is 3:30 p.m., on the second Friday after classes begin.

## **Assessment of Tuition Fees**

Pursuant to Section UF-3.0375 Regulations of the University of Florida, tuition shall be assessed on residency, first enrolled term of the current degree, course level and degree program. In some instances, tuition waivers accompanying assistantships or fellowships include only the matriculation fee and where applicable the non-resident fee. All other fees must be paid by the student.

To estimate your tuition fees and determine your student status, visit the University Bursar website.

Students can pay their own tuition fees on the secure myUFL portal: [my.ufl.edu](http://my.ufl.edu). Login then select Main Menu > My Campus Finances > Make a Payment.

To estimate your tuition fees and determine your student status, visit the University Bursar website: [www.fu.ufl.edu/bursar/current-students/](http://www.fu.ufl.edu/bursar/current-students/)

Lack of written notification of the tuition fee debt does not negate the student's responsibility to pay by the published fee payment deadline.

### **University personnel will not be held accountable for assessment or accuracy of calculations.**

For purposes of discussion, the word *term* refers to the fall semester, the spring semester and any of the summer semesters. Definitions of *first enrolled term of the current degree program* are as follows: (UF-3.0375 Regulations of the University of Florida):

### **Fall 2015 Tuition Fee Criteria**

- A first-time admitted and enrolled degree-seeking student registered for Fall 2015, Spring 2016 or Summer 2016 term.
- A UF graduate admitted to a new degree program or upon the student's admission or readmission to a degree program requiring a new application for Fall 2015, Spring 2016 or Summer 2016 term.
- A former student who is readmitted for Fall 2015, Spring 2016 or Summer 2016 term after an absence of two or more consecutive terms, excluding military withdrawals.
- A non-degree seeking student.

### **Fall 2014 Tuition Fee Criteria**

- A first-time admitted and enrolled degree-seeking student registered for Fall 2014, Spring 2015 or Summer 2015 term.
- A UF graduate admitted to a new degree program or upon the student's admission or readmission to a degree program requiring a new application for Fall 2014, Spring 2015 or Summer 2015 term.
- A former student who is readmitted for Fall 2014, Spring 2015 or Summer 2015 term after an absence of two or more consecutive terms, excluding military withdrawals.

### **Fall 2013 Tuition Fee Criteria**

- A first-time admitted and enrolled degree-seeking student registered for Fall 2013, Spring 2014 or Summer 2014 term.



- A UF graduate admitted to a new degree program or upon the student's admission or readmission to a degree program requiring a new application for all 2013, Spring 2014 or Summer 2014 term.
- A former student who is readmitted for Fall 2013, Spring 2014 or Summer 2014 term after an absence of two or more consecutive terms.

### **Fall 2012 Tuition Fee Criteria**

- A first-time admitted and enrolled degree-seeking student registered for Fall 2012, Spring 2013 or Summer 2013 term.
- A UF graduate admitted to a new degree program for Fall 2012, Spring 2013 or Summer 2013 term.
- A former student who is readmitted for Fall 2012, Spring 2013 or Summer 2013 term after an absence of two or more consecutive terms.

**Fall 2011 and Prior Term Tuition Fee Criteria: Refer to UF-3.0375 Regulations of the University of Florida.**

### **Assessment of Student Fees**

**Activity and Service Fee (UF-3.0372 Regulations of the University of Florida):** All students must pay an activity and service fee that is assessed on a per credit-hour basis and is included in the basic rate per credit hour.

**Athletic Fee (UF-3.0372 Regulations of the University of Florida):** All students must pay an athletic fee that is assessed on a per credit hour basis and is included in the basic rate per credit hour. Graduate research and teaching assistants enrolled for eight (8) or more credits during the fall or spring semesters and all other students enrolled for nine (9) or more credits (except students enrolled in a New World School of the Arts degree program and other students not required to pay the athletic fee) are eligible to purchase athletic tickets at the student rate.

**Audit Fee (UF-3.0376(18) Regulations of the University of Florida):** Tuition fees for audited courses are assessed at the applicable resident or non-resident cost as set forth in Regulation UF-3.0375.

**Diploma Replacement Fee (UF-3.0376(13) Regulations of the University of Florida):** Each diploma ordered after a student's initial degree application can result in a diploma replacement charge not to exceed \$10.

**Distance Learning Fee (1009.24 Florida Statutes):** Online courses may be assessed a per credit hour amount.

**Health Fee (UF-3.0372 Regulations of the University of Florida):** All students must pay a health fee that is assessed on a per credit-hour basis and is included in the basic rate per credit hour. The health fee maintains the university's Student Health Service and is not part of any health insurance a student may purchase.

**Material and Supply (UF-3.0374 Regulations of the University of Florida):** Material and supply fees are assessed for certain courses to offset the cost of materials or supply items consumed in the course of instruction. A list of approved courses and fees is published in the Schedule of Courses each semester.

**Off-campus Educational Activities (UF-3.0376(19) Regulations of the University of Florida):** The president or the president's designee will establish fees for off-campus course offerings when the location results in specific identifiable increased costs to the university. These fees will be in addition to the regular tuition and fees charged to students enrolling in these courses on campus. The additional fees charged are

for the purpose of recovering the increased costs resulting from off campus vs. on campus offerings. As used herein, off campus refers to locations other than main campus, branch campuses and centers.

**Registration for Zero Credits (UF-3.0376(17) Regulations of the University of Florida):** The student is assessed the applicable resident or non-resident cost as set forth in Regulation UF-3.0375, for one credit hour.

**Technology Fee (UF-3.3075 Regulations of the University of Florida):** All students must pay a technology fee that is assessed on a per credit-hour basis and is included in the basic rate per credit hour.

**Transcript Fee (UF-3.0376(12) Regulations of the University of Florida):** An official transcript for current undergraduate, graduate and professional students can be purchased for a fee of \$6. Cost for a non-enrolled student and a student who has not been registered at the university for two or more terms is \$12. The university releases only official transcripts.

**Transportation Access Fee (UF-3.0372 Regulations of the University of Florida):** All students must pay a transportation access fee that is assessed on a per credit-hour basis and is included in the basic rate per credit hour.

**Library processing fee:** Students pay \$12.80 in their final term for the administrative costs of processing the thesis or dissertation through the UF Libraries. This fee will appear and is payable on the student account on my.ufl.edu only after making first submission of their thesis or dissertation to the Graduate School Editorial Office; <http://graduateschool.ufl.edu/files/checklist-dissertation.pdf>.

**Microfilm fee:** Dissertation students must pay a \$25.00 microfilm fee for Traditional Publishing with ProQuest/UMI for archiving and publication services. This fee will appear and is payable on the student account on my.ufl.edu only after making first submission to the Graduate School Editorial Office, <http://graduateschool.ufl.edu/files/checklist-dissertation.pdf>.

**Architecture project students should contact their department regarding the project option fee and how these fees will be processed.**

**All charges may be subject to change without notice.**

## Payment of Tuition Fees

Tuition fees are payable on the dates listed in the academic calendar. Deadlines are enforced. Tuition fee payments are processed by University Bursar. Payments sent via U.S. mail must be received in the university cashier's office by the established fee payment deadline. An on time payment for the tuition deadline date is a receipt date, not a postmark date.

According to university policy, university cashiers will accept checks only for the amount due in payment of tuition fees, accounts receivable, loans and other student debts. Checks from foreign countries must be payable through a United States bank in U.S. dollars. The university can refuse two-party checks, altered checks and checks that will not photocopy. The university does not have the authority to waive late payment fees unless extraordinary circumstances warrant such a waiver or the university is primarily responsible for the delinquency.

Online payment navigation for tuition fees and other charges can be made via the my.ufl.edu portal by selecting Main Menu > My Campus Finances > Make-a-Payment.

Students making payments with a mobile device should access m.ufl.edu and then select *Make a Payment*.

Payment options on my.ufl.edu:

- Electronic check; there is no service charge for the electronic check payments.

- Credit cards: MasterCard, Discover, American Express, or Visa will include a 2.6% service charge for tuition fees and accounts receivable charges (e.g., laser print, library fines, parking decals, etc.).
- International Payment is a wire transfer, providing a competitive rate of exchange for many international currencies.
- In-person payments: Check, money order, or cashier's check. International paper checks or demand drafts must be drawn on a U.S. bank in U.S. dollars and amounts cannot be greater than the amount due. Any payment that is more than the amount due will not be refunded and automatically will be applied to a future debt.

Cash and debit cards are not payment options.

## Returned Payments

Returned electronic checks or paper checks will be charged a service fee of \$25 if the returned payment is less than \$50; \$30 if the returned payment is \$50.01 - \$299.99 and \$40 if the returned payment is \$300 or more. Payments for returned electronic check payments returned paper checks, and the returned service fee must be paid by money order or cashier's check.

A \$10 service fee will be charged if the bank information provided for the electronic check payment is inaccurate for electronic funds transfer. Payment for this type of return does not require a money order or a cashier's check.

**All financial obligations to the university will be applied on the basis of age of the debt. The oldest debt will be paid first.**

## Late Registration/Late Payment Fees

**Late Registration Fee (UF-3.037(3) Regulations of the University of Florida):** Any student who fails to register prior to the late registration date published in the academic calendar will be subject to the late registration fee of \$100.

**Late Payment Fee (UF-3.037(4) Regulations of the University of Florida):** Any student who fails to pay all tuition fees due or to make appropriate arrangements for tuition fee payment (deferment or third party billing) by the fee payment deadline published in the academic calendar will be subject to a late payment fee of \$100.

**Waiver of Late Fees:** A student who believes that a late fee should not be assessed because of university error or extraordinary circumstances that prevented all conceivable means of compliance by the deadline may petition for a waiver. Late registration fee: Office of the University Registrar; Late payment fee: University Bursar. The university reserves the right to require documentation to substantiate these circumstances.

## Deferment of Tuition Fees

Deferment extends the deadline for payment of tuition fees for a specific term. A tuition fee deferment is granted based on information from Student Financial Affairs (financial aid deferments), the Office of the University Registrar (veterans) or Graduate and Fellowship Waivers; departments may provide Letters of Appointment (LOA) and tuition waivers to teaching, research, graduate assistants, and fellowship students. Refer questions on eligibility to the appropriate office. A tuition fee deferment must be established by the tuition fee payment deadline for each term. A tuition fee deferment is provided to students in the following circumstances:

- Students receiving benefits from state or federal financial assistance programs (1009.27, Florida Statutes).
- Students receiving veterans or other educational benefits under Chapter 30, Chapter 31, Chapter 32, Chapter 33, Chapter 34, Chapter 35, Chapter 1606 or Chapter 1607 Title 38 U.S.C.; or

- Students for whom formal arrangements have been made with the university for payment by an acceptable third-party sponsor.

A \$100 late payment fee will be assessed if a student fails to pay all tuition fees due by the deferment deadline.

**Non-payment of Tuition Fees** (UF-3.037 Regulations of the University of Florida): The university shall temporarily suspend further academic progress of any student who has not satisfied the entire balance of his/her fee liability by the established deadlines. This will be accomplished by placing a financial hold on the student's record, which will prevent the student from receiving grades, transcripts and/or diploma, and the student's registration will be denied for future terms until the account has been satisfied.

Students who have not paid any portion of their tuition fee liability by the established university payment deadline will continue to be held fee liable for these courses, but will not be allowed to attend these courses until payment is made in full and the student has been re-registered.

To re-register for courses, students must submit a Re-Enrollment; Request form to the Office of the University Registrar. Students who re-register after being withdrawn for non-payment of tuition fees will be subject to both late registration and late payment fees.

## Refund of Tuition Fees

The following circumstances may constitute a tuition fees refund:

- If notice of withdrawal from the University is approved prior to the end of the drop/add period and written documentation is received from the student.
- Credits dropped during drop/add
- Courses cancelled by the university
- Call to active military duty
- Death of the student or member of the immediate family (parent, spouse, child, sibling)
- Illness of the student of such severity or duration, as confirmed in writing by a physician, that completion of the semester is precluded
- Exceptional circumstances, upon approval of the university president or his designee

A refund of 25% of the total fees paid (less late fees) is available for withdrawal of enrollment from the university prior to the deadlines listed in the academic calendar.

Refunds are issued by University Bursar and will be applied against any university debts. The university reserves the right to set minimum amounts for which refunds will be produced for overpayments on student accounts.

Tuition refunds due to cancellation, withdrawal or termination of attendance for students receiving financial aid will first be refunded to the appropriate financial aid programs. If the student is a recipient of federal financial aid, such as Grad Plus Loan, Pell Grant, TEACH Grant, Supplemental Educational Opportunity Grant (SEOG), Perkins Loan, Federal Direct Stafford Loans or PLUS loans, federal rules require that any unearned portion of the federal aid must be returned to the U.S. Department of Education.

The amount the student has earned is based on the number of days the student attended classes as compared to the number of days in the entire term (first day of classes to the end of finals week). Any remaining refund then will be returned according to university policy.

**Deadlines:** Deadlines are enforced. The university does not have the authority to waive late payment fees unless extraordinary circumstances warrant such waiver or the university is primarily responsible for the delinquency.

**Direct Deposit Requirement:** Due to the university's continuing support for sustainable practices, as well as the costs associated with producing, mailing, and tracking undelivered checks, direct deposit is now required for the delivery of refunds, whether financial aid or student overpayments. This electronic method will deposit any

overpayments to the student's checking account. Students must give authorization their my.ufl.edu, select Main Menu > My Campus Finances > Direct Deposit- Student or PLUS to have overpayments electronically credited to a U.S. bank or other U.S. financial institution checking account.

## General Fiscal Information

Students can pay online at my.ufl.edu the exact amount of tuition fees and/or other amounts owed the university. The online payment system at the exact amount of tuition fees and/or other amounts owed the university. The online payment system accepts the following payment methods: American Express, MasterCard, Discover, or Visa credit cards and electronic checks from checking and international payments via wire transfer.

**Students making payments with a mobile device should access** m.ufl.edu and then select *Make a Payment*. Students can pay at the University Bursar office with personal checks, cashier's checks and money orders, which can be placed in the 24-hour drop box located outside 113 Criser Hall. Payments on all financial obligations to the university will be applied on the basis of age of the debt. The oldest debt will be paid first.

University Bursar is not able to accept cash or debit card payments and does not cash checks or make cash refunds.

## Past-Due Student Accounts

All student accounts are payable at the University Bursar office or on my.ufl.edu at the time such charges are incurred. Graduating students with outstanding financial obligations will have a hold placed on their records withholding release of a diploma, transcript and other university services until the debt is satisfied.

University regulations prohibit the following for any student whose account with the university is delinquent until the debt has been satisfied:

- Registration
- Release of transcript, diploma, grades or schedules
- Loans
- The use of UF facilities and/or services
- Admission to UF functions and athletic events

Delinquent accounts, including those debts for which the student's records have a financial hold, may require payment by cashier's check or money order.

Delinquent debts may be placed with a billing agent, reported to a credit bureau and referred to collection agencies without further notice or litigated, at which time additional collection costs will be assessed in accordance with UF-3.0376(20) Regulations of the University of Florida. All payments received are applied to the oldest debt first.

## Financial Aid

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

### Graduate Assistantships and Fellowships

#### University-wide Fellowships

Graduate School Fellowships

Grinter Fellowship

Title VI-Foreign Language and Area Studies Fellowships

Veterans Administration & Social Security Administration Benefits Information  
External Fellowships for Graduate Students

Graduate School Support Programs

Dissertation Completion Assistance  
Office of Graduate Minority Program (OGMP) Student Support

Office for Student Financial Affairs

Loans  
Part-time Employment  
Academic Progress Policy for Financial Aid Recipients

## Graduate Assistantships and Fellowships

Graduate Assistantships are available through individual academic units. Stipend rates paid are determined by the employing academic unit. Interested students should ask their academic-unit offices about the availability of assistantships and the procedure for applying. Early inquiry is essential to be assured of meeting application deadlines. Appointments are made on the recommendation of the academic unit chair, subject to admission to the Graduate School and to the approval of the Dean of the Graduate School. Initial appointment requires clear evidence of superior ability and promise. Reappointment to assistantships requires evidence of continued good scholarship.

For fall appointments, apply to the appropriate academic unit chair, on or before February 15th of each year, unless otherwise specified. Deadlines for appointments for other terms are determined by the employing unit.

Fellows, trainees, and graduate assistants must pay appropriate tuition and fees. Fellows receiving stipends of \$4,000 or greater per term (prorated for summer) are expected to devote full time to their studies. Students who accept fellowships and traineeship are required to register appropriately. Trainees are also expected to devote full time to their studies. Graduate assistants have part-time teaching or research duties; they are required to register for reduced credit loads, according to the schedule for their appointment. Students on appointment are financially liable for excess credits beyond the required registrations. **If a student on appointment drops below the required registration at any time in the semester, the student becomes financially liable for the entire registration.**

## University-wide Fellowships

### Graduate School Fellowship Program

The Graduate School Fellowship program (GSF) represents one of the most prestigious graduate student award available at the University. Funded at competitive levels, these desirable awards support students in all programs and departments of the University awarding a Ph.D. or M.F.A.

To ensure that Graduate School Fellows receive every opportunity to succeed, the GSF will provide four years of stipend support. Tuition and health insurance are also provided for new students formally admitted into Ph.D. programs. M.F.A. students receive three-year GSF awards. Students may be appointed as graduate assistants, research assistants, teaching assistants, or fellows.

The University expects Graduate School Fellows to demonstrate high levels of academic achievement and active participation in university life. GSF recipients are selected by their departments or programs of their major field of study. For more information on the GSF program, please contact the graduate coordinator for the degree program of interest.

## **Grinter Fellowship**

Named in honor of Dr. Linton E. Grinter, Dean of the Graduate School from 1952 to 1969, this fellowship provides stipend supplements to assist in recruiting exceptional graduate students. Currently enrolled graduate students are not eligible, except when entering a Ph.D. (or other terminal degree) program. Stipend supplements are \$2000 to \$4000 per year for up to three years. Continuing the Grinter Fellowship beyond the first year depends on satisfactory student progress. Students in the Colleges of Engineering and Law are not eligible for this award.

For further details, please contact the appropriate major academic unit.

## **Title VI: Foreign Language and Area Studies Fellowship**

Title VI fellowships are available to graduate students whose academic programs are Latin America, Africa, or Europe oriented.

Applicants must be U.S. citizens or permanent residents and must be registered for a full-time course load including a language relevant to the area of their choice: specifically, Portuguese or Haitian Creole for recipients through the Center for Latin American Studies; Akan, Amharic, Arabic, Swahili, Wolof, Yoruba, Zulu or other African languages for which appropriate instruction can be arranged, for recipients through the Center for African Studies; and Czech, Greek (modern), Hungarian, Italian, Polish, Portuguese, Russian, Turkish, or other lesser and least commonly taught European languages for which appropriate instruction can be arranged for recipients through the Center for European Studies. The fellowships provide a \$15,000 stipend for the academic year and \$2,500 for the summer plus payment of all tuition and fees up to 12 credits. Academic year and summer fellowship programs have separate application processes.

For more information, contact:

Center for Latin American Studies  
(319 Grinter Hall, <http://www.latam.ufl.edu>);

Center for African Studies  
(427 Grinter Hall, <http://www.africa.ufl.edu>); or

Center for European Studies  
(3324 Turlington Hall, <http://www.ces.ufl.edu>).

## **Veterans Administration and Social Security Administration Benefits Information**

### **Veterans Benefits**

For information regarding veteran education benefits please visit the UF Office of Veterans Affairs.

For further GI Bill information, please visit <http://www.benefits.va.gov/gibill/>

### **Social Security Benefits**

Inquiries related to Social Security benefits should be directed to the student's local Social Security Office. The Office of the University Registrar will complete enrollment certificates issued by the Social Security Administration for students eligible to receive educational benefits. A full-time graduate load is nine hours.

## **External Fellowships for Graduate Students**

For information on external fellowships, small grants, and other funding opportunities:  
<http://research.ufl.edu/faculty-and-staff/finding-funding/external-funding-opportunity-resources.html>

The COS/Pivot Funding Opportunities database and the GrantForward Database are keyword searchable and highly recommended as information resources  
<http://guides.uflib.ufl.edu/content.php?pid=215478&sid=1953084>.

The Graduate School posts information concerning external funding opportunities at  
<http://graduateschool.ufl.edu/finances-and-funding/financial-aid-bulletin-board>

## Graduate School Support Programs

### Dissertation Completion Assistance

**Graduate School Dissertation Awards:** The Graduate School Dissertation Award is a competitive award to provide final term funding for UF Ph.D. candidates in selected majors in the humanities, arts, and social sciences to complete their dissertations through defense, final clearance by the Editorial Office, and graduation. This program is for students who have exhausted all funding and meant to allow recipients time and resources to focus exclusively on completing their dissertation by the end of the award period.

The program provides a stipend for approximately 4-6 months. The award periods will be 1) Summer B plus Fall, 2) Fall, 3) Spring, or 4) Spring plus Summer A. Up to 5 credits of tuition at the instate rate will be provided depending on the award period. Students are expected to graduate at the end of the award period. Applicants may not receive a fellowship, assistantship, or other funding with this award.

The application and deadlines are posted on the website <http://www.graduateschool.ufl.edu/finances-and-funding/dissertation-award>

**Graduate School Doctoral Research Travel Awards:** The Graduate School Doctoral Research Travel Award provides support for research-related travel expenses for UF Ph.D. students in the humanities, arts, and social sciences. This program is for students who have inadequate departmental funding to effectively conduct doctoral dissertation research away from UF.

Students selected for the Graduate School Doctoral Research Travel Award can receive up to \$5,000 for doctoral research-related travel for one semester—Fall, Spring, or Summer C. A limited number of awards will be available each semester depending on the level of available funding.

For more information and application process and deadlines, see website  
<http://www.graduateschool.ufl.edu/finances-and-funding/doctoral-research-travel>

**Supplemental Tuition Retention Award:** This award assists doctoral students in completing their degrees by providing tuition support at the in-state level and involves their participation in Graduate School-sponsored workshops. Students within 3 semesters of completing their Ph.D., who no longer have funding available through an assistantship or fellowship, are eligible to receive limited tuition assistance for the remaining semesters. The tuition assistance is not given in the form of cash, employment, tuition, or fee waiver; it is paid directly to Student Financial Services. This award is limited to U.S. citizens or permanent-residents.

Applications may be obtained at  
<http://www.graduateschool.ufl.edu/finances-and-funding/supplemental-retention-scholarships>

### Office of Graduate Minority Program (OGMP) Student Support



The following fellowships and programs are administered by the Graduate School's Office of Graduate Minority Programs (OGMP) <http://www.graduateschool.ufl.edu/student-life-and-support/diversity-programs> mailing address: 115 Grinter P.O. Box 115500 Gainesville, FL 32611 Phone: (352) 392-6444, (800) 753-9798, email: [ogmp@ufl.edu](mailto:ogmp@ufl.edu)

**Florida Board of Education (BOE) Summer Program:** BOE is held during Summer B and is an orientation program for ethnic/cultural minorities, first-generation college students, students from a low socio-economic background, and students who are underrepresented in various academic disciplines. This program provides opportunities for newly admitted Ph.D. students to build support networks and become acclimated to UF and the Gainesville community. Participants receive a \$3,500 stipend and payment of 4 credits for Summer B. U.S. citizens and permanent residents who meet criteria for eligibility and who have been admitted to a UF graduate program are invited to apply online at: <http://www.graduateschool.ufl.edu/finances-and-funding/florida-boe-summer-fellowship-program>

**Florida A&M University (FAMU) Feeder Program:** UF is 1 of over 40 universities in the FAMU Feeder Program aimed at increasing the number of FAMU students in graduate programs. FAMU nominates students with at least a 3.0 GPA to participating feeder institutions for admission into their graduate programs. OGMP is UF's main contact for the feeder program. UF offers five fellowships every year to qualified FAMU Feeder students who have been admitted to a Ph.D. program. Each fellow receives a \$13,000 annual stipend, in-state tuition and health insurance for up to three years. For information please visit: <http://www.graduateschool.ufl.edu/finances-and-funding/famu-feeder-program>

**McKnight Doctoral Fellowship Program:** The Florida Education Fund (FEF) awards McKnight Doctoral Fellowships (MDF) to African American and Hispanic students who are U.S. citizens and newly admitted into Ph.D. programs at Florida institutions. However students must submit an application for the McKnight Doctoral Fellowship to FEF by January 15. Awardees are selected from students who are newly admitted to Ph.D. programs and who have submitted a complete application to FEF. The Fellowship provides a \$12,000 annual stipend, in-state tuition, fees, and health insurance for up to 5 years, provided there is satisfactory progress toward completing the degree. To apply for the McKnight Doctoral Fellowship, students should contact FEF for applications and more information and visit the MDF website: <http://www.fefonline.org/mdf.html>

Application deadline: January 15

Florida Education Fund  
201 East Kennedy Blvd.  
Suite 1525  
Tampa, FL 33602  
Phone (813) 272-2772

**University of Florida/Santa Fe College Faculty Development Project:** This partnership initiative allows UF doctoral students to teach as adjunct professors at Santa Fe College. Participants who teach 3 courses per year at SFC and help SFC recruit and retain minority students, are appointed on an annual basis. The program provides a \$13,000 stipend for 9 months, in-state tuition, fees and health insurance for fall and spring semesters. Students are selected for participation based on the academic and personnel needs of Santa Fe College. Faculty Development Project applicants must be U.S. citizens, from a minority or underrepresented group, and hold a master's degree or 18 credit hours of graduate level credit in one of the approved disciplines. For additional information: <http://www.graduateschool.ufl.edu/finances-and-funding/uf-sfcc-development-project>

**National Consortium for Graduate Degrees for Minorities in Engineering and Sciences, Inc. (GEM)**

**Fellowship:** This fellowship program supports African American, Native American, and Hispanic students in pursuing the Master of Science degree in engineering and the Doctor of Philosophy degree in engineering and/or science disciplines. The GEM Fellowship Program provides funding for under-represented minority students at the master's and Ph.D. level through fellowships and paid summer internships. The GEM Consortium assists in the matching of industry to the students for the paid internship. Students matched for a paid internship are eligible to receive a stipend for both master's and doctoral fellowship recipients. Each M.S. applicant must be a junior, senior, or graduate of an engineering program with at least a 2.8 GPA. Each Ph.D. applicant must be a junior, senior, or graduate of an

engineering program with at least a 3.0 GPA. For additional information: <http://www.gemfellowship.org> or call (703) 562-3646

**Delores Auzenne Dissertation Award:** The Delores Auzenne Dissertation Award is a competitively awarded program for underrepresented Ph.D. students in the advanced writing stages of their dissertation. Applicants may not receive a fellowship, assistantship, or other funding with this award. The award provides half year (Spring semester and the following Summer C or Summer C and the following Fall semester) of support, which includes in-state tuition assistance of up to 3 hours of in state dissertation credit hours, and up to \$11,000 stipend. This award does not provide health insurance coverage.

Recipients may only receive the award once. The application deadlines are in April and November each year. Students must adhere to the following application guidelines to qualify for full consideration: Awardees will be expected to participate in at least 2 Professional Development Programs organized by the Graduate School, and provide regular updates of their writing progress. For more information: <http://www.graduateschool.ufl.edu/finances-and-funding/delores-auzenne-dissertation-award>

**Ronald E. McNair Graduate Assistantship Program:** UF provides a limited number of one-year research assistantships for newly enrolled McNair scholars who are entering a Ph.D. program. It provides a stipend of \$13,000, in-state tuition, fees, and health insurance. It assists students who have successfully completed the McNair Post-Baccalaureate Achievement Program as undergraduates. The student will be appointed and perform research assistant duties under faculty supervision. Since this program is intended to increase enrollment in Ph.D. programs, currently enrolled doctoral students are not eligible. Interested students who meet the eligibility requirements are invited to apply. For more information and application: <http://www.graduateschool.ufl.edu/finances-and-funding/mcnair-graduate-assistantships>

**Bridge to the Doctorate Fellowship:** The Bridge to the Doctorate (BD) Grant was awarded to UF by the National Science Foundation through the Florida-Georgia Louis Stokes Alliance for Minority Participation (FG-LSAMP) to enhance recruitment and retention of underrepresented minority students in Science, Technology, Engineering and Mathematics (STEM) disciplines. The BD provides stipends of \$30,000 per year for the first two years of doctoral studies for former LSAMP students who are entering Ph.D. programs after completing baccalaureate degrees. In addition, the grant provides funds for those two years for each BD student's cost of education (in-state tuition, fees and health insurance). The grants are awarded to institutions in two-year cycles.

**Campus Visitation Program (CVP):** This program invites prospective students who are underrepresented in graduate studies to visit the University of Florida campus. During the visitation, participants learn more about UF's graduate programs and meet with administrators, faculty members, and current graduate students. CVP is held for 2 days during fall semester. OGMP provides housing and some meals. Participants are reimbursed for a portion of their travel expenses. Students must meet the minimum UF requirements of an undergraduate GPA (3.0), must have taken the graduate entrance examination (GRE, GMAT, etc.), and must have applied to the Graduate School to be considered for acceptance. Program applicants must be U.S. citizens or permanent-residents. For more information: <http://graduateschool.ufl.edu/admission/campus-visitation-program>

For additional information about any of the above offerings, you may contact the OGMP office at

115 Grinter  
P.O. Box 115500  
Gainesville, FL 32611

Phone:  
(352) 392-6444, (800) 753-9798  
Email: [ogmp@ufl.edu](mailto:ogmp@ufl.edu)

Visit online at <http://www.graduateschool.ufl.edu/student-life-and-support/diversity-programs>

**Please note:** The UF Office of Graduate Minority Programs is not involved in processing applications or making admissions decisions. The student's academic unit is the primary contact for both. For questions about the online

application process, please contact the UF Office of Admissions directly. Contact information can be found at the bottom of the UF office of admission website: <http://www.admissions.ufl.edu/>

## **Office for Student Financial Affairs**

Financial aid is available to qualified graduate students through the Office for Student Financial Affairs (SFA) in S107 Criser Hall, mainly through work or loan programs.

Applying for financial aid at UF, including loans, begins with the FAFSA, the Free Application for Federal Student Aid. Apply on or soon after January 1 at <https://fafsa.ed.gov>. UF's "On-Time" deadline to receive the results of your FAFSA from the federal processor is March 15. Apply well before March 15 to ensure that the federal processor has time to analyze and send the results of your FAFSA to UF SFA. Apply as early as possible to be considered for the most, and best aid.

Students should not forget to reapply each year. Financial aid is not renewed automatically.

Although you must be accepted for enrollment at UF before you receive financial aid, you should apply for aid before being admitted.

## **Loans**

UF participates in the Federal Direct Loan Program. There are other loan programs available including UF Long Term Loans, UF Short Term Loans and Alternative Loans. Your eligibility is based on your classification, cost of attendance, and a number of other factors.

**Short-term loans:** UF has Short-Term Loans (STL) available to students enrolled at least half-time to help meet temporary, emergency financial needs related to educational expenses. Registered students with valid repayment sources may borrow up to \$1,000 if tuition is paid or deferred, or the amount of their in-state tuition. Interest is computed monthly at the rate of 1% on the unpaid balance from the date the loan is disbursed. A minimum of one month's interest will be charged if the loan is paid in full within 30 days. Short-Term Loans must be repaid either when the repayment source is received, or by the established repayment deadline for the semester in which the loan was received, whichever comes first.

For more information regarding specific loan programs, please visit SFA's loan page at <http://www.sfa.ufl.edu/programs/loans>.

## **Part-Time Employment**

UF offers part-time student jobs through three employment programs: Federal Work-Study jobs, including the Federal Community Service component; Other Personnel Services (STAS); and off-campus jobs.

Federal Work-Study jobs are based on financial need. To apply for Federal Work-Study jobs, students must complete a FAFSA. STAS jobs are not based on financial need.

To search and apply for on-campus jobs, including all Federal Work-Study (FWS), Federal Community Service, and STAS positions, go to GatorJobs. Choose "Search Postings." For "Job Type," choose "Student."

Search for off-campus jobs through the Career Resource Center website, <http://www.crc.ufl.edu>, using your Gator CareerLink Account.

For more information and how to apply:  
<http://www.sfa.ufl.edu/programs/employment>

## **Academic Progress Policy for Financial Aid Recipients**

Students receiving financial aid must be making satisfactory academic progress under UF's published standards. UF's financial aid academic progress policy is available on the Office for Student Financial Affairs (SFA) website at <http://www.sfa.ufl.edu/additional/academic-progress>.

## Student Services

*The information in this catalog is current as of June 2015. Please contact individual units for any additional information or changes.*

- Career Resource Center
- Centers and Institutes
- Counseling and Wellness Center
- English Skills for International Students
- Gator 1 Card
- Graduate International Outreach
- Graduate Minority Programs
- Graduate Professional Development
- Graduate School Editorial Office
- Graduate Student Council
- Graduate Student Email Listserv and GIMS
- Graduate Student Handbook
- Graduate Student Records
- Housing
- Ombuds
- Research and Teaching Services
- Speech and Hearing Center
- Student Health Care Center
- UF International Center
- University Writing Studio
- Workshops for Teaching Assistants

## Career Resource Center

The Career Resource Center, known as the CRC, is a comprehensive career planning facility located on the 1st floor of the J. Wayne Reitz Union. The CRC is the only centralized unit on campus providing resources for all graduate students across all disciplines. Information specifically for graduate students is located at <http://www.crc.ufl.edu/students/studentGraduateGlance.html> to help students explore career paths as well make connections to employers.

The CRC provides opportunities for students to explore career paths with resources from Career Planning Appointments, where you can discuss interests one-on-one with a staff member, to workshops to prepare students for careers inside and outside of academia. Graduate students can also take advantage of our job preparation resources and networking opportunities with employers from all disciplines. Graduate students can activate their Gator CareerLink account to have access to our event calendar, mock interview module, job and internship postings, and our employer directory.

Get started with the Career Resource Center, visit us online [www.crc.ufl.edu](http://www.crc.ufl.edu), stop into our office for quick questions Monday through Friday, or schedule a Career Planning Appointment online. The CRC works with students in all disciplines and best of all, it's free.

## Centers and Institutes

As a major research institution, UF has a number of research areas designated as Centers or Institutes. There are more than 150 Centers and more than 30 recognized institutes. Ten of these centers and institutes with campus-wide missions report to the Vice President for Research: <http://www.research.ufl.edu/or/about/centers-and-institutes.html>

For more information, contact the unit directly.

## Counseling and Wellness Center

The Counseling and Wellness Center (CWC) offers services to currently enrolled graduate students for personal and educational concerns. Graduate students who are not currently registered may be eligible to pay an off semester fee for services (please inquire for details).

Professional counselors offer short-term individual, couples, and group counseling. There is no charge for the Center's confidential services. Topics of services for graduate students often include help with concerns related to academic success, time and stress management skills, anxiety and depression, personal and family relationships, adjustment to the culture, and other issues associated with transition.

Counseling and Wellness Center clinicians also provide a range of consultation and outreach programs to the campus community. Phone or in-person consultation is available for students, parents, faculty, and staff regarding any issues related to student development. The CWC clinicians serve as program resources for a wide variety of student organizations and academic departments. The Center has an extensive training program for selected graduate students. The clinical staff teaches undergraduate and graduate courses in the Departments of Psychology and Counselor Education and guest lecture on a variety of psychological and wellness topics.

All CWC activities are conducted with sensitivity to the diversity of the students on a large, multicultural campus.

For more information, phone (352) 392-1575, or visit <http://www.counseling.ufl.edu>.

The CWC is located at 3190 Radio Road (down the street from Lakeside and SW Rec Center).

## English Skills for International Students

The University of Florida makes available three English language programs to help international graduate students improve their proficiency in English under the umbrella of the UF English Language Institute. These programs are 1) Academic Spoken English, 2) Academic Written English, and 3) the Intensive English Program.

The Academic Spoken English (ASE) program consists, primarily, of the 03 credit supervised ITA teaching course---EAP 5836. This course is required of all international teaching assistants (whose first language is not English) during their first semester of teaching at UF, whose TOEFL-IBT Speaking score is between 23–27 or UF SPEAK score is 45–50. A 04 credit EAP 5835 course is also offered for students who need to make rapid progress in their oral proficiency in English or who desire to improve their performance on a UF SPEAK test. These two credit-bearing courses are eligible for a graduate tuition waiver. Non-credit ASEP classes intended to help with general oral communication in English skills (fluency, pragmatics, pronunciation) are offered each semester if there is sufficient student demand. Information about ASE can be found at <http://ase.ufl.edu/>.

The Academic Written English (AWE) program is designed to help international graduate students improve their writing ability. Applicants admitted with low verbal GRE scores, or those demonstrating a lower proficiency than needed for successful performance in written tasks as determined by their academic unit, may be required to enroll in a Scholarly Writing course. Students may also self-select to enroll in these classes if they find they need additional academic writing support to be successful. The Scholarly Writing course is offered as a non-credit class lasting six

weeks. This course is not eligible for a tuition waiver and is not offered as a distance education class. Information about AWE can be found at <http://www.eli.ufl.edu/programs/AcademicWrittenEnglish.html>.

The Intensive English Program can help graduate applicants improve their spoken and written English prior to beginning graduate studies. In some cases, applicants with low or missing English test scores may receive ELI Conditional Admission, requiring them to exit the Intensive English Program before receiving full admission to their graduate programs. Information about the Intensive English Program can be found at <http://www.eli.ufl.edu/>.

## **Gator 1 Card**

The Gator 1 Card is the official University of Florida picture ID card. A valid Gator 1 Card must be presented to transact business at University Financial Services, athletic event tickets, Gator Dining accounts, CIRCA computer labs, University Libraries, and all recreational facilities. The Gator 1 Card can be obtained and purchased for \$15.00 at the Gator 1 Central Office located at the UF Bookstore and Welcome Center at the Museum Road entrance. An official picture ID (military ID, passport, or driver's license) is required. A student's spouse or domestic partner may also obtain a Gator 1 ID; verification of eligibility for a spouse or domestic partner is performed by Student Legal Services. For information and instructions visit their website at <https://www.studentlegalservices.ufl.edu/Gator1Registration.aspx>. After Student Legal Services approves the request, contact the Gator1 Central Office to obtain the ID Card. The cost of the card is \$15.00; payment may be made with cash, check or a credit card. The Gator 1 Central Office may be contacted at 352-392-8343.

## **Graduate International Outreach**

The Office of Graduate International Outreach (OGIO) in the UF Graduate School serves as a catalyst for collaboration with regard to international outreach, recruitment, and student success within the university community. The office is a resource for information on international outreach opportunities, and leverages existing structures in the interest of international outreach and student success. The OGIO creates and supports existing successful initiatives with regard to international outreach/recruitment efforts across campus; and supports international student advancement and success.

## **Graduate Minority Programs**

The Office of Graduate Minority Programs (OGMP) is defined by its student-centered support services. The OGMP administers various multicultural educational programs that support and foster an intellectually and culturally diverse student population.

The OGMP's staff accomplishes this by actively working with academic units to recruit and retain students who are underrepresented in their field of study, low-income, first-generation students, as well as ethnic/cultural minorities (African Americans, Hispanics, Native Alaskans [Aleuts and Eskimos], Native Americans, and Native Pacific Islanders).

## **Specialized Programs for Recruitment, Retention and Completion**

Recruitment activities occur through Graduate School programs, including the two-day Campus Visitation Program (CVP), the Graduate School Information Day, and the HBCU-UF Master's to the PhD Pathway Project. Student funding opportunities are available through the Florida Board of Education (BOE) Summer Fellowship Program, Florida A&M University (FAMU) Feeder Program, McKnight Doctoral Fellowships, UF/SFC Faculty Development Project, National Consortium for Graduate Degrees for Minorities in Engineering and Sciences, Inc. (GEM) Fellowships, McNair Graduate Assistantship Program, NSF Florida-Georgia Louis Stokes Alliance for Minority Participation Bridge to the Doctorate, and the NSF Atlantic Coast–Social, Behavioral and Economic Sciences Alliance. Retention and completion support programs include the Supplemental Retention Scholarship Award, Delores Auzenne Dissertation Award, For more information, visit OGMP's website.

## Graduate Professional Development

The Office of Graduate Professional Development (OGPD) is a newly formed office in the Division of Graduate Student Affairs in the Graduate School. This office provides resources and opportunities for graduate students to gain information, insights and skills they can use in academia and the job market. Currently, OGPD initiatives include

- Professional Development Workshop series (Fall/Spring). These workshops are now offered as webinars to our online graduate students and cover topics such as effective time management, research strategies, preparing for examinations and final defenses, and publishing manuscripts. Video recordings of the previous workshops and webinars can be found in the Graduate Information Management System (GIMS).
- Leadership Traits series (Fall/Spring). These workshops are also offered as webinars and focus on character traits that help graduate students successfully complete their graduate program, as well as stand out as a great leader among their peers for future jobs.
- OGPD also works closely with the Graduate Student Advisory Council (GSAC), a graduate student organization that focuses on providing more opportunities for graduate students with respect to teaching, mentoring, and ethics. GSAC signature events include
  - Graduate Student Research Day (GSRD) in the fall
  - Three Minute Thesis® in the spring
- Grants and Fellowship Conference (Spring) that provides information for both graduate and undergraduate students on funding options through grants and fellowships. This includes information regarding specific fellowships like the "National Science Foundation's Graduate Research Fellowship Program," "National Institute of Health Fellowships," "Fellowships and Grants for the Arts and Humanities," as well as more general information on "How to Find Funding Using Key Words and Proper Databases" and "How to Write a Proposal."

Announcements of these events, and deadlines for all award programs, are made through the graduate student listserv.

For more information, visit the website at <http://graduateschool.ufl.edu/student-life-and-support/diversity-programs> or email Dr. Katie Indarawis at [kindarawis@aa.ufl.edu](mailto:kindarawis@aa.ufl.edu)

## Graduate School Editorial Office

The Graduate School Editorial Office provides format requirements for theses and dissertations on the editorial page of the Graduate School website in order to help students prepare their manuscripts for submission to the Editorial Office. The Graduate School Editorial Office facilitates the thesis and dissertation process, by providing clear guidelines and checklists, and by outlining the procedures to follow when completing the thesis or dissertation. In order to complete degree requirements, all thesis and dissertation students must gain final clearance status with the Editorial Office by each of the posted deadlines for the term in which they intend for the degree to be awarded.

The following procedures apply to the Graduate School's editorial services to students:

Upon submission to the Graduate School Editorial Office, a thesis or dissertation should be near-final and must be completely formatted. It will not be accepted as meeting first submission requirements in draft form.

Additionally, master's theses must be orally defended before making submission to the Graduate School Editorial Office. Accordingly, the Final Exam data must be posted to GIMS by the department, before the document can be submitted to the Editorial Office for review. Subsequently, a master's student who does not defend the thesis prior to the first submission deadline will not be eligible for a degree award in the current term; nor is the student a clear-prior candidate to the following term, since they were unable to meet the first submission requirement.

The thesis or dissertation must be of publishable quality and must be in a form suitable for publication, using the Graduate School's format requirements found here.

The student's department is responsible for quality and scholarship.

Graduate Council requires the Graduate School Editorial Office, as agents of the Dean of the Graduate School, to briefly review theses and dissertations for acceptable format, and to make recommendations as needed.

The Application Support Center, although not a part of the Graduate School Editorial Office, provides assistance to students seeking help with the guidelines of the Editorial Office free of charge. Their services are invaluable to students concerned about meeting the submission standards of the Editorial Office. Students should avail themselves of these services long before making first submission to the Editorial Office. Appointments are encouraged, particularly well in advance of deadlines, because seats are extremely limited.

The Graduate School Editorial Office maintains a list of formatters, editors, and binders that students may hire for a fee, if needed; however, the Application Support Center also offers many formatting and conversion services at reasonable rates as well.

- Checklist for master's theses:  
<http://graduateschool.ufl.edu/files/checklist-thesis.pdf>
- Checklist for doctoral dissertations:  
<http://graduateschool.ufl.edu/files/checklist-dissertation.pdf>
- Graduate School Editorial Office:  
<http://graduateschool.ufl.edu/graduation/thesis-and-dissertation>
- Format requirements:  
<http://www.graduateschool.ufl.edu/files/etd-guide.pdf>
- Format examples:  
<http://helpdesk.ufl.edu/application-support-center/graduate-editorial-office/format-requirements/examples/>

For more information, contact:

Graduate School Editorial Office  
224-B, The Hub  
Gainesville, FL  
32611-5500

Phone: (352) 392-1282  
Email: [gradedit@aa.ufl.edu](mailto:gradedit@aa.ufl.edu)  
Website: <http://graduateschool.ufl.edu/graduation/thesis-and-dissertation>

## **Graduate Student Council**

The Graduate Student Council was formed in 1989 to foster interaction among graduate students on campus and to provide an agency for coordinating graduate student activities and programs. The GSC seeks the improvement of graduate student education through active and permanent communication with the Graduate School, the University administration, and the University of Florida Board of Trustees. It also represents the interests of graduate students at the student government, administration, local, state, and national levels. GSC is a dues-paying member of the National Association of Graduate and Professional Students.

## **Graduate Student Email Listserv, GatorLink, and the Graduate Information Management System (GIMS)**



The Graduate School communicates directly with enrolled graduate students via email using UF business email addresses; this listing generally corresponds to a student's GatorLink account. Students must establish a Gatorlink account and must check it regularly. In order to set up the required GatorLink account, one should visit their website at <http://www.gatorlink.ufl.edu>. The Graduate School cannot maintain personal email addresses.

The UF business email addresses of all currently enrolled graduate students are automatically added to the Graduate School's Graduate Student listserv. **A student cannot opt out of receiving these messages.** Messages contain time-sensitive information about important deadlines. An archive of messages is available at <http://lists.ufl.edu/archives/gradstudent-l.html>.

The Graduate Information Management System (GIMS) has information about important milestones, grants and fellowships, workshops, and many other pertinent items relevant to graduate education. Students must check GIMS on a regular basis.

## **Graduate Student Handbook**

The Graduate School provides additional information in the online Graduate Student Handbook: <http://www.graduateschool.ufl.edu/student-life-and-support/student-handbook>.

## **Graduate Student Records**

Graduate Student Records staff work with academic units to support students at all phases of their graduate careers, from admission through degree certification and graduation. The office is responsible for keeping the official graduate student record and ensuring compliance with all Graduate Council and University policies.

## **Housing**

Graduate students and their families are housed in graduate and family housing villages. All applicants must apply to the University and have a UF ID number. Due to limited space, all students are not guaranteed on campus housing.

For information, go to the Housing website, <http://www.housing.ufl.edu/gfh/choices/>.

To be eligible for Graduate and Family housing, all residents must make normal progress toward a degree in consultation with academic departments and Graduate and Family Housing policies. Please inquire at [villages@housing.ufl.edu](mailto:villages@housing.ufl.edu) for more information about general eligibility and/or eligibility as it relates to academic status.

## **Applying for Housing**

Each student must make personal arrangements for housing, either by applying to the Department of Housing and Residence Education for assignment to University housing facilities or by obtaining accommodations off campus.

For application information and to submit an application:  
<http://www.housing.ufl.edu/gfh/apply/howto/>

For off-campus housing information:  
<http://www.offcampus.ufl.edu/>

## **Graduate and Family Housing**

Village apartments are unfurnished. Residents in all villages must provide their own linens, dishes, rugs, curtains, or other similar items. Electricity is an additional expense and is billed with the rent. For questions about Graduate and Family Housing, please email [villages@housing.ufl.edu](mailto:villages@housing.ufl.edu), or call 352.392.2171 extension 10321.

The Continuum is UF affiliated off-campus Housing. To qualify for residency, Continuum residents must be matriculated, full-time or part-time (or equivalent) students enrolled in a graduate or professional school or a faculty or staff member at UF.

Additional information about all Graduate and Family Housing facilities is available at the following website:  
<http://www.housing.ufl.edu/gfh/choices/>

## Off Campus Life

The Office of Off Campus Life is part of the Division of Student Affairs and offers resources, services, education and support for students living off campus.

Services include a free Off Campus Housing Locator <http://housing.offcampus.ufl.edu> so students can search for apartments off campus based on price, number of bedrooms, location and several other criteria. Additional resources include the Off Campus Life website [www.offcampus.ufl.edu](http://www.offcampus.ufl.edu), which features the Gator Guide to Off Campus Life. The Gator Guide includes tips for finding off campus housing, average rental costs, lease information, safety information, transportation information and much more. Off Campus Life also provides one-on-one meetings for students looking for off campus housing. All resources and services are free to students. We are happy to help you with your questions and hope to see you at an upcoming OCL event.

To schedule an appointment or for questions:

- visit the Off Campus Life website, [www.offcampus.ufl.edu](http://www.offcampus.ufl.edu)
- stop by the Off Campus Life office, which is located in 311 Peabody Hall
- call Off Campus Life at (352) 392-1207

Like Off Campus Life on Facebook:

<https://www.facebook.com/UFOffCampusLife>

Follow OCL on Twitter:

<https://twitter.com/UFOffCampusLife>.

## Ombuds

The Office of the University Ombuds was established by the state legislature and reports through the Provost to the President. The Office helps students resolve problems and conflicts. It offers an informal avenue of redress for students' problems and grievances that arise in the course of interacting with the institution. By considering the problems in an unbiased way, the Ombuds works to achieve a fair resolution while protecting the rights of all involved parties.

**Resolving student academic issues:** The Office of the Ombuds deals with student concerns of an academic nature. In almost all instances, students should first contact the instructor, the academic unit chair, and the college dean before seeking help from the Ombuds, although in some rare circumstances earlier contact with the University Ombuds is beneficial.

**Resolving student non-academic issues:** In many instances, non-academic issues can be easily and readily resolved for students merely by facilitating direct communication and effective listening. For other problems not related to academic issues, the Offices of the Dean of Students and the University Ombuds may provide help or direct students to contact the appropriate campus office.

For more information, visit <http://www.ombuds.ufl.edu>.

## **Research and Teaching Services**

The University of Florida Graduate School offers research opportunities in a variety of fields. Our colleges and departments offer numerous majors and interdisciplinary research options. In addition, the University of Florida Libraries and the University Press of Florida offer extensive collections to guide your research. For information on these services and UF's state-of-the-art computer facilities, art galleries, performing arts centers, and museums, see the Research and Teaching Services Section of this catalog, where you can also find helpful information about UF's Office of Research.

## **University of Florida & UF Health Speech and Hearing Center**

Faculty in the Department of Speech, Language, and Hearing Sciences see inpatients at UF Health Shands Hospital in Gainesville and outpatients in the Speech and Hearing Center located at UF Health at Shands Hospital in Gainesville, as well as at UF Health Rehab at Magnolia Parke, UF Health Hearing Center at Hampton Oaks, and UF Health Hearing Center at Park Avenue. Our clinics serve the needs of the individual from initial evaluation through the rehabilitation process.

Members of our clinical staff are all Board Certified & Florida Licensed Audiologists and Speech-Language Pathologists. We are committed to maintaining the highest standard of excellence in all areas of service to the patient. Our clinics are premier centers for delivering speech, language, swallowing, hearing and balance services to individuals of all ages.

Speech & Hearing Center  
2nd Floor, Dental Tower  
1600 S.W. Archer Road  
Gainesville, Florida 32610  
Room: D2-055

Speech Pathology: (352) 273-5871  
Audiology: (352) 273-5555  
Fax: (352) 846-1565

## **Student Health Care Center, Infirmary Building, 280 Fletcher Drive**

### **Building a Healthy Foundation for The Gator Nation.**

The Student Health Care Center (SHCC) is an accredited outpatient clinic offering a wide variety student-focused services, including: General Medical Care/Primary Care; Health Counseling; Immunizations (seasonal flu shots, vaccinations for travel, etc.); Lab and X-ray/EKG Services; Pharmacy and Mini Drug Store; Sexual Health Services; Allergy Injection Clinic; Nutrition Services; Physical Therapy (operated by UF Health Rehab Services); Sports Medicine Clinic; and Women's Clinic.

Students are encouraged to view an introductory video and review basic information about the SHCC by visiting <http://shcc.ufl.edu/new-students>. Call before coming for same-day appointment availability (main phone: 352-392-1161), or schedule visits more than 24 hours out via phone or online at <https://my.shcc.ufl.edu>. PLEASE NOTE: Call your team or specialty clinic directly to cancel or cancel online at least 24 hours out to avoid a no-show fee.

The health fee, paid as part of tuition, helps pay for basic evaluations, but does not cover all possible charges at the SHCC. Patients are financially responsible for items including, but not limited to: physicals; procedures; X-rays; lab tests; medications; medical equipment; and physical therapy. Private health insurance plans are accepted for

payment of covered services, so be sure to bring all health insurance information to your first appointment. For more information about charges, billing and health insurance, please visit <http://shcc.ufl.edu/fees-and-insurance>.

The SHCC is proceeding with the Mandatory Health Insurance requirement as an Opt Out system where students who don't opt out by providing documentation of adequate health insurance will be automatically enrolled in the school-sponsored plan. They may either purchase outside health insurance that meets the requirements for comparable coverage or they can be auto-enrolled in the school-sponsored plan. Students will be auto-enrolled in the school sponsored Student Health Insurance Plan.

If a student currently has insurance, they will be required to review their insurance coverage and check that it meets the requirements set forth as comparable coverage. They will then need to submit their policy information online for verification by the end of drop/add but ideally much earlier. The charge for the school-sponsored Student Health Insurance Plan will be removed once submission is completed and verified. Health insurance information can be submitted at <http://studentinsurance.shcc.ufl.edu>. Once verified, the waiver is good for one year. Waivers must be submitted PRIOR to the deadline in order for charges to be removed.

**More information including insurance coverage guidelines, frequently asked questions, how to submit one's insurance information and more, can be found at** <http://studentinsurance.shcc.ufl.edu>.

## UF International Center (UFIC)

Located on 1765 Stadium Rd. Suite 170, Hub, the University of Florida International Center (UFIC), through Exchange Visitor Services, International Student Services, Study Abroad Services, and the Office of Global Engagement, serves in a leadership and facilitation role to further the University's international agenda, providing assistance and support to faculty, staff, administrators, and students as well as external stakeholders in their international activities. In addition to assisting these clients, the Center also functions to enhance the University's ability to pursue and develop international activities and partnerships appropriate to its core mission, motivating and mobilizing the UF community to integrate and sustain high-impact global dimensions in learning, discovery, and engagement, and provides administrative support to assure leadership for this vision.

For more information:

Phone: (352) 392-5323  
Fax: (352) 392-5575  
Email: [ufic@ufic.ufl.edu](mailto:ufic@ufic.ufl.edu)  
Website [ufic.ufl.edu](http://ufic.ufl.edu)

**Exchange Visitor Services** offers administrative, liaison, and support services for foreign national faculty, scholars, researchers and professionals. Additionally Exchange Visitor Services ensures that the university is in compliance with immigration laws and regulations affecting immigration statuses for sponsored foreign nationals and visiting scholars by providing technical and advisory information to the university community. Support services include assistance with immigration regulations compliance, pre-arrival procedures, and orientation to the campus and community.

**International Student Services** provides support services for international students through immigration document preparation, orientation, immigration services, and various workshops. These services include advising international students on academic, immigration, financial, cultural, and personal issues. All new international students are required to check-in with the International Center.

**Study Abroad Services** administers a wide range of programs that give students the opportunity to live and study abroad while fulfilling degree requirements. Students can choose among faculty-led summer programs, exchange programs, and independent programs for the summer, a semester, or an academic year as well as spring break, Thanksgiving break and other programs. Various scholarships and other financial aid can be applied to help finance the international academic experience. UF exchange programs enable students to pay UF tuition while studying

abroad. Study Abroad program assistants advise applicants on all aspects of UF approved programs, provide pre-departure orientations, and process the foreign transcript on return of the student. Study Abroad program details are available in the UFIC library or on the UFIC website.

**Office of Global Engagement** facilitates the engagement of UF faculty and students in international research, technical and development assistance, educational programs, outreach, and other related activities. Working closely with donors and funding agencies to engage other UF centers, academic units, and colleges, the office promotes programs and projects that capitalize on the strengths of UF's faculty and staff, build global partnerships, and achieve UF's goals.

## University Writing Program

The University Writing Program at the University of Florida cultivates effective communication for engaged citizens, supporting their work in academic, business, and international spheres.

The UWP prepares students and faculty to meet their academic and professional writing goals by delivering broad-based instruction in composition, by providing a writing studio for individualized help, and by hosting faculty and student workshops. The UWP houses coursework in First-Year Writing, Second-Year Analytical Thinking and Writing, Third-Year Professional Writing in the Disciplines, and Graduate-Level Scholarship and Publication.

Engaging with students and faculty at all levels of writing and at every stage in the writing process, the UWP develops fundamental concepts of critical reasoning and effective communication.

ENC 5319: Scholarly Writing for Publication is a "service course" to other Graduate-level programs: graduate students learn how to transform research in their field of study into publishable articles, drafting, editing, and revising their work with the guidance of instructor feedback and peer review. With sufficient data, students can produce an article ready for submission to a scholarly journal in their field of study over the course of the semester.

For more information, please see our website: <http://writing.ufl.edu>.

## University Writing Program Courses

- ENC 5319: Scholarly Writing for Publication

## University Writing Studio

The Writing Studio is part of the University Writing Program, located in 302 Tigert Hall. The Studio's graduate student tutors provide one-on-one writing help for both undergraduate and graduate students. In 30-minute sessions, the Studio advises students on papers written for graduate school classes and theses or dissertations. The Studio also provides help with application essays and personal statements for graduate school applications. Students can make appointments—for daytime sessions in Tigert or evening sessions in Library West—at [www.writing.ufl.edu](http://www.writing.ufl.edu). Phone: (352) 846-1138.

## Workshops for Teaching Assistants

The Graduate School and the Teaching Center offer an orientation and a series of workshops for teaching assistants to improve their instructional skills. The orientation and "getting started" workshop are mandatory for all graduate students starting teaching assignments. Some topics included in the workshop series are presentation skills, course and lecture planning, techniques for improving student attention and motivation, group dynamics, testing and grading, use of technology to enhance learning, and how to elicit and interpret feedback. TAs who complete a significant percentage of the workshops are awarded certificates. To register or for more information go to TA Development at <https://www.teachingcenter.ufl.edu>, call the Teaching Center, 392-2010, or visit the office on the ground level,

Southwest Broward Hall. Teaching at the University of Florida: A Handbook for Teaching Assistants is available at [https://www.teachingcenter.ufl.edu/ta\\_development.html](https://www.teachingcenter.ufl.edu/ta_development.html).

## College of Agricultural and Life Sciences

Dean: Elaine Turner

Complete faculty listings: Follow this link.

The College of Agricultural and Life Sciences offers academic programs and grants advanced degrees in 17 departments and the Schools of Forest Resources and Conservation, and Natural Resources and Environment. These academic units are all a part of the Institute of Food and Agricultural Sciences (IFAS). Additional components of IFAS include 16 research centers located throughout the state and cooperative extension offices in each of the 67 counties of the state.

The following courses are offered under the supervision of the office of the dean by an interdisciplinary faculty and deal with material of concern to two or more IFAS academic units. The courses are also open to students of other colleges, with the permission of the course instructor.

For more information, please see our website: <http://cals.ufl.edu>

Departments and Programs within the College of Agricultural and Life Sciences

College of Agricultural and Life Sciences Courses

## Genetics and Genomics (CALS)

### College

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Medicine

### Genetics and Genomics Program Information

*Program Co-Directors:* Connie Mulligan and John M. Davis

*Complete faculty listing:* Follow this link

The University of Florida Genetics Institute is a multi-college, multi-faceted research center which offers the a degree program leading to the Ph.D. in Genetics and Genomics. Minimum requirements for this degree are available in the Graduate Degrees section of this catalog.

What defines the Genetics & Genomics Graduate Program is the philosophy that good geneticists are integrative geneticists, who incorporate many different subfields of genetics into their work. Accordingly, faculty interests and graduate research opportunities include a wide range of areas: advances in gene therapy, understanding the maintenance of genetic variation, understanding plant immune responses, developing improved algorithms for identifying regulatory motifs in DNA sequences, and the challenges of bioethics to strategies for controlling malaria. Due to the fundamental nature of genetics in the life sciences, our training program is distributed across several

colleges at UF, including but not limited to the College of Medicine, the College of Liberal Arts and Sciences, and the College of Agricultural and the Life Sciences.

## **Graduate Program Overview**

### **First Year:**

- Advanced Genetics (PCB 5065)
- Genomics & Bioinformatics (GMS 6231)
- Statistical Methods Research II (STA 6167)
- Advanced Molecular & Cellular Biology (BCH 6415)
- Ethics in Genetics (GMS 6221)
- Seminar in Genetics (GMS 6290) begins in the first semester and continues throughout students' graduate careers

The first year core training is the research rotation program, in which students "rotate" through three labs in a minimum of two colleges. Rotations are critical to selecting a graduate advisor: they provide a hands-on opportunity to participate in the research being conducted in a lab, and a mutual opportunity to evaluate fit between advisor and prospective student.

### **Second Year:**

- Individual program of courses and requirements is developed in consultation with major professor and dissertation committee

Admission Standards: Prospective students should have strong backgrounds in biology and other hard sciences. Exceptional students with other backgrounds will also be considered. The research statement required as part of the application has a particularly important part in the admissions decision. Each applicant must describe his/her research interests, so that Graduate Faculty can evaluate knowledge of the discipline, fit to the program, and ability to articulate and motivate an interesting research problem. The required Letters of Recommendation are also extremely important in helping identify applicants with exceptional aptitude for genetics, and with research experience and promise.

Contact the Genetics and Genomics Graduate Program by email, [UFGI-Info@uad.ufl.edu](mailto:UFGI-Info@uad.ufl.edu) or by phone, 352-273-8100.

For more information, visit our website: <http://www.ufgi.ufl.edu>.

## **Degrees Offered with a Major in Genetics and Genomics**

Doctor of Philosophy

Doctor of Philosophy - Clinical and Translational Science

## **Courses**

- AGR 6322: Advanced Plant Breeding
- ANG 6532: Molecular Genetics of Disease
- ANG 7979: Advanced Research
- ANG 7980: Research for Doctoral Dissertation
- BCH 6415: Advanced Molecular and Cell Biology
- BCH 7410: Advanced Gene Regulation

- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5805: Computer Simulation Concepts
- CIS 6930: Special Topics in CIS
- COT 5405: Analysis of Algorithms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6920: Genetics Journal Colloquy
- GMS 7979: Advanced Research
- GMS 7980: Research for Doctoral Dissertation
- HOS 6201: Breeding Perennial Cultivars
- PCB 5065: Advanced Genetics
- PCB 5235L: Experiments in Immunology
- PCB 5615: Molecular Evolution and Systematics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6178: Genetic Data Analysis
- STA 6208: Basic Design and Analysis of Experiments
- STA 6329: Matrix Algebra and Statistical Computing
- STA 6934: Special Topics in Statistics
- STA 7979: Advanced Research
- STA 7980: Research for Doctoral Dissertation
- ZOO 6927: Special Topics in Zoology
- ZOO 7979: Advanced Research
- ZOO 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine



- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Agricultural and Biological Engineering Department**

College of Agricultural and Life Sciences

*Chair:* Dorota Z. Haman

*Graduate Coordinator:* Greg Kiker

*Complete faculty listing by department:* Follow this link.

The Master of Science and Doctor of Philosophy degrees in agricultural and biological engineering are offered in the areas of agricultural operations management and applied science through the College of Agricultural and Life Sciences. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Master of Science and Doctor of Philosophy in the agricultural operations management area of specialization provide for scientific training and research in technical agricultural management. Typical plans of study focus on advanced training in environmental systems management, production systems management, construction and process management and technical sales management.

For students with basic science degrees, the Doctor of Philosophy program with a specialization in applied sciences through the College of Agricultural and Life Sciences provides advanced training in problem-solving capabilities, interdisciplinary research, and methods for applying science to real-world problems and issues. Typical emphasis is on (1) the use of engineering methods and approaches, such as mathematical modeling, optimization, and information technologies, in application of science to problems of various spatial and temporal scales; and (2) an interdisciplinary experience in research at the doctoral level.

The requirements for a master's degree normally take 2 years to complete. The length of time required for the Doctor of Philosophy degree depends partly on the research topic, but normally takes 3 to 4 years.

For more information about the program, please visit the program link below and the graduate studies pages on the departmental website at <http://www.abe.ufl.edu>.

## **Agricultural and Biological Engineering (CALS)**

### **College**

- College of Agricultural and Life Sciences

### **Department/School**

Agricultural and Biological Engineering Department

### **Agricultural and Biological Engineering Program**

The degrees of Master of Science, Master of Engineering, and Doctor of Philosophy are offered with graduate programs in agricultural and biological engineering through the College of Engineering. The Master of Science and Doctor of Philosophy degrees in agricultural and biological engineering are offered in the areas of agricultural operations management and applied science through the College of Agricultural and Life Sciences. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

A combined B.S./M.S. program allows up to 12 graduate credits to be double counted toward fulfillment of both degrees. Contact the graduate coordinator for qualifications and details. A 30-credit, nonthesis master's degree program is also available to students interested in completing the requirements in 1 year.

The **Master of Science, Master of Engineering, and Doctor of Philosophy** (Engineering) degrees are offered in the following areas of research:

Agricultural production includes development and application of precision agriculture concepts and tools, climate risk in agriculture, pesticide application, post-harvest operations robotics and other machine systems and environmental control systems. Applications to space agriculture are included in cooperation with NASA at Kennedy Space Center.

Biological engineering includes biocomplexity analysis, ecological modeling, risk and decision analysis, bioprocess design, plant biotechnology, process microbiology, food process engineering, environmental biotechnology, bioreactors, and packaging science.

Information systems includes development and application of GIS and remote sensing, communications, mathematical modeling, and expert systems techniques to biological and agricultural systems.

Land and water resources includes soil-water-plant relations, irrigation, water quality, watershed hydrology, BMP and TMDL studies, hydrologic modeling, ecological restoration, environmental fate and transport of nanoparticles, waste management, and water reuse.

Students also may choose to participate in interdisciplinary concentrations in hydrologic sciences, geographic information sciences, particle science and technology, and interdisciplinary ecology.

The **Master of Science and Doctor of Philosophy** (CALS) in the agricultural operations management area of specialization provide for scientific training and research in technical agricultural management. Typical plans of study focus on advanced training in environmental systems management, production systems management, construction and process management and technical sales management.

For students with basic science degrees, the Doctor of Philosophy program with a specialization in applied sciences through the College of Agricultural and Life Sciences provides advanced training in problem-solving capabilities, interdisciplinary research, and methods for applying science to real-world problems and issues. Typical emphasis is on (1) the use of engineering methods and approaches, such as mathematical modeling, optimization, and information technologies, in application of science to problems of various spatial and temporal scales; and (2) an interdisciplinary experience in research at the doctoral level.

The requirements for a master's degree normally take 2 years to complete. The length of time required for the Doctor of Philosophy degree depends partly on the research topic, but normally takes 3 to 4 years.

Additional information can also be found on the graduate studies pages on the department website at [www.abe.ufl.edu](http://www.abe.ufl.edu).

## **Degrees Offered with a Major in Agricultural and Biological Engineering**

### **Doctor of Philosophy**

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

Master of Science

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

## **Agricultural and Biological Engineering Courses**

- ABE 5015: Empirical Models of Crop Growth and Yield Response
- ABE 5038: Recent Developments and Applications in Biosensors
- ABE 5152: Electro-Hydraulic Circuits and Controls
- ABE 5332: Advanced Agricultural Structures
- ABE 5442: Advanced Agricultural Process Engineering
- ABE 5643C: Biological Systems Modeling
- ABE 5646: Biological and Agricultural Systems Simulation
- ABE 5653: Rheology and Mechanics of Agricultural and Biological Materials
- ABE 5663: Advanced Applied Microbial Biotechnology
- ABE 5707C: Agricultural Waste Management
- ABE 5815C: Food and Bioprocess Engineering Design
- ABE 6005: Applied Control for Automation and Robots
- ABE 6031: Instrumentation in Agricultural Engineering Research
- ABE 6035: Advanced Remote Sensing: Science and Sensors
- ABE 6037C: Remote Sensing in Hydrology
- ABE 6252: Advanced Soil and Water Management Engineering
- ABE 6254: Simulation of Agricultural Watershed Systems
- ABE 6265: Vadose Zone Modeling
- ABE 6266: Nanotechnology in Water Research
- ABE 6615: Advanced Heat and Mass Transfer in Biological Systems
- ABE 6644: Agricultural Decision Systems
- ABE 6816: Food and Bioprocess Sterilization
- ABE 6905: Individual Work in Agricultural and Biological Engineering
- ABE 6910: Supervised Research
- ABE 6931: Seminar
- ABE 6933: Special Topics in Agricultural and Biological Engineering
- ABE 6940: Supervised Teaching
- ABE 6971: Research for Master's Thesis
- ABE 6972: Research for Engineer's Thesis
- ABE 6974: Nonthesis Project

- ABE 6986: Applied Mathematics in Agricultural and Biological Engineering
- ABE 7979: Advanced Research
- ABE 7980: Research for Doctoral Dissertation
- AOM 5334C: Agricultural Chemical Application Technology
- AOM 5431: GIS and Remote Sensing in Agriculture and Natural Resources
- AOM 5435: Advanced Precision Agriculture
- AOM 6905: Individual Work in Agricultural Operations Management
- AOM 6932: Special Topics in Agricultural Operations Management
- CWR 6536: Stochastic Subsurface Hydrology
- PKG 5003: Advanced Distribution and Transport Packaging
- PKG 5006: Advanced Packaging Principles
- PKG 5105: Advanced Consumer Products Packaging
- PKG 5206C: Advanced Package Decoration
- PKG 5256C: Advanced Analytical Packaging Methods
- PKG 6100: Advanced Computer Tools for Packaging
- PKG 6905: Individual Work in Packaging
- PKG 6932: Special Topics in Packaging Sciences

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Agricultural Education and Communication Department**

Chair: E. W. Osborne

Graduate Coordinator: B. E. Myers

*Complete faculty listing by department:* Follow this link.

The Department of Agricultural Education and Communication offers the degrees of Master of Science and Doctor of Philosophy. Graduate students who obtain a degree in Agricultural Education and Communication will focus their study in one of four areas of specialization. The areas of specialization are agricultural communication, agricultural education, extension education, and leadership development. These degree programs are individually tailored to meet the student's unique needs for professional development. The requirements for each degree are described in the Graduate Degrees section of the University of Florida Graduate Catalog. More information about our program can be found by following the link below.

## Agricultural Education and Communication

### College

College of Agricultural and Life Sciences

### Department/School

Agricultural Education and Communication Department

### Agricultural Education and Communication Program

The Master of Science program is designed to prepare graduates for domestic and international teaching, research, extension, administrative and leadership positions in both the public and private sectors. Courses are taught in an agricultural and natural resources context and are broadly applicable in educational, business, government, and agency settings. The Master of Science program is delivered on-campus and online via the AEC e-Learning Institute (eLI). The Doctor of Philosophy degree program is primarily designed to prepare graduates for academic positions in teaching, research, and extension within the realm of Agricultural Education and Communication. In addition, graduates may obtain positions in administration, human resource management, or training and development.

The **Agricultural Communication** specialization prepares students for professional communication careers in or dealing with agriculture and agribusiness. It is intended primarily for students who enter with a bachelor's degree in journalism, agricultural communication/journalism, advertising, broadcasting, public relations, or related fields. Graduates of this option are employed in: (1) communication or management positions with the numerous commodity or special-interest associations in agriculture and related fields; (2) communication support positions in agricultural extension and research information departments of land-grant universities, agencies of USDA, state Departments of Agriculture, and agricultural development projects overseas; (3) advertising and public relations positions with agribusiness firms or commodity associations; and (4) media positions involved in reporting on agriculture, agribusiness, and natural resource issues. Students in Agricultural Communication also develop strong skills/application in media writing, production, campaign strategies and/or Web design/desktop publishing. Graduates become prepared for positions in both public and private sectors in both industry and educational settings.

The **Agricultural Education** specialization is designed to enhance the careers of those employed in the educational professions in agriculture and natural resources. Regardless if one is employed in public school teaching, community college instruction, or training and development in agribusiness, students gain valuable knowledge and experience in designing, implementing, and evaluating educational programs. In addition, graduates of the program command added depth in the understanding of the teaching and learning process. This specialization may be designed to allow students to complete the requirements of teacher certification while completing their master's degree program. The PhD is a research-oriented degree that has a primary focus of preparing candidates to assume faculty positions in colleges or university teacher education programs. Candidates develop an individual program of study that provides a comprehensive knowledge of teaching and learning processes. The degree also seeks to extend the candidate's development by providing instruction, research opportunities, and experiences that enhance the depth and breadth of the candidate's prior learning opportunities.

The **Extension Education** specialization is designed to prepare students for careers in the Cooperative Extension service, outreach education, and/or other international agencies. Through coursework and research, students will gain valuable knowledge and experience in designing, implementing, and evaluating educational programs. Extension graduate students choose between a domestic or international focus in regards to coursework and/or research. In addition, graduates of the program command tremendous depth of the teaching and learning process. Candidates who select the **Extension Education** specialization develop an individual program of study that focuses

on such topics as program development, experiential education, the change process, educational technologies and extension, program evaluation and organizational accountability, administration and leadership, and international extension. Graduates become prepared for a variety of positions including extension specialists, county and district extension directors, outreach education coordinators for private and public agencies, 4-H Extension agents and specialists, and educator specialists with international agencies.

The **Leadership Development** specialization is designed to prepare students for educational leadership, training, and outreach positions in agricultural, extension, community and governmental agencies. Course work in the major will focus on a core of agricultural courses along with emphasis in designing educational/training programs, professional presentation enhancement, leadership development, teaching/training methods, and interpersonal communication. Candidates who select the **Leadership Development** specialization develop an individual program that focuses on leadership theory and measurement, critical and creative thinking, and leadership in cross-cultural settings. Students will encompass a strong research and theory-based program with a strong knowledge of training and development, and human resource management. Graduates become prepared for positions in both public and private sectors in both industry and educational settings.

### **Degrees Offered with a Major in Agricultural Education and Communication**

Doctor of Philosophy

without a concentration

concentration in Tropical Conservation and Development

Master of Science

without a concentration

concentration in Tropical Conservation and Development

### **Agricultural Education and Communication Courses**

- AEC 5032: Agricultural Media Writing
- AEC 5037: Agricultural Media Production
- AEC 5060: Public Opinion and Agricultural and Natural Resource Issues
- AEC 5074: Agriculture, Resources, People, and the Environment: A Global Perspective
- AEC 5201: Teaching in Colleges of Agricultural and Life Sciences
- AEC 5203: Advanced Teaching in Colleges of Agricultural and Life Sciences
- AEC 5206: Teaching Methods in Agricultural Education
- AEC 5227: Teaching in Agricultural Education Laboratory Facilities
- AEC 5302: Professional Skill Development in Agriscience Education I
- AEC 5324: Philosophy and Development of Agricultural Education
- AEC 5454: Leadership Development for Extension and Community Nonprofit Organizations
- AEC 5501: Professional Skill Development in Agriscience Education II
- AEC 5541: Communication and Instructional Technologies in Agricultural and Life Sciences
- AEC 5544: Curriculum Development and Assessment Techniques in Emerging Agricultural Technologies
- AEC 5545: Special Methods in Teaching Agriculture
- AEC 5546: Program Planning in Agricultural Education
- AEC 6205: Advanced Curriculum and Teaching Methods

- AEC 6210: Designing Educational Programs in Agricultural Settings
- AEC 6211: Delivering Educational Programs in Agricultural Settings
- AEC 6212: Teacher Education in Agriculture
- AEC 6229: Laboratory Instruction: Theory and Practice
- AEC 6300: Methodology of Planned Change
- AEC 6316: From America to Zimbabwe: An Overview of International Extension Systems
- AEC 6321: The Land Grant University and University Governance
- AEC 6325: History and Philosophy of Agricultural Education
- AEC 6419: Communication and Competencies for Global Leadership
- AEC 6426: Development of a Volunteer Leadership Program
- AEC 6512: Program Development in Extension Education
- AEC 6540: Agricultural and Natural Resources Communications Theory and Strategies
- AEC 6543: Teaching and Learning Theory: Applications in Agricultural Education
- AEC 6552: Evaluating Programs in Extension Education
- AEC 6611: Agricultural and Extension Adult Education
- AEC 6704: Extension Administration and Supervision
- AEC 6767: Research Strategies in Agricultural Education and Communication
- AEC 6905: Problems in Agricultural and Extension Education
- AEC 6910: Supervised Research
- AEC 6912: Nonthesis Research in Agricultural and Extension Education
- AEC 6932: Special Topics In Agricultural Education and Communication
- AEC 6933: Seminar in Agricultural Education and Communication
- AEC 6940: Supervised Teaching
- AEC 6945: Practicum in Agricultural Education and Communication
- AEC 6947: Experiential Learning in Agricultural Education
- AEC 6971: Research for Master's Thesis
- AEC 7979: Advanced Research
- AEC 7980: Research for Doctoral Dissertation
- AEC 5416: Critical and Creative Thinking in Problem Solving and Decision Making

### **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

### **Agronomy Department**

*Chair:* R. A. Gilbert

*Graduate Coordinator:* L. E. Sollenberger

*Complete faculty listing by department: [Follow this link.](#)*

The Agronomy Department offers the degrees of Doctor of Philosophy and Master of Science (thesis and non-thesis options) in agronomy with specializations in plant physiology, ecology, management and nutrition, weed science (terrestrial and aquatic), and plant breeding and genetics. Requirements for these degrees are given in the *Graduate Degrees* section of this catalog.

Graduate programs emphasize the development and subsequent application of basic principles in each specialization to the management of agricultural and natural ecosystems in Florida and throughout the world. The continuing need for increased plant production for food, fiber and energy to meet the demands of a rapidly escalating population is reflected in departmental research programs. When compatible with a student's program and permitted by prevailing circumstances, some thesis and dissertation research may be conducted wholly or in part in other countries.

Students seeking a graduate program in the Agronomy Department should hold a Bachelor of Science degree from an accredited college or university with a major in an area of plant science, or closely related discipline. A science background with basic courses in biology, botany, mathematics, chemistry, and physics is required of new graduate students.

## **Agronomy**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Agronomy Department

### **Agronomy Program Information**

The Agronomy Department offers the degrees of Doctor of Philosophy and Master of Science (thesis and non-thesis option) in agronomy with specializations in plant physiology, ecology, management and nutrition, weed science (terrestrial and aquatic), and plant breeding and genetics. Requirements for these degrees are given in the *Graduate Degrees* section of this catalog.

Graduate programs emphasize the development and subsequent application of basic principles in each specialization to the management of plants in Florida and throughout the world. The continuing need for increased plant production for food, fiber and energy to meet the demands of a rapidly escalating population is reflected in departmental research programs. When compatible with a student's program and permitted by prevailing circumstances, some thesis and dissertation research may be conducted wholly or in part in other countries.

Students seeking a graduate program in the Agronomy Department should hold a Bachelor of Science degree from an accredited college or university with a major in an area of plant science, or closely related discipline. A science background with basic courses in biology, botany, mathematics, chemistry, and physics is required of new graduate students.

### **Degrees Offered with a Major in Agronomy**



## Doctor of Philosophy

without a concentration

concentration in Toxicology

concentration in Tropical Conservation and Development

## Master of Science

without a concentration

concentration in Agroecology

concentration in Geographic Information Systems

concentration in Tropical Conservation and Development

## Agronomy Departmental Courses

- AGR 5215C: Integrated Field Crop Science
- AGR 5230C: Florida Grassland Agroecosystems
- AGR 5266C: Field Plot Techniques
- AGR 5277C: Tropical Crop Production
- AGR 5307: Molecular Genetics for Crop Improvement
- AGR 5321C: Genetic Improvement of Plants
- AGR 5444: Ecophysiology of Crop Production
- AGR 5511: Crop Ecology
- AGR 6233: Tropical Grassland Agroecosystems
- AGR 6237C: Research Techniques in Forage Evaluation
- AGR 6322: Advanced Plant Breeding
- AGR 6325L: Plant Breeding Techniques
- AGR 6353: Cytogenetics
- AGR 6422C: Environmental Crop Nutrition
- AGR 6442C: Physiology of Agronomic Plants
- AGR 6905: Agronomic Problems
- AGR 6910: Supervised Research
- AGR 6932: Topics in Agronomy
- AGR 6933: Graduate Agronomy Seminar
- AGR 6940: Supervised Teaching
- AGR 6971: Research for Master's Thesis
- AGR 7979: Advanced Research
- AGR 7980: Research for Doctoral Dissertation
- ALS 5155: Global Agroecosystems
- IPM 5305: Principles of Pesticides

- PLS 5632C: Integrated Weed Management
- PLS 5652: Advanced Weed Science
- PLS 6623: Weed Ecology
- PLS 6626: Invasive Plant Ecology
- PLS 6655: Plant/Herbicide Interaction

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Animal Molecular and Cellular Biology Department**

*Director:* P.J. Hansen

*Complete faculty listing by department:* Follow this link.

For more information about the program, contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu), follow the link below to our catalog page, or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

## **Animal Molecular and Cellular Biology**

### **College**

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Veterinary Medicine

### **Department/School**

Animal Molecular and Cellular Biology Department

### **Animal Molecular and Cellular Biology Program**

The animal molecular and cell biology (AMCB) graduate program offers Master of Science and Doctor of Philosophy degrees. Faculty are drawn from these disciplines:

- Animal Sciences
- Biochemistry and Molecular Biology
- Large Animal Clinical Sciences
- Obstetrics and Gynecology
- Zoology

Early in the program, students choose a faculty supervisor who will ensure the quality of their research experience. Students may also do optional rotations through the laboratories of one or more other faculty. The Annual Research Symposium features guest speakers and student research presentations. A weekly journal club and monthly seminars draw on the knowledge and diversity the campus offers in molecular and cell biology.

Core course requirements for the M.S. degree are BCH 5045 and registration in a 1-credit graduate seminar course. Core course requirements for the Ph.D. include BCH 5413 and GMS 6421 and registration in two graduate seminar courses.

Contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu) or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

## **Degrees Offered with a Major in Animal Molecular and Cellular Biology**

Doctor of Philosophy

Master of Science

## **Animal Molecular and Cellular Biology Courses**

- ALS 5905: Individual Study
- ALS 6046: Grant Writing
- ANS 5312C: Applied Ruminant Reproductive Management
- ANS 5446: Animal Nutrition
- ANS 5935: Reproductive Biology Seminar and Research Studies
- ANS 6288: Experimental Techniques and Analytical Procedures in Meat Research
- ANS 6314: Experimental Embryology
- ANS 6313: Current Concepts in Reproductive Biology
- ANS 6449: Vitamins
- ANS 6452: Principles of Forage Quality Evaluation
- ANS 6458: Advanced Methods in Nutrition Technology
- ANS 6636: Meat Technology
- ANS 6666L: Molecular and Cellular Research Methods
- ANS 6702: Lactation Physiology of Farm Animals
- ANS 6704: Mammalian Endocrinology
- PCB 6816: Thermal Physiology
- ANS 6707: Growth Physiology in Farm Animals
- ANS 6711: Current Topics in Equine Nutrition and Exercise Physiology
- ANS 6715: Gastrointestinal and Feed Microbiology
- ANS 6716: Physiology in Farm Animals
- ANS 6718: Nutritional Physiology of Domestic Animals
- ANS 6723: Mineral Nutrition and Metabolism
- ANS 6745: Introduction to Statistical Genetics
- ANS 6750: Reproductive Physiology in Farm Animals
- ANS 6751: Physiology of Reproduction

- **ANS 6751C**

- ANS 6767: Molecular Endocrinology
- ANS 6905: Problems in Animal Science
- ANS 6910: Supervised Research
- ANS 6932: Special Topics in Animal Science
- ANS 6933: Graduate Seminar in Animal Science
- ANS 6936: Graduate Seminar in Animal Molecular and Cell Biology
- ANS 6939: Animal Molecular and Cellular Biology Journal Colloquy
- ANS 6940: Supervised Teaching
- ANS 6971: Research for Master's Thesis
- ANS 7979: Advanced Research
- ANS 7980: Research for Doctoral Dissertation
- BCH 5045: Graduate Survey of Biochemistry
- BCH 6876: Recent Advances in Membrane Biology
- BME 5085: Patents, Product Development, and Technology Transfer
- BME 5401: Biomedical Engineering and Physiology I
- BCH 5413: Mammalian Molecular Biology and Genetics
- BCH 6740: Physical Biochemistry/Structural Biology
- BCH 6877: Recent Advances in Structural Biology
- BCH 6878: Recent Advances in Cytoskeletal Processes
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6031: Molecular Immunology
- GMS 6051: Signal Transduction
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6140: Principles of Immunology
- GMS 6331: Stem Cell Biology
- GMS 6421: Cell Biology
- GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation
- MCB 5305L: Microbial Genetics and Biotechnology Laboratory
- MCB 6485: Advanced Techniques in Microbiology and Cell Science
- PCB 5065: Advanced Genetics
- PCB 5235: Immunology
- PCB 5615: Molecular Evolution and Systematics
- PHA 6449: Pharmacogenomics
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6934: Special Topics in Statistics
- VME 5244: Physiology: Organ Systems
- VME 6602: General Toxicology
- VME 6810: Integrating Veterinary Medicine with Shelter Systems
- VME 6811: Shelter Animal Physical Health
- VME 6812: Shelter Animal Behavior and Welfare

- ZOO 6927: Special Topics in Zoology

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Animal Sciences Department**

*Chair:* Geoffrey E. Dahl

*Graduate Coordinator:* Adegbola Tolulope Adesogan

*Complete faculty listing by department:* Follow this link.

Animal Sciences is an academic department of the College of Agriculture and Life Sciences (CALS), a unit of the Institute of Food and Agricultural Sciences (IFAS). Creating new solutions to tomorrow's problems underlies everything we do in the Animal Sciences Program. In the areas of teaching, research, and extension, our faculty integrate the most modern technologies available with personal expertise and attention to the needs of students and our industry. For more information about the Animal Sciences program, contact A.T. Adesogan at [adesogan@ufl.edu](mailto:adesogan@ufl.edu), follow the link below to our program page, or visit the program's website at <http://animal.ifas.ufl.edu/students/graduate/index.shtml>.

## **Animal Sciences**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Animal Sciences Department

### **Animal Sciences Program**

The Department of Animal Sciences offers the degrees of Master of Science (thesis and non-thesis) and Doctor of Philosophy in Animal Sciences with emphasis in beef or dairy cattle, swine, or equine. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The following specializations are available:

- Breeding, genetics and genomics
- Behavior
- Management
- Immunology
- Nutrition (nutritional physiology, nutrient metabolism, and feedstuff utilization)
- Physiology (environmental, lactational, muscle and reproductive)
- Molecular biology (embryology, endocrinology, and genetics)
- Meat science (meat processing, meat quality, muscle biology, and food safety)

A student may work on a problem covering more than one area of study. Animal resources (beef cattle, dairy cattle, horses, swine, sheep, and laboratory animals) are available for use in various research programs. Nutrition, physiology, immunology and meats laboratories are available for detailed chemical and carcass quality evaluations, and excellent computer facilities are available. Special arrangements may be made to conduct research at the various branch agricultural experiment stations throughout Florida.

Departmental and program prerequisites for admission to graduate study include a sound science background, with basic courses in microbiology, biology, mathematics, and chemistry. All courses in the animal sciences program area are acceptable for graduate credit as part of the candidate's major.

The Graduate School restricts graduate students from pursuing minors in academic units that contribute major credit toward their degree program. Therefore, graduate students majoring in Animal Sciences cannot pursue a minor in Food and Resource Economics, Food Science and Human Nutrition, Medicine-Biochemistry, and Veterinary Medical Sciences. In addition, undergraduate credits at the 3000–4000 level in the major of any of these listed academic units are not eligible to count toward degree requirements.

## **Degrees Offered with a Major in Animal Sciences**

### **Doctor of Philosophy**

without a concentration

concentration in Animal Molecular and Cellular Biology

### **Master of Science**

without a concentration

## **Animal Sciences Departmental Courses**

- ANS 5312C: Applied Ruminant Reproductive Management
- ANS 5446: Animal Nutrition
- ANS 5935: Reproductive Biology Seminar and Research Studies
- ANS 6288: Experimental Techniques and Analytical Procedures in Meat Research
- ANS 6313: Current Concepts in Reproductive Biology
- ANS 6314: Experimental Embryology
- ANS 6447: Ruminant Nutrition

- ANS 6449: Vitamins
- ANS 6452: Principles of Forage Quality Evaluation
- ANS 6458: Advanced Methods in Nutrition Technology
- ANS 6636: Meat Technology
- ANS 6702: Lactation Physiology of Farm Animals
- ANS 6704: Mammalian Endocrinology
- ANS 6705: Muscle Physiology
- ANS 6707: Growth Physiology in Farm Animals
- ANS 6711: Current Topics in Equine Nutrition and Exercise Physiology
- ANS 6714: Current Topics in Microbial Physiology in Animals
- ANS 6715: Gastrointestinal and Feed Microbiology
- ANS 6716: Physiology in Farm Animals
- ANS 6718: Nutritional Physiology of Domestic Animals
- ANS 6723: Mineral Nutrition and Metabolism
- ANS 6750: Reproductive Physiology in Farm Animals
- ANS 6751: Physiology of Reproduction
- ANS 6767: Molecular Endocrinology
- ANS 6775: Essentials of Livestock Immunology
- ANS 6905: Problems in Animal Science
- ANS 6910: Supervised Research
- ANS 6932: Special Topics in Animal Science
- ANS 6933: Graduate Seminar in Animal Science
- ANS 6936: Graduate Seminar in Animal Molecular and Cell Biology
- ANS 6939: Animal Molecular and Cellular Biology Journal Colloquy
- ANS 6940: Supervised Teaching
- ANS 6942: Supervised Extension in the Animal Sciences
- ANS 6971: Research for Master's Thesis
- ANS 7979: Advanced Research
- ANS 7980: Research for Doctoral Dissertation
- PCB 6816: Thermal Physiology

### **Additional Courses for Major Credit in Animal Sciences**

- AEB 5326: Agribusiness Financial Management
- AEB 6385: Management Strategies for Agribusiness Firms
- AEB 7182: Agricultural Risk Analysis and Decision Making
- FOS 5205: Current Issues in Food Safety and Sanitation
- FOS 5225C: Principles in Food Microbiology
- FOS 5437C: Food Product Development
- FOS 5732: Current Issues in Food Regulations
- FOS 5126C: Psychophysical Aspects of Foods
- FOS 6226C: Advanced Food Microbiology
- FOS 6315C: Advanced Food Chemistry
- FOS 6317C: Flavor Chemistry and Technology
- FOS 6355C: Instrumental Analysis and Separations
- FOS 6428C: Advanced Food Processing
- FOS 6455C: Industrial Food Fermentations
- HUN 5447: Nutrition and Immunity

- HUN 6245: Advanced Human Nutrition
- HUN 6301: Nutritional Aspects of Lipid Metabolism
- HUN 6305: Nutritional Aspects of Carbohydrates
- HUN 6321: Proteins and Amino Acids in Nutrition
- VME 5162C: Avian Diseases
- VME 5244: Physiology: Organ Systems

## College of Agricultural and Life Sciences Courses

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Entomology and Nematology Department

College of Agricultural and Life Sciences

*Chair:* Blair Siegfried

*Graduate Coordinator:* Heather J. McAuslane

*Complete faculty listing by department:* Follow this link.

The Entomology and Nematology Department offers the Master of Science (thesis and nonthesis options) and Doctor of Philosophy degrees in entomology and nematology with the following specializations: entomology, nematology, and pest management. Minimum requirements for the M.S. and Ph.D. degrees are described in the Graduate Degrees section of this catalog.

The Department also offers a cooperative Doctor of Philosophy degree with Florida A&M University and distance education courses leading to the M.S. degree. Members of the Graduate Faculty include the department resident faculty, faculty located on University of Florida campuses away from Gainesville, scientists with other State of Florida agencies such as the Division of Plant Industry and Florida Department of Agriculture and Consumer Services, and scientists of the U.S. Department of Agriculture. The Graduate Faculty is qualified to direct graduate students in all specialties of entomology, nematology, and acarology.

New graduate students should have backgrounds in biology, chemistry, physics, and mathematics. Minor deficiencies may be made up after entering graduate school.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

For more information, please see the program page below, and visit our website: <http://entnemdept.ufl.edu>.



## **Entomology and Nematology**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Entomology and Nematology Department

### **Entomology and Nematology Program Information**

The Entomology and Nematology department offers research-based M.S. (thesis) and PhD degrees in entomology and in nematology. Our large faculty in Gainesville and at Research and Education Centers around the state allow for study in many important areas, including behavior, ecology, systematics, biological control, nematology, pest management, and medical, veterinary and urban entomology. Molecular, whole organism and population ecology studies are all within the range of supported research in the Entomology and Nematology department, and our nematology program is one of the most comprehensive in the nation.

The M.S. degree can be taken in a non-thesis format, in Gainesville or entirely online, with a specialization in either entomology or pest management. Online M.S. degrees are designed to accommodate place-bound students interested in biological science with emphasis on insects and other arthropods, including extension faculty and other educators; state and federal employees in agricultural, environmental and regulatory positions; consultants; pest control industry personnel; and others who want to further their education.

Certificates, comprising 15 credit hours of specific coursework, are available online or to residential students with concentrations in urban pest management, landscape pest management or medical entomology. These certificates document specialization and proficiency in sub-disciplines within entomology for enrolled graduate students and provide evidence of expertise for non-degree seeking students.

Students entering graduate programs in entomology and nematology should have a strong science background, including biology, chemistry, and algebra. Physics and statistics are recommended. Admissions criteria can be found on the Graduate School's Admission page.

### **Degrees Offered with a Major in Entomology and Nematology**

Doctor of Philosophy

Master of Science

### **Entomology and Nematology Departmental Courses**

- ALS 5156: Agricultural Ecology Principles and Applications
- ALS 6046: Grant Writing
- ALS 6166: Exotic Species and Biosecurity Issues
- ALS 6935: Topics in Biological Invasions

- ENY 5006: Graduate Survey of Entomology
- ENY 5006L: Graduate Survey of Entomology Laboratory
- ENY 5031C: Insect Field Biology
- ENY 5151C: Techniques in Insect Systematics
- ENY 5160C: Survey of Science with Insects
- ENY 5164: Graduate Survey of Invertebrate Field Biology
- ENY 5212: Insects and Wildlife
- ENY 5223C: Biology and Identification of Urban Pests
- ENY 5226C: Principles of Urban Pest Management
- ENY 5332: Graduate Survey of Urban Vertebrate Pest Management
- ENY 5236: Insect Pest and Vector Management
- ENY 5241: Biological Control
- ENY 5245: Agricultural Acarology
- ENY 5405: Insects as Vectors of Plant Pathogens
- ENY 5516: Turf and Ornamental Entomology
- ENY 5566: Tropical Entomology
- ENY 5567: Tropical Entomology Field Laboratory
- ENY 5572: Advanced Apiculture
- ENY 5611: Immature Insects
- ENY 5820: Insect Molecular Genetics
- ENY 6166: Insect Classification
- ENY 6203: Insect Ecology
- ENY 6203L: Insect Ecology Laboratory
- ENY 6248: Termite Biology and Control
- ENY 6401: Insect Physiology
- ENY 6401L: Insect Physiology Laboratory
- ENY 6454: Behavioral Ecology and Systematics of Insects
- ENY 6591C: Advanced Mosquito Identification
- ENY 6593: Advanced Mosquito Biology
- ENY 6651C: Insect Toxicology
- ENY 6665: Advanced Medical and Veterinary Entomology I
- ENY 6665L: Advanced Medical and Veterinary Entomology Laboratory
- ENY 6706: Forensic Entomology
- ENY 6706L: Forensic Entomology Laboratory
- ENY 6821: Insect Microbiology
- ENY 6822C: Molecular Biology Techniques with Invertebrates and Their Pathogens
- ENY 6905: Problems in Entomology
- ENY 6910: Supervised Research
- ENY 6931: Entomology Seminar
- ENY 6932: Special Topics in Entomology
- ENY 6934: Selected Studies in Entomology
- ENY 6940: Supervised Teaching
- ENY 6942: Insect Diagnostics
- ENY 6943: Entomology Internship
- ENY 6944: Entomology Extension Internship
- ENY 6971: Research for Master's Thesis
- ENY 7979: Advanced Research
- ENY 7980: Research for Doctoral Dissertation
- NEM 5004C: Graduate Survey of Nematology

- NEM 5707C: Plant Nematology
- NEM 6101C: Nematode Morphology and Anatomy
- NEM 6102: Nematode Systematics and Molecular Phylogeny
- NEM 6102L: Nematode Systematics and Molecular Phylogeny Laboratory
- NEM 6103: Insect Parasitic Nematodes
- NEM 6104L: Insect Parasitic Nematodes Laboratory
- NEM 6201: Nematode Ecology
- NEM 6708: Field Plant Nematology
- NEM 6905: Problems in Nematology
- NEM 6931: Nematology Seminar
- NEM 6932: Special Topics in Nematology
- NEM 6934: Selected Studies in Nematology
- NEM 6940: Supervised Teaching
- NEM 6942: Nematode Diagnostics
- NEM 6943: Nematode Internship
- NEM 6944: Nematode Extension Internship
- NEM 6971: Research for Master's Thesis
- NEM 7979: Advanced Research
- NEM 7980: Research for Doctoral Dissertation
- PMA 5205: Citrus Pest Management
- PMA 6228: Field Techniques in Integrated Pest Management

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Plant Medicine**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Entomology and Nematology Department

## **Plant Medicine Program Information**

*Coordinator:* Amanda C. Hodges

The Doctor of Plant Medicine (DPM) program is an intensive doctorate-level graduate level training program for students interested in plant health diagnosis and management. Requirements for the degree can be found in the Graduate Degrees section of this catalog.

DPM students complete rigorous coursework and intensive internships. Only DPM students jointly enrolled in one of our discipline department M.S. or Ph.D. programs complete a thesis or dissertation. DPM students often participate in applied research within laboratory programs, and may participate in the publication of peer-reviewed scientific and extension papers. More information regarding the latest policies for the DPM program is available in the DPM graduate handbook.

The DPM program is a partnership among faculty mentors and teaching faculty within the following primary departments:

- Entomology and Nematology Department
- Department of Plant Pathology
- Agronomy Department
- Horticulture Sciences Department
- Environmental Horticulture Department
- Soil and Water Sciences Department
- Food Science and Human Nutrition Department

For more information, please see the DPM website: <http://dpm.ifas.ufl.edu>.

## **Degrees Offered with a Major in Plant Medicine**

Doctor of Plant Medicine

without a concentration

concentration in Tropical Conservation and Development

## **Agronomy Departmental Courses**

- AGR 5215C: Integrated Field Crop Science
- AGR 5230C: Florida Grassland Agroecosystems
- AGR 5266C: Field Plot Techniques
- AGR 5277C: Tropical Crop Production
- AGR 5307: Molecular Genetics for Crop Improvement
- AGR 5321C: Genetic Improvement of Plants
- AGR 5444: Ecophysiology of Crop Production
- AGR 5511: Crop Ecology
- AGR 6233: Tropical Grassland Agroecosystems
- AGR 6237C: Research Techniques in Forage Evaluation
- AGR 6322: Advanced Plant Breeding
- AGR 6325L: Plant Breeding Techniques
- AGR 6353: Cytogenetics
- AGR 6422C: Environmental Crop Nutrition

- AGR 6442C: Physiology of Agronomic Plants
- AGR 6905: Agronomic Problems
- AGR 6910: Supervised Research
- AGR 6932: Topics in Agronomy
- AGR 6933: Graduate Agronomy Seminar
- AGR 6940: Supervised Teaching
- AGR 6971: Research for Master's Thesis
- AGR 7979: Advanced Research
- AGR 7980: Research for Doctoral Dissertation
- ALS 5155: Global Agroecosystems
- IPM 5305: Principles of Pesticides
- PLS 5632C: Integrated Weed Management
- PLS 5652: Advanced Weed Science
- PLS 6623: Weed Ecology
- PLS 6626: Invasive Plant Ecology
- PLS 6655: Plant/Herbicide Interaction

## **Botany Courses**

- BOT 5225C: Plant Anatomy
- BOT 5305: Paleobotany
- BOT 5505C: Intermediate Plant Physiology
- BOT 5625: Plant Geography
- BOT 5655C: Physiological Plant Ecology
- BOT 5685C: Tropical Botany
- BOT 5695C: Ecosystems of Florida
- BOT 5725C: Taxonomy of Vascular Plants
- BOT 6508C: Proteomics Theory and Practice
- BOT 6516: Plant Metabolism
- BOT 6566: Plant Growth and Development
- BOT 6716C: Advanced Taxonomy
- BOT 6726C: Principles of Systematic Biology
- BOT 6905: Individual Studies in Botany
- BOT 6910: Supervised Research
- BOT 6927: Advances in Botany
- BOT 6935: Special Topics
- BOT 6936: Graduate Student Seminar
- BOT 6940: Supervised Teaching
- BOT 6943: Internship in College Teaching
- BOT 6971: Research for Master's Thesis
- BOT 7979: Advanced Research
- BOT 7980: Research for Doctoral Dissertation
- PCB 5046C: Advanced Ecology
- PCB 5338: Principles of Ecosystem Ecology
- PCB 5356: Tropical Ecology
- PCB 6675C: Evolutionary Biogeography
- PLP 6656C: Fungal Biology

## Entomology and Nematology Departmental Courses

- ALS 5156: Agricultural Ecology Principles and Applications
- ALS 6046: Grant Writing
- ALS 6166: Exotic Species and Biosecurity Issues
- ALS 6935: Topics in Biological Invasions
- ENY 5006: Graduate Survey of Entomology
- ENY 5006L: Graduate Survey of Entomology Laboratory
- ENY 5031C: Insect Field Biology
- ENY 5151C: Techniques in Insect Systematics
- ENY 5160C: Survey of Science with Insects
- ENY 5164: Graduate Survey of Invertebrate Field Biology
- ENY 5212: Insects and Wildlife
- ENY 5223C: Biology and Identification of Urban Pests
- ENY 5226C: Principles of Urban Pest Management
- ENY 5332: Graduate Survey of Urban Vertebrate Pest Management
- ENY 5236: Insect Pest and Vector Management
- ENY 5241: Biological Control
- ENY 5245: Agricultural Acarology
- ENY 5405: Insects as Vectors of Plant Pathogens
- ENY 5516: Turf and Ornamental Entomology
- ENY 5566: Tropical Entomology
- ENY 5567: Tropical Entomology Field Laboratory
- ENY 5572: Advanced Apiculture
- ENY 5611: Immature Insects
- ENY 5820: Insect Molecular Genetics
- ENY 6166: Insect Classification
- ENY 6203: Insect Ecology
- ENY 6203L: Insect Ecology Laboratory
- ENY 6248: Termite Biology and Control
- ENY 6401: Insect Physiology
- ENY 6401L: Insect Physiology Laboratory
- ENY 6454: Behavioral Ecology and Systematics of Insects
- ENY 6591C: Advanced Mosquito Identification
- ENY 6593: Advanced Mosquito Biology
- ENY 6651C: Insect Toxicology
- ENY 6665: Advanced Medical and Veterinary Entomology I
- ENY 6665L: Advanced Medical and Veterinary Entomology Laboratory
- ENY 6706: Forensic Entomology
- ENY 6706L: Forensic Entomology Laboratory
- ENY 6821: Insect Microbiology
- ENY 6822C: Molecular Biology Techniques with Invertebrates and Their Pathogens
- ENY 6905: Problems in Entomology
- ENY 6910: Supervised Research
- ENY 6931: Entomology Seminar
- ENY 6932: Special Topics in Entomology
- ENY 6934: Selected Studies in Entomology

- ENY 6940: Supervised Teaching
- ENY 6942: Insect Diagnostics
- ENY 6943: Entomology Internship
- ENY 6944: Entomology Extension Internship
- ENY 6971: Research for Master's Thesis
- ENY 7979: Advanced Research
- ENY 7980: Research for Doctoral Dissertation
- NEM 5004C: Graduate Survey of Nematology
- NEM 5707C: Plant Nematology
- NEM 6101C: Nematode Morphology and Anatomy
- NEM 6102: Nematode Systematics and Molecular Phylogeny
- NEM 6102L: Nematode Systematics and Molecular Phylogeny Laboratory
- NEM 6103: Insect Parasitic Nematodes
- NEM 6104L: Insect Parasitic Nematodes Laboratory
- NEM 6201: Nematode Ecology
- NEM 6708: Field Plant Nematology
- NEM 6905: Problems in Nematology
- NEM 6931: Nematology Seminar
- NEM 6932: Special Topics in Nematology
- NEM 6934: Selected Studies in Nematology
- NEM 6940: Supervised Teaching
- NEM 6942: Nematode Diagnostics
- NEM 6943: Nematode Internship
- NEM 6944: Nematode Extension Internship
- NEM 6971: Research for Master's Thesis
- NEM 7979: Advanced Research
- NEM 7980: Research for Doctoral Dissertation
- PMA 5205: Citrus Pest Management
- PMA 6228: Field Techniques in Integrated Pest Management

## **School of Forest Resources and Conservation Courses**

### **Geomatics Concentration Courses**

- GIS 6103: GIS Programming and Customization
- GIS 6116: Geographic Information Systems Analysis
- SUR 5365: Digital Mapping
- SUR 5385: Remote Sensing Applications
- SUR 5386: Image Processing for Remote Sensing
- SUR 5391C: Geomatics: Spatial Foundations of GIS
- SUR 5425: Cadastral Information Systems
- SUR 5525: Least Squares Adjustment Computations
- SUR 6375: Terrain Analysis and Mapping
- SUR 6395: Topics in Geographic Information Systems
- SUR 6427: Land Tenure and Administration
- SUR 6535: GPS-INS Integration
- SUR 6905: Special Problems in Geomatics

- SUR 6934: Topics in Geomatics

## Fisheries and Aquatic Sciences Program Courses

- FAS 5203C: Biology of Fishes
- FAS 5255C: Diseases of Warmwater Fish
- FAS 5276C: Field Ecology of Aquatic Organisms
- FAS 5335C: Applied Fisheries Statistics
- FAS 5901: Scientific Thinking in Ecology
- FAS 6154: Aquatic Invertebrate Ecological Physiology
- FAS 6171: Applied Phycology
- FAS 6176: Algae Biology and Ecology
- FAS 6256: Fish and Aquatic Invertebrate Histology
- FAS 6272: Marine Ecological Processes
- FAS 6337C: Fish Population Dynamics
- FAS 6339C: Advanced Quantitative Fisheries Assessment
- FAS 6355C: Fisheries Management
- FAS 6905: Individual Study
- FAS 6910: Supervised Research
- FAS 6932: Special Topics in Fisheries and Aquatic Sciences
- FAS 6933: Graduate Symposium
- FAS 6935: Contemporary Problems in Fisheries and Aquatic Sciences
- FAS 6940: Supervised Teaching
- FAS 6971: Research for Master's Thesis
- FAS 7979: Advanced Research
- FAS 7980: Research for Doctoral Dissertation

## Forest Resources and Conservation Program Courses

- FNR 5072C: Environmental Education Program Development
- FNR 5335: Agroforestry
- FNR 5462: Spatial Models and Decision Analysis
- FNR 5608: Research Planning
- FNR 6564: Ecohydrology
- FOR 5157: Ecosystem Restoration Principles and Practice
- FOR 5159: Ecology and Restoration of Loblolly Pine Ecosystems
- FOR 5161: Forest Productivity and Health
- FOR 5435: Forest Information Systems
- FOR 5615: Forest Conservation and Management Policies and Issues
- FOR 5625: Forest Water Resources Management
- FOR 5756: Non-Timber Forest Products
- FOR 6005: Conservation Behavior
- FOR 6154: Analysis of Forest Ecosystems
- FOR 6156: Simulation Analysis of Forest Ecosystems
- FOR 6164: Silviculture: Concepts and Application
- FOR 6170: Tropical Forestry
- FOR 6172C: Tropical Forestry Field Course



- FOR 6215: Fire Paradigms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6340: Physiology of Forest Trees
- FOR 6345C: Plant Water Relations Techniques
- FOR 6543: Natural Resource Economics and Valuation
- FOR 6628: Community Forest Management
- FOR 6665: Landscape Planning for Ecotourism
- FOR 6905: Research Problems in Forest Resources and Conservation
- FOR 6910: Supervised Research
- FOR 6933: Seminar
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 6940: Supervised Teaching
- FOR 6971: Research for Master's Thesis
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 6555: Introduction to Quantitative Genetics

## **Horticultural Sciences Departmental Courses**

- ALS 5934: Graduate Professional Development Seminar
- HOS 5085C: Principles of Postharvest Horticulture
- HOS 5115C: Horticultural Plant Morphology and Identification
- HOS 5242: Genetics & Breeding of Vegetable Crops
- HOS 5306: Molecular Biology of Plant Hormones
- HOS 5330: Postharvest Technologies for Horticultural Crops
- HOS 5432: Advanced Nutritional Management of Ornamental Crops
- HOS 5515C: Greenhouse and Nursery Operations
- HOS 5516C: Advanced Production of Greenhouse and Nursery Crops
- HOS 5555: Tropical Fruit Production and Research in Florida
- HOS 5711: Phytochemicals in Food & Health
- HOS 6201: Breeding Perennial Cultivars
- HOS 6236: Molecular Marker Assisted Plant Breeding
- HOS 6331: Postharvest Biology
- HOS 6345: Environmental Physiology
- HOS 6412: Nutrition of Horticultural Crops
- HOS 6523: Research and Development in Turfgrass Science
- HOS 6545: Advanced Citriculture I
- HOS 6546: Advanced Citriculture II
- HOS 6905: Problems in Horticultural Science
- HOS 6910: Supervised Research
- HOS 6931: Horticultural Science Seminar
- HOS 6932: Special Topics
- HOS 6940: Supervised Teaching
- HOS 6941: Practicum in Horticultural Science
- HOS 6971: Research for Master's Thesis
- HOS 7979: Advanced Research

- HOS 7980: Research for Doctoral Dissertation
- ORH 5026C: Advanced Annual and Perennial Gardening
- ORH 5086: Advanced Golf and Sports Turf Management
- ORH 5282: Orchid Biology and Culture
- ORH 5322C: Palm Biology and Culture
- ORH 5817C: Advanced Florida Native Landscaping
- ORH 7941: Doctor of Plant Medicine: Internship in Environmental Horticulture
- PCB 5065: Advanced Genetics
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PLS 5222C: Propagation of Horticultural Crops
- PLS 5241C: Advanced Plant Micropropagation
- PLS 5405: Advanced Composting Technology

### **Plant Pathology Departmental Courses**

- PLP 5005C: General Plant Pathology
- PLP 5102: Theory and Practice of Plant Disease Control
- PLP 5115C: Citrus Pathology
- PLP 5155: Microbiological Control of Plant Diseases and Weeds
- PLP 6656C: Fungal Biology
- PLP 6223C: Viral Pathogens of Plants
- PLP 6241C: Bacterial Plant Pathogens
- PLP 6262C: Fungal Plant Pathogens
- PLP 6291: Plant Disease Diagnosis
- PLP 6303: Host-Parasite Interactions II
- PLP 6404: Epidemiology of Plant Disease
- PLP 6502: Host-Parasite Interactions I
- PLP 6621C: Pop Genetics Microbes
- PLP 6636: Frontiers in Plant Biotechnology
- PLP 6905: Problems in Plant Pathology
- PLP 6910: Supervised Research
- PLP 6921: Colloquium in Principles of Plant Pathology
- PLP 6932: Seminar in Plant Pathology
- PLP 6940: Supervised Teaching
- PLP 6942: Professional Internship in Plant Disease Clinic
- PLP 6971: Research for Master's Thesis
- PLP 7946: Plant Pathology Internship
- PLP 7979: Advanced Research
- PLP 7980: Research for Doctoral Dissertation

### **Soil and Water Science Departmental Courses**

- AGG 5607: Communicating in Academia
- ALS 5027: Reusable Learning Objects
- ALS 5155: Global Agroecosystems
- CWR 6537: Contaminant Subsurface Hydrology

- SWS 5050: Soils for Environmental Professionals
- SWS 5050L: Soils for Environmental Professionals Laboratory
- SWS 5115: Environmental Nutrient Management
- SWS 5132: Tropical Soil Management
- SWS 5182: Earth System Analysis
- SWS 5208: Sustainable Agricultural and Urban Land Management
- SWS 5234: Environmental Soil, Water, and Land Use
- SWS 5235: South Florida Ecosystems
- SWS 5224: Environmental Biogeochemistry
- SWS 5246: Water Resource Sustainability
- SWS 5247: Hydric Soils
- SWS 5248: Wetlands and Water Quality
- SWS 5305C: Soil Microbial Ecology
- SWS 5308: Ecology of Waterborne Pathogens
- SWS 5406: Soil and Water Chemistry
- SWS 5424C: Soil Chemical Analysis
- SWS 5551: Soils, Water, and Public Health
- SWS 5605C: Environmental Soil Physics
- SWS 5716C: Environmental Pedology
- SWS 5721C: GIS in Land Resource Management
- SWS 5805: Environmental Soil and Water Monitoring Techniques
- SWS 6134: Soil Quality
- SWS 6136: Soil Fertility
- SWS 6161: Bioavailability of Soil Nutrients
- SWS 6262: Soil Contamination and Remediation
- SWS 6323: Advanced Microbial Ecology
- SWS 6325: Rhizosphere Biochemistry
- SWS 6366: Biodegradation and Bioremediation
- SWS 6448: Biogeochemistry of Wetlands and Aquatic Systems
- SWS 6454: Advanced Soil and Water Chemistry
- SWS 6456: Advanced Biogeochemistry
- SWS 6464C: Soil Mineralogy
- SWS 6622: Vadose Zone Hydrology
- SWS 6722: Soil-Landscape Modeling
- SWS 6905: Special Problems
- SWS 6910: Supervised Research
- SWS 6931: Seminar
- SWS 6932: Topics in Soils
- SWS 6940: Supervised Teaching
- SWS 6971: Research for Master's Thesis
- SWS 7979: Advanced Research
- SWS 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study

- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Family, Youth, and Community Sciences Department**

Interim Chair: Tracy Irani

Graduate Coordinator: Larry F. Forthun

*Complete faculty listing by department:* Follow this link

The FYCS graduate program is an interdisciplinary applied social science program that prepares students for advanced degrees (e.g., Ph.D.) and careers in such areas as family and youth services, Extension and community-based education, community development and nonprofit management, program planning and evaluation, and social policy. Graduates find careers in both the public and private sectors including:

- Child and Youth Development in areas such as juvenile justice, dropout prevention programs, recreational and camp programs, and youth ministry;
- Community Development Practice in local and regional government, private nonprofit organizations (such as chambers of commerce, local development corporations, and local, national and international foundations) and citizen's groups;
- Nonprofit Organizational Management, such as management of community based, nonprofit organizations;
- Family and Social Services, such as family preservation programs, assistance for abused and neglected children and other public assistance programs; and
- Cooperative Extension Service in such areas as youth development, family and consumer sciences and community development.

Contact the graduate coordinator for more information.

## **Family, Youth, and Community Sciences**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Family, Youth, and Community Sciences Department

### **Master of Science in Family, Youth and Community Sciences**

The Master of Science in FYCS offers two degree options—a thesis and a non-thesis. Both options prepare students for advanced professional positions. FYCS students in either option may complete the FYCS Concentration in Nonprofit Organizational Development, the Certificate in Nonprofit Organizational Development, or the Certificate in Personal & Family Financial Planning.

**Thesis Option** prepares students to conduct independent research needed to develop science-based solutions to problems, issues and policies that affect families, youth and communities. Students develop expertise in a subject matter area directly relevant to the problem or need they want to address with the thesis research.

**Non-Thesis Project Option** provides the student with a broad base of knowledge and skills in the discipline. Students complete a non-thesis project determined in consultation with the supervisory committee. Projects vary in nature and may include directed research, program evaluation, or other empirically-based projects.

**The Minor in Family, Youth and Community Sciences** provides students with knowledge about the theories and body of research that explain how families, youth and communities develop and interact. The minor consists of nine hours of study.

**The Minor in Organizational Leadership for Nonprofits** provides students with an understanding of how to develop not-for-profit organizations to address problems facing families, youth and communities. The minor consists of six hours of study (nine hours for doctoral students).

**Concentration in Nonprofit Organizational Development** The nonprofit organizational development concentration will prepare students to work with tax exempt nonprofit organizations and informal community based groups that serve a charitable purpose for the public good. The concentration includes the study of the historical development of nonprofits in the US that enable students to understand the unique aspects of nonprofits and their growing importance and impact on our society. It provides students with a knowledge base for aspiring nonprofit organizational leaders and proven competencies for practicing professionals in the nonprofit sector.

**The Graduate Certificate in Nonprofit Leadership** will prepare students to work with all 501 (c) nonprofit organizations, tax exempt and others. Courses provide an in depth understanding for developing and sustaining and efficient and effective nonprofit organization. Core competencies in governance, strategic planning, fund raising, and risk management are included as well as other tools.

**The Graduate Certificate in Personal and Family Financial Planning** The certificate addresses the Certified Financial Planner™ (CFP) Board of Standards education requirement for sitting for the CFP examination, including: insurance, personal investing, retirement planning, tax planning, behavioral finance, financial planning practice management and foundational family economic theories. The CFP designation is the leading standard in financial planning and our program is registered with the CFP Board of Standards enabling students to sit for the exam upon completion of the certificate.

## **Degrees Offered with a Major in Family, Youth, and Community Sciences**

Master of Science

without a concentration

concentration in Community Studies

concentration in Family and Youth Development

concentration in Nonprofit Organization Development

## **Courses**

- FYC 5008: Personal and Family Tax Planning
- FYC 5009: Personal and Family Insurance Planning
- FYC 5106: Personal and Family Retirement and Estate Planning
- FYC 5935: Personal and Family Financial Planning Capstone
- FYC 6020: Principles of Family, Youth, and Community Sciences
- FYC 6111: Families and Violence
- FYC 6117: Military Families in Community Context
- FYC 6131: Ethics for FYCS Practitioners
- FYC 6207: Adolescent Problematic Behavior
- FYC 6221: Grant Proposals for Community-Based Organizations
- FYC 6222: Parenting and Child Relationships
- FYC 6223: Promoting Positive Youth Development
- FYC 6224: Resilience and Positive Youth Development
- FYC 6230: Theories of Youth and Family Development
- **FYC 6232**
- FYC 6234: Theoretical Approaches to Youth Programming
- FYC 6302: Sustainable Community Development
- FYC 6320: Community Development and Civic Engagement
- FYC 6330: Theories of Community Development
- FYC 6331: Involving Youths in Community Issues
- FYC 6412: Historical Foundations of Philanthropy
- FYC 6421: Nonprofit Organizations
- FYC 6422: Policy Issues and Case Studies in Nonprofit Organizations
- FYC 6423: Non-Governmental Organizations
- FYC 6424: Fund Raising for Community Nonprofit Organizations
- FYC 6425: Risk Management in Nonprofit Organizations
- FYC 6620: Program Planning and Evaluation for Human Service Delivery
- FYC 6662: Public Policy and Human Resource Development
- FYC 6800: Scientific Reasoning and Research Design
- FYC 6802: Advanced Research Methods for Family, Youth, and Community Sciences
- FYC 6901: Problems in Family, Youth, and Community Sciences
- FYC 6912: Nonthesis Project in Family, Youth, and Community Sciences
- FYC 6932: Topics, in Family, Youth, and Community Sciences
- FYC 6933: Seminar in Human Resource Development
- FYC 6934: Professional Internship/Practicum in Family, Youth, and Community Sciences
- FYC 6971: Research for Master's Thesis

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Food and Resource Economics Department

College of Agricultural and Life Sciences

*Chair:* Spiro Stefanou

*Associate Chair:* Rodney Clouser

*Acting Graduate Coordinator:* Sherry Larkin

Complete faculty listing by department: [Follow this link](#)

The Food and Resource Economics Department offers the Master of Agribusiness (M.AB) (non-thesis), Master of Science with Concentration in Agribusiness (M.S.AB.) (non-thesis), Master of Science (thesis), and Doctor of Philosophy. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Department participates in programs with the Center for Latin American Studies, the Center for African Studies, the Center for Tropical Agriculture, the School of Natural Resources and Environment, the College of Law, and the Florida Sea Grant College Program.

The Department programs reflects the diversity of Florida's agriculture which has more than fifty major commodities. With over thirty faculty involved in a full range of research, extension, and teaching programs in areas including Agricultural Marketing, International Trade, Policy, Production/Farm Management, International Development, Marine Economics, Natural Resource and Environmental Economics, Community/Regional Development and Labor Economics. In addition to the main campus location, the department has faculty at research centers throughout the state.

Several members of the faculty have garnered international reputations in diverse fields such as trade policy, generic advertising, citrus economics, sugar policy, business retention and expansion, leadership development, consumer attitudes towards genetically modified food, and dairy marketing.

The Department offers a combined bachelor's/master's degree program for the Master of Science and Master of Science with Concentration in Agribusiness. Contact the Graduate Program Office in 1170 McCarty Hall for information.

For more information, please see the program pages below, and see our website: <http://www.fred.ifas.ufl.edu>.

## Food and Resource Economics

## College

College of Agricultural and Life Sciences

## Department/School

Food and Resource Economics Department

## Food and Resource Economics Program Information

The Food and Resource Economics Department offers the Master of Agribusiness (M.AB.) (non-thesis), Master of Science with Concentration in Agribusiness (M.S.AB.) (non-thesis), Master of Science (thesis), and Doctor of Philosophy. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

The **Ph.D. in Food and Resource Economics** is designed to provide the student with rigorous training in economics, statistics, and applied quantitative techniques. Each student is exposed to core theory and to fields of specialization with the purpose to prepare the candidate for a professional career in post-secondary education, government, non-governmental organizations, private business, and international agencies.

The **Master of Agribusiness** is designed specifically for students with no academic background in economics or agricultural economics. The program is made up of students from diverse backgrounds including Accounting, Agricultural Education and Communication, Agricultural Operations Management, Animal Science, Business Administration, Finance, Food Science, Horticulture, Management, Turfgrass, and Wildlife Ecology and Conservation. The graduate coursework complements the student's undergraduate background and prepare them for careers in financial analysis, sales, management, marketing, human resources, policy, production, and entrepreneurial pursuits working in private industry, international firms, non-profit organizations and government.

The **Master of Science** in the Food and Resource Economics Department provides broad training in applied economics as it relates to food production, marketing and trade, regional economics, and natural resource issues. Students are taught to use basic economic principles and quantitative methods to address empirical problems. The core consists of graduate level courses in microeconomics, policy, econometrics, statistics and survey research methods. Many students elect to continue their education with a Ph.D. degree while others opt for employment with government agencies, non-governmental organizations, foreign agencies, private consulting firms, or corporations.

The **Master of Science with Concentration in Agribusiness** is designed specifically for students with an educational background in economics and agricultural economics. The quantitative courses include microeconomics, policy, econometrics and survey research methods and provide solid economic theory to prepare students for careers in financial analysis, sales, management, marketing, human resources, policy, production, and entrepreneurial pursuits working in private industry, international firms, non-profit organizations and government. For more information, please see our website: <http://www.fred.ifas.ufl.edu>.

## Degrees Offered with a Major in Food and Resource Economics

Doctor of Philosophy

without a concentration

with a concentration in Hydrologic Sciences

with a concentration in Toxicology



with a concentration in Tropical Conservation and Development

## Master of Agribusiness

without a concentration

with a concentration in Tropical Conservation and Development

## Master of Science

without a concentratio

with a concentration in Agribusiness

with a concentration in Hydrologic Sciences

with a concentration in Toxicology

with a concentration in Tropical Conservation and Development

## Courses

- AEB 5167: Economic Analysis in Small Farm Livelihood Systems
- AEB 5188: Economics of Agribusiness Decisions
- AEB 5326: Agribusiness Financial Management
- AEB 5516: Quantitative Methods in Agribusiness Decisions
- AEB 5757: Strategic Agribusiness Human Resource Management
- AEB 6106: Microeconomic Principles and Analysis
- AEB 6139: Strategic Agribusiness Management
- AEB 6145: Agricultural Finance
- AEB 6183: Agribusiness Risk Management
- AEB 6225: Public Policy and the Agribusiness Firm
- AEB 6301: Food Wholesale and Retail Marketing
- AEB 6363: Agricultural Marketing
- AEB 6385: Management Strategies for Agribusiness Firms
- AEB 6533: Static and Dynamic Optimization Models in Agriculture
- AEB 6553: Elements of Econometrics
- AEB 6592: Mathematical Programming for Economic Analysis
- AEB 6675: International Agribusiness Marketing
- AEB 6815: Science and Research Methodology
- AEB 6817: Survey Research Methods for Economists
- AEB 6905: Problems in Food and Resource Economics
- AEB 6910: Supervised Research
- AEB 6921: Workshop in Food and Resource Economics I

- AEB 6933: Special Topics
- AEB 6934: Workshop in Food and Resource Economics II
- AEB 6942: Advanced Applications in Agribusiness Experience
- AEB 6971: Research for Master's Thesis
- AEB 7108: Microeconomic Theory II
- AEB 7174: Economic Coordination and Organizational Behavior in Agribusiness
- AEB 7182: Agricultural Risk Analysis and Decision Making
- AEB 7184: Production Economics
- AEB 7240: Macroeconomic Theory in Open Economies II
- AEB 7373: Consumer Demand and Applied Analysis
- AEB 7453: Natural Resource and Environmental Economics
- AEB 7483: Seminar in Natural Resource and Environmental Economics
- AEB 7571: Econometric Methods I
- AEB 7572: Econometric Methods II
- AEB 7645: Economic Development and Agriculture
- AEB 7979: Advanced Research
- AEB 7980: Research for Doctoral Dissertation

## College of Agricultural and Life Sciences Courses

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Food Science and Human Nutrition Department

College of Agricultural and Life Sciences

*Chair:* Susan S. Percival

*Graduate Coordinators:* Harry S. Sitren (M.S. in Food Science and Human Nutrition / Ph.D. in Food Science), James F. Collins (Ph.D. in Nutritional Sciences)

*Complete faculty listing by department:* [Follow this link.](#)

The Food Science and Human Nutrition Department (FSHN) is one of the world's largest combined academic programs where food science, nutritional sciences, and dietetics are all studied within one department. FSHN has nearly 30 full-time faculty members, 80 graduate assistants, and close to 1,000 undergraduate students. Our programs are accredited by the Institute of Food Technologists (IFT) and the Academy of Nutrition and Dietetics. After completing undergraduate degrees, our students typically move on to professional employment, further

education or training in food or nutrition graduate programs, or on to professional school programs. We have a strong record of excellent placement of our graduate students in industry and professional organization employment positions, as faculty members at colleges and universities, or in postdoctoral training experiences.

Our faculty has trained at institutions from around the world; they have been widely successful in their teaching, research, and extension efforts. Throughout our programs in food science, nutrition, and dietetics, our faculty is recognized nationally and internationally as experts in their respective fields.

The Food Science and Human Nutrition Department offers programs leading to the degrees of Master of Science in Food Science and Human Nutrition, Doctor of Philosophy in Food Science, and Doctor of Philosophy in Nutritional Sciences (offered under the auspices of the Center for Nutritional Sciences). Minimum requirements for these degrees are located in the Graduate Degrees section of this catalog.

For more information please click the links to the program pages below, or see our website: <http://fshn.ifas.ufl.edu>.

## **Food Science**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Food Science and Human Nutrition Department

### **Food Science Program Information**

The Ph.D. program in Food Science is a multidisciplinary program consisting of Food Chemistry, Food Processing and Engineering, and Food Microbiology and Safety. Students are expected to obtain a breadth of food science knowledge by taking courses in all program areas with the majority of courses stressing one of the three areas of emphasis.

For further information, please see our website at: <http://fshn.ifas.ufl.edu>.

### **Doctor of Philosophy**

without a concentration

concentration in Toxicology

### **Food Science and Human Nutrition Departmental Courses**

- DIE 6241: Advanced Medical Nutrition Therapy
- DIE 6242: Advanced Medical Nutrition Therapy II
- DIE 6516: Professional Development in Dietetics
- DIE 6905: Problems in Dietetics

- DIE 6938: Advanced Dietetic Seminar
- DIE 6942: Dietetic Internship I
- DIE 6944: Dietetic Internship II
- DIE 6949: Dietetic Internship in Sports Nutrition
- FOS 5205: Current Issues in Food Safety and Sanitation
- FOS 5225C: Principles in Food Microbiology
- FOS 5437C: Food Product Development
- FOS 5561C: Citrus Processing Technology
- FOS 5645: Functional Foods and Nutraceuticals
- FOS 5732: Current Issues in Food Regulations
- FOS 6125C: Sensory Evaluation of Food
- FOS 5126C: Psychophysical Aspects of Foods
- FOS 6215: Principles of Food Safety
- FOS 6216: Food Safety Systems
- FOS 6217: Food Safety, Sanitation, and Microbiology
- FOS 6226C: Advanced Food Microbiology
- FOS 6315C: Advanced Food Chemistry
- FOS 6317C: Flavor Chemistry and Technology
- FOS 6355C: Instrumental Analysis and Separations
- FOS 6428C: Advanced Food Processing
- FOS 6455C: Industrial Food Fermentations
- FOS 6736: Food Regulations
- FOS 6905: Problems in Food Science
- FOS 6910: Supervised Research
- FOS 6915: Research Planning
- FOS 6936: Topics in Food Science
- FOS 6938: Food Science Seminar
- FOS 6940: Supervised Teaching
- FOS 6971: Research for Master's Thesis
- FOS 7979: Advanced Research
- FOS 7980: Research for Doctoral Dissertation
- HUN 5246: Current Issues in Dietary Supplements
- HUN 5441: Metabolic Response to Enteral and Parenteral Nutrition
- HUN 5447: Nutrition and Immunity
- HUN 6245: Advanced Human Nutrition
- HUN 6255: Clinical Nutrition
- HUN 6301: Nutritional Aspects of Lipid Metabolism
- HUN 6305: Nutritional Aspects of Carbohydrates
- HUN 6321: Proteins and Amino Acids in Nutrition
- HUN 6331: Vitamins in Human Nutrition
- HUN 6356: Minerals in Nutrition
- HUN 6812C: Analytical Techniques in Nutritional Biochemistry
- HUN 6905: Problems in Nutritional Sciences
- HUN 6910: Supervised Research
- HUN 6936: Topics in Nutritional Sciences
- HUN 6938: Nutritional Sciences Seminar
- HUN 6939: Advanced Clinical Nutrition
- HUN 6940: Supervised Teaching
- HUN 6971: Research for Master's Thesis

- HUN 7979: Advanced Research
- HUN 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Food Science and Human Nutrition**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Food Science and Human Nutrition Department

### **Food Science and Human Nutrition Program**

The M.S. program offers tracks in food science and in nutritional sciences. The Institute of Food Technologists and the American Society for Nutrition recognize these concentrations. The department also offers a combined Master of Science-Dietetics Internship (MS-DI) program accredited by the Commission on Accreditation for Dietetic Education (CADE). Students who complete this program are eligible to take the national registration examination to become a registered dietitian. Only graduates from a CADE accredited/approved Didactic Program in Dietetics are eligible for the MS-DI program.

Specific areas of study include nutritional biochemistry/molecular biology, nutrient function/metabolism, medical nutrition therapy/dietetics, nutritional immunology, food processing/engineering, food chemistry/biochemistry, and food safety/microbiology/quality.

Applicants must have an adequate background in physical and biological sciences and food science or nutritional sciences. Students with specific deficiencies will be required to take prerequisite courses.

For further information, please see our website at: <http://fshn.ifas.ufl.edu>.

## **Degrees Offered with a Major in Food Science and Human Nutrition**

Master of Science

without a concentration

concentration in Nutritional Sciences

## **Food Science and Human Nutrition Departmental Courses**

- DIE 6241: Advanced Medical Nutrition Therapy
- DIE 6242: Advanced Medical Nutrition Therapy II
- DIE 6516: Professional Development in Dietetics
- DIE 6905: Problems in Dietetics
- DIE 6938: Advanced Dietetic Seminar
- DIE 6942: Dietetic Internship I
- DIE 6944: Dietetic Internship II
- DIE 6949: Dietetic Internship in Sports Nutrition
- FOS 5205: Current Issues in Food Safety and Sanitation
- FOS 5225C: Principles in Food Microbiology
- FOS 5437C: Food Product Development
- FOS 5561C: Citrus Processing Technology
- FOS 5645: Functional Foods and Nutraceuticals
- FOS 5732: Current Issues in Food Regulations
- FOS 6125C: Sensory Evaluation of Food
- FOS 5126C: Psychophysical Aspects of Foods
- FOS 6215: Principles of Food Safety
- FOS 6216: Food Safety Systems
- FOS 6217: Food Safety, Sanitation, and Microbiology
- FOS 6226C: Advanced Food Microbiology
- FOS 6315C: Advanced Food Chemistry
- FOS 6317C: Flavor Chemistry and Technology
- FOS 6355C: Instrumental Analysis and Separations
- FOS 6428C: Advanced Food Processing
- FOS 6455C: Industrial Food Fermentations
- FOS 6736: Food Regulations
- FOS 6905: Problems in Food Science
- FOS 6910: Supervised Research
- FOS 6915: Research Planning
- FOS 6936: Topics in Food Science
- FOS 6938: Food Science Seminar
- FOS 6940: Supervised Teaching
- FOS 6971: Research for Master's Thesis
- FOS 7979: Advanced Research
- FOS 7980: Research for Doctoral Dissertation
- HUN 5246: Current Issues in Dietary Supplements
- HUN 5441: Metabolic Response to Enteral and Parenteral Nutrition

- HUN 5447: Nutrition and Immunity
- HUN 6245: Advanced Human Nutrition
- HUN 6255: Clinical Nutrition
- HUN 6301: Nutritional Aspects of Lipid Metabolism
- HUN 6305: Nutritional Aspects of Carbohydrates
- HUN 6321: Proteins and Amino Acids in Nutrition
- HUN 6331: Vitamins in Human Nutrition
- HUN 6356: Minerals in Nutrition
- HUN 6812C: Analytical Techniques in Nutritional Biochemistry
- HUN 6905: Problems in Nutritional Sciences
- HUN 6910: Supervised Research
- HUN 6936: Topics in Nutritional Sciences
- HUN 6938: Nutritional Sciences Seminar
- HUN 6939: Advanced Clinical Nutrition
- HUN 6940: Supervised Teaching
- HUN 6971: Research for Master's Thesis
- HUN 7979: Advanced Research
- HUN 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Nutritional Sciences**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Food Science and Human Nutrition Department

### **Nutritional Sciences Program**

The field of nutritional science has unprecedented public interest. This is fostered by evolving links between diet and health, and the impact of one's individual genetic makeup on nutrient utilization. The Ph.D. degree program in Nutritional Sciences is interdisciplinary, with participating CALS, COM, CLAS, and CVM faculty directing research of doctoral students, where the full spectrum of Nutritional Sciences is available. Emphasis areas include basic nutritional sciences, biochemistry and molecular biology, genetics, immunology, physiology, clinical nutrition, microbiology, and biostatistics.

Students are admitted to the program after the bachelor's degree or a master's degree in nutritional sciences or a related field. Applicants should have a strong undergraduate background in biological sciences and chemistry. Deficiencies may be made up during the first year of graduate study.

Additional information can be found at <http://nutritionalsciences.centers.ufl.edu>.

For additional information, e-mail Dr. Mitchell D. Knutson, Director at [mknutson@ufl.edu](mailto:mknutson@ufl.edu) or Dr. James F. Collins, Graduate Coordinator at [jfcollins@ufl.edu](mailto:jfcollins@ufl.edu).

### **Degrees Offered with a Major in Nutritional Sciences**

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

### **Nutritional Sciences Program Core Courses**

BCH 6206: Advanced Metabolism  
HUN 6938: Nutritional Sciences Seminar  
STA 6166: Statistical Methods in Research I  
HUN 6301: Nutritional Aspects of Lipid Metabolism  
HUN 6305: Nutritional Aspects of Carbohydrates  
HUN 6321: Proteins and Amino Acids in Nutrition  
HUN 6331: Vitamins in Human Nutrition  
HUN 6356: Minerals in Nutrition

### **Additional Course Offerings**

The following courses may be taken to contribute to the overall degree award requirements.

### **Food Science and Human Nutrition Departmental Courses**

- DIE 6241: Advanced Medical Nutrition Therapy
- DIE 6242: Advanced Medical Nutrition Therapy II
- DIE 6516: Professional Development in Dietetics
- DIE 6905: Problems in Dietetics
- DIE 6938: Advanced Dietetic Seminar
- DIE 6942: Dietetic Internship I
- DIE 6944: Dietetic Internship II
- DIE 6949: Dietetic Internship in Sports Nutrition



- FOS 5205: Current Issues in Food Safety and Sanitation
- FOS 5225C: Principles in Food Microbiology
- FOS 5437C: Food Product Development
- FOS 5561C: Citrus Processing Technology
- FOS 5645: Functional Foods and Nutraceuticals
- FOS 5732: Current Issues in Food Regulations
- FOS 6125C: Sensory Evaluation of Food
- FOS 5126C: Psychophysical Aspects of Foods
- FOS 6215: Principles of Food Safety
- FOS 6216: Food Safety Systems
- FOS 6217: Food Safety, Sanitation, and Microbiology
- FOS 6226C: Advanced Food Microbiology
- FOS 6315C: Advanced Food Chemistry
- FOS 6317C: Flavor Chemistry and Technology
- FOS 6355C: Instrumental Analysis and Separations
- FOS 6428C: Advanced Food Processing
- FOS 6455C: Industrial Food Fermentations
- FOS 6736: Food Regulations
- FOS 6905: Problems in Food Science
- FOS 6910: Supervised Research
- FOS 6915: Research Planning
- FOS 6936: Topics in Food Science
- FOS 6938: Food Science Seminar
- FOS 6940: Supervised Teaching
- FOS 6971: Research for Master's Thesis
- FOS 7979: Advanced Research
- FOS 7980: Research for Doctoral Dissertation
- HUN 5246: Current Issues in Dietary Supplements
- HUN 5441: Metabolic Response to Enteral and Parenteral Nutrition
- HUN 5447: Nutrition and Immunity
- HUN 6245: Advanced Human Nutrition
- HUN 6255: Clinical Nutrition
- HUN 6301: Nutritional Aspects of Lipid Metabolism
- HUN 6305: Nutritional Aspects of Carbohydrates
- HUN 6321: Proteins and Amino Acids in Nutrition
- HUN 6331: Vitamins in Human Nutrition
- HUN 6356: Minerals in Nutrition
- HUN 6812C: Analytical Techniques in Nutritional Biochemistry
- HUN 6905: Problems in Nutritional Sciences
- HUN 6910: Supervised Research
- HUN 6936: Topics in Nutritional Sciences
- HUN 6938: Nutritional Sciences Seminar
- HUN 6939: Advanced Clinical Nutrition
- HUN 6940: Supervised Teaching
- HUN 6971: Research for Master's Thesis
- HUN 7979: Advanced Research
- HUN 7980: Research for Doctoral Dissertation

## College of Agricultural and Life Sciences Courses

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Horticultural Sciences Department

College of Agricultural and Life Sciences

*Chairs* : K.M. Folta (Interim Chair, Horticultural Sciences) and W. Mackay (Environmental Horticulture)

*Graduate Coordinator*: G. A. Moore (Horticultural Sciences) and L. Trenholm (Environmental Horticulture)

*Complete faculty listing*: Follow this link.

The Horticultural Sciences Department Graduate Program at the University of Florida has a wide array of opportunities for graduate study.

The Horticultural Sciences (HOS) graduate program is administered jointly by the Environmental Horticulture (HSE) and Horticultural Sciences (HS) departments and offers graduate programs leading to the Master of Science (thesis or nonthesis options) and the Doctor of Philosophy degrees. Members of the program's Graduate Faculty include department resident faculty and faculty at University of Florida Research and Education Centers located throughout Florida.

The Horticultural Sciences Department offers a combined bachelor's/master's degree program. Please contact the graduate coordinator for information.

For admission to the HOS graduate program, apply to either the HS or HSE departments, depending on your career/research interest. Details about the program and how to apply are listed on their website: <http://hos.ufl.edu>.

## Horticultural Sciences

### College

College of Agricultural and Life Sciences

### Department/School

Horticultural Sciences Department  
Environmental Horticulture Department

## **Horticultural Sciences Program Information**

The Horticultural Sciences (HOS) graduate program is administered jointly by the Environmental Horticulture (HSE) and Horticultural Sciences (HS) departments and offers graduate programs leading to the Master of Science (thesis or nonthesis options) and the Doctor of Philosophy degrees. The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information. Members of the program's Graduate Faculty include department resident faculty and faculty at University of Florida Research and Education Centers located throughout Florida.

For admission to the HOS graduate program, apply to either the HS or HSE departments, depending on your career/research interest.

### **Requirements:**

A strong undergraduate or graduate background in horticultural, biological, agronomic, or other disciplines in the life sciences and undergraduate coursework in chemistry, physics, and mathematics. A prospective graduate student need not have majored in horticulture as an undergraduate or master's student; however, students with curriculum deficiencies are required to take prerequisite subjects during the first year of graduate study. Undergraduate courses taken to correct curriculum deficiencies do not count for graduate program credit.

Specializations in the HS department focus on vegetable and fruit crops and include

- Plant Breeding and Genetics
- Crop Production and Nutrient Management
- Postharvest Biology
- Organic Sustainable Agriculture
- Weed Science
- Physiology and Biochemistry
- Plant Molecular Biology
- Protected Agriculture

Numerous HS and HSE faculty participate in the interdisciplinary Plant Molecular and Cellular Biology Program. Students interested in molecular biology/biotechnology may pursue molecular-oriented studies in any listed specialization. Students interested in full specialization in molecular and related disciplines should contact the Plant Molecular and Cellular Biology interdisciplinary program for specific requirements.

Specializations in the HSE department:

- Breeding and Genetics
- Restoration Ecology
- Floriculture
- Foliage Production
- Plant anatomy and development
- Plant Biotechnology
- Plant Restoration Conservation Biotechnology
- Stress Physiology
- Taxonomy
- Tissue Culture
- Turfgrass Science
- Woody Plants

### **Graduate School Degree Program Requirements Master of Science (thesis option):**

Students must earn at least 30 credits as a graduate student at UF. No more than 9 of the 30 credits (earned with a grade of A, B+, or B) may be transferred from institutions approved for this purpose by the Dean of the Graduate

School. A minimum of 12 credits is required in the Horticultural Sciences major; additionally, a maximum of 6 credits in HOS 6971- Master's Research - may be counted toward the total credits. See here for information on M.S. graduate degrees.

A minor may be chosen in an academic unit other than the major. If a minor is chosen, at least 6 credits of course work are required in the minor field. Two 6-credit minors may be taken with the major academic unit's permission. A 3.00 (truncated) GPA is required for minor credit. In addition, a representative from the department in which the minor is being received must be on the supervisory committee.

#### **Master of Science non-thesis option:**

This option offers additional training beyond the bachelor's degree in a horticultural specialization. Essential elements of this program include a program of courses and a comprehensive written and/or final oral qualifying examination. There is no thesis requirement. A minimum of 30 credit hours of course work is required. Courses taken for program credit must be numbered 5000 or higher with at least 15 of these credits in the Horticultural Science major. With supervisory committee and college dean approval, 6 hours of 3000- or 4000-level undergraduate courses, taught outside the major department, may count toward the minimum requirements for the degree. Click for information on all graduate degrees.

A minor may be chosen in an academic unit other than the major. If a minor is chosen, at least 6 credits of work are required in the minor field. Two 6-credit minors may be taken with the major academic unit's permission. A 3.00 (truncated) GPA is required for minor credit. In addition, a representative from the department in which the minor is being received must be on the supervisory committee.

#### **Doctor of Philosophy:**

The Doctor of Philosophy is a research degree and is granted on evidence of general proficiency, distinctive attainment in a special field, and ability to conduct independent investigation as demonstrated in a dissertation presenting original research with a high degree of literary skill. Consequently, doctoral programs are more flexible and varied than those leading to M.S. degree programs. The Ph.D. degree requires at least 90 credits beyond the bachelor's degree, although specific course requirements vary from field to field and from student to student. Up to 30 credits of master's degree may be transferred to a doctoral program. Any credits counted from an M.S. degree program must have been earned within the previous seven years (or by petition). The Graduate Council does not specify the courses required for the Ph.D. degree.

General requirements for the program include

- a clear objective for research
- approval of the student's entire supervisory committee
- an appropriate number of credits of doctoral research

Click for information on all graduate degrees.

**Minor:** With the supervisory committee's approval, the student may choose one or more minor fields. Minor work may be completed in any academic unit outside the major, if approved for M.S. or doctoral programs listed in this catalog. The collective grade for courses included in a minor must be "B" (3.00) or higher. If one minor is chosen, the supervisory committee member representing the minor suggests 12 to 24 credits of courses numbered 5000 or higher as preparation for a qualifying examination. Part of this credit may have been earned in the M.S. degree program. If two minors are chosen, each must include at least 8 credits. Competence in the minor area is demonstrated by written examination by the minor academic unit, or by the oral qualifying examination. Minor course work at the doctoral level may include courses in more than one academic unit; if the objective of the minor is clearly stated and the combination of courses is approved by the Graduate School (this approval is not required for a minor in one academic unit). Further requirements for the Master of Science and the Doctor of Philosophy degrees are listed under those headings in the General Information section of this catalog.

### **Degrees Offered with a Major in Horticultural Sciences**

## Doctor of Philosophy

without a concentration

concentration in Environmental Horticulture

concentration in Horticultural Sciences

concentration in Toxicology

## Master of Science

without a concentration

concentration in Environmental Horticulture

concentration in Horticultural Sciences

## Horticultural Sciences Program Courses

- ALS 6935: Topics in Biological Invasions
- BCH 5045: Graduate Survey of Biochemistry
- BOT 6935: Special Topics
- HOS 6934: Professional Seminar Preparation
- PLS 5222C: Propagation of Horticultural Crops
- PLS 5241C: Advanced Plant Micropropagation
- PLS 5405: Advanced Composting Technology

## Additional Course Offerings

The following courses may be taken to contribute to the overall degree award requirements.

## Horticultural Sciences Departmental Courses

- ALS 5934: Graduate Professional Development Seminar
- HOS 5085C: Principles of Postharvest Horticulture
- HOS 5115C: Horticultural Plant Morphology and Identification
- HOS 5242: Genetics & Breeding of Vegetable Crops
- HOS 5306: Molecular Biology of Plant Hormones
- HOS 5330: Postharvest Technologies for Horticultural Crops
- HOS 5432: Advanced Nutritional Management of Ornamental Crops
- HOS 5515C: Greenhouse and Nursery Operations
- HOS 5516C: Advanced Production of Greenhouse and Nursery Crops
- HOS 5555: Tropical Fruit Production and Research in Florida

- HOS 5711: Phytochemicals in Food & Health
- HOS 6201: Breeding Perennial Cultivars
- HOS 6236: Molecular Marker Assisted Plant Breeding
- HOS 6331: Postharvest Biology
- HOS 6345: Environmental Physiology
- HOS 6412: Nutrition of Horticultural Crops
- HOS 6523: Research and Development in Turfgrass Science
- HOS 6545: Advanced Citriculture I
- HOS 6546: Advanced Citriculture II
- HOS 6905: Problems in Horticultural Science
- HOS 6910: Supervised Research
- HOS 6931: Horticultural Science Seminar
- HOS 6932: Special Topics
- HOS 6940: Supervised Teaching
- HOS 6941: Practicum in Horticultural Science
- HOS 6971: Research for Master's Thesis
- HOS 7979: Advanced Research
- HOS 7980: Research for Doctoral Dissertation
- ORH 5026C: Advanced Annual and Perennial Gardening
- ORH 5086: Advanced Golf and Sports Turf Management
- ORH 5282: Orchid Biology and Culture
- ORH 5322C: Palm Biology and Culture
- ORH 5817C: Advanced Florida Native Landscaping
- ORH 7941: Doctor of Plant Medicine: Internship in Environmental Horticulture
- PCB 5065: Advanced Genetics
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PLS 5222C: Propagation of Horticultural Crops
- PLS 5241C: Advanced Plant Micropropagation
- PLS 5405: Advanced Composting Technology

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Botany Courses

- BOT 5225C: Plant Anatomy
- BOT 5305: Paleobotany
- BOT 5505C: Intermediate Plant Physiology
- BOT 5625: Plant Geography
- BOT 5655C: Physiological Plant Ecology
- BOT 5685C: Tropical Botany
- BOT 5695C: Ecosystems of Florida
- BOT 5725C: Taxonomy of Vascular Plants
- BOT 6508C: Proteomics Theory and Practice
- BOT 6516: Plant Metabolism
- BOT 6566: Plant Growth and Development
- BOT 6716C: Advanced Taxonomy
- BOT 6726C: Principles of Systematic Biology
- BOT 6905: Individual Studies in Botany
- BOT 6910: Supervised Research
- BOT 6927: Advances in Botany
- BOT 6935: Special Topics
- BOT 6936: Graduate Student Seminar
- BOT 6940: Supervised Teaching
- BOT 6943: Internship in College Teaching
- BOT 6971: Research for Master's Thesis
- BOT 7979: Advanced Research
- BOT 7980: Research for Doctoral Dissertation
- PCB 5046C: Advanced Ecology
- PCB 5338: Principles of Ecosystem Ecology
- PCB 5356: Tropical Ecology
- PCB 6675C: Evolutionary Biogeography
- PLP 6656C: Fungal Biology

## Microbiology and Cell Science Department

*Chair:* E. Triplett.

*Graduate Coordinator:* Tony Romeo.

*Complete faculty listing by department:* Follow this link.

Graduate study is offered leading to the Master of Science and Doctor of Philosophy degrees in microbiology and cell science, with emphasis in one or more of the disciplines of biochemistry, cell biology, and microbiology.

Requirements for these degrees are provided in the Graduate Degrees section of this catalog and also at the Department webpage: <http://microcell.ufl.edu/>.

Instruction and guidance are collaborative among faculty in the Colleges of Agricultural and Life Sciences, Liberal Arts and Sciences, and Medicine.

Research spans broad areas in the cellular and molecular aspects of bacterial, plant, and animal life functions: Areas of research include microbial biochemistry, biotechnology; biomass conversion; genetic and metabolic regulation;

environmental microbiology; cell biology; molecular biology; molecular genetics; genomics and bioinformatics; immunology; virology; parasitology, host-pathogen interactions; cellular ultrastructure.

Prerequisites for admission to graduate study, in addition to those of the Graduate School, are a broad educational background including mathematics, physics, and chemistry through organic, analytical, and physical chemistry; basic courses in biology, botany, and/or zoology; and at least one course in microbiology and biochemistry. An undergraduate major in biochemistry, physical or chemical science, engineering, or general biology may be an acceptable alternative to a degree in microbiology or cell science. Receipt of an advanced degree requires detailed knowledge in microbiology, biochemistry, and chemistry; undergraduate deficiencies may necessitate additional course work prior to entry into the graduate program.

In addition, the Microbiology and Cell Science Department also offers a combined B.S./M.S. program that allows qualified students to earn both the Bachelor's and Master's degrees with 12 credit hours of jointly counted course work. This program is considered a "4/1" because students may be awarded both degrees within a five-year period. For further information on this program, follow this link: <http://microcell.ufl.edu/graduate-program/combined-degree-program/>.

## **Microbiology and Cell Science**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Microbiology and Cell Science Department

### **Microbiology and Cell Science Program Information**

The Department of Microbiology and Cell Science offers a top-10 education for students who wish to earn their M.S. or Ph.D. in Microbiology and Cell Science. Graduates are well prepared to pursue careers in government, industry, research and teaching in microbiology, cell biology, cellular biochemistry, and molecular genetics. For more information on how to apply for these programs, please visit our Microbiology and Cell Science Graduate Program Website – <http://microcell.ufl.edu/programsmcs>.

Currently there are 22 tenure eligible faculty positions staffed, 8 non-tenure eligible faculty, 16 post-doctoral fellows, over 47 graduate students, 22 office and technical staff, and 2 full time academic advisors. Most faculty are involved in both teaching and research programs that complement one another. The faculty's research programs span areas of broad interest in the cellular and molecular aspects bacterial, plant and animal life functions. Areas of research include

- Microbial physiology, metabolism and regulation
- Molecular biology
- Molecular genetics
- Immunology
- Virology
- Host-pathogen interactions
- Cellular ultrastructure
- Environmental microbiology



For more information, please see our website: <http://microcell.ufl.edu>. For Microbiology and Cell Science Academic Advising, contact Jonathan Orsini at 352-846-1330 or [jorsini@ufl.edu](mailto:jorsini@ufl.edu).

## **Degrees Offered with a Major in Microbiology and Cell Science**

### **Doctor of Philosophy**

without a concentration

concentration in Medical Microbiology and Biochemistry

concentration in Toxicology

### **Master of Science**

without a concentration

concentration in Medical Microbiology and Biochemistry

## **Courses**

- MCB 5205: Microbiology of Human Pathogens
- MCB 5252: Microbiology, Immunology, and Immunotherapeutics
- MCB 5305L: Microbial Genetics and Biotechnology Laboratory
- MCB 5408: Anaerobic Microbiology and Biotechnology
- MCB 5458: Energy Transformation in Microorganisms
- MCB 5505: General Virology
- MCB 6317: Molecular Biology of Gene Expression
- MCB 6318: Comparative Microbial Genomics
- MCB 6355: Microbial/Host Defense
- MCB 6409: Microbial Cell Structure and Function
- MCB 6417: Microbial Metabolism and Energetics
- MCB 6457: Metabolic Regulation
- MCB 6465: Microbial Metabolic Engineering
- MCB 6485: Advanced Techniques in Microbiology and Cell Science
- MCB 6772: Advanced Topics in Cell Biology
- MCB 6905: Experimental Microbiology
- MCB 6910: Supervised Research
- MCB 6930: Seminar
- MCB 6937: Special Topics in Microbiology
- MCB 6940: Supervised Teaching
- MCB 6971: Research for Master's Thesis
- MCB 7922: Journal Colloquy
- MCB 7979: Advanced Research
- MCB 7980: Research for Doctoral Dissertation
- PCB 5136L: Techniques in Microbial and Cell Biology

- PCB 5235: Immunology

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Plant Molecular and Cellular Biology Department**

College of Agricultural and Life Sciences

College of Liberal Arts and Sciences

College of Medicine

*Complete faculty listing by department:* Follow this link.

Plant Molecular and Cellular Biology (PNCB) currently has 45 faculty members in the program. They are based in the departments of Agronomy, Biology, Environmental Horticulture, Forest Resources and Conservation, Horticultural Sciences, Microbiology and Cell Science, Molecular Genetics and Microbiology, and Plant Pathology within the colleges of Agriculture and Life Sciences, Medicine, and Liberal Arts and Sciences.

## **Plant Molecular and Cellular Biology (CALS)**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Plant Molecular and Cellular Biology Department

### **Plant Molecular and Cellular Biology Program Information**

*Director:* Gloria A. Moore

*Graduate Coordinator:* Matias Kirst

Plant Molecular and Cellular Biology (PCMB) is an interdisciplinary and interdepartmental graduate degree program that emphasizes understanding the molecular and cellular mechanisms that mediate plant development, adaptation, and evolution. Students can pursue an M.S. or a Ph.D. degree through the PCMB program. All students complete core courses in Advanced Genetics, Plant Molecular Biology and Genomics, Plant Cellular and Developmental Biology, and Plant Biochemistry. In addition to the core classes, students can select from a variety of courses in biochemistry, molecular biology, physiology, breeding, genetics, evolution, microbiology, and plant pathology.

New students are exposed to a variety of faculty and experimental systems while they rotate through several laboratories during their first two semesters before selecting an adviser and dissertation research area. Both M.S. and Ph.D. students take four required courses: PCB 5065 Advanced Genetics, PCB 5530 Plant Molecular Biology and Genomics, PCB 6528 Plant Cell and Developmental Biology and BOT 6935 Plant Biochemistry, as well as journal colloquium classes (PCB 7922 Journal Colloquium). Additional elective courses are taken after approval by the student's supervisory committee. For additional information see <http://pmcb.ifas.ufl.edu>.

Successful candidates should have a strong interest in plant molecular and cellular mechanisms controlling development, metabolism, adaptation, and evolution. Applicants typically have a B.S. or M.S. in the agricultural, forestry, biological or chemical sciences with advanced undergraduate coursework in genetics, molecular and cellular biology, and biochemistry. However, outstanding students from a broad range of science disciplines are actively considered.

### **Degrees Offered with a Major in Plant Molecular and Cellular Biology**

Doctor of Philosophy

without a concentration

concentration in Toxicology

Master of Science

### **Plant Molecular and Cellular Biology Courses**

- BOT 6935: Special Topics
- PCB 5065: Advanced Genetics
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 6910: Supervised Research
- PCB 6937: Special Topics in Plant Molecular and Cellular Biology
- PCB 6971: Research for Master's Thesis
- PCB 7922: Journal Colloquy in Plant Molecular and Cellular Biology
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation

### **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment

- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Plant Pathology Department**

*Chair:* R. Loria

*Graduate Coordinators:* J. Jones

*Complete faculty listing by department:* Follow this link.

The Department of Plant Pathology offers graduate studies leading to the Master of Science (thesis and nonthesis option) and Doctor of Philosophy degrees. The Department also participates in the Doctor of Plant Medicine interdisciplinary professional degree.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

## **Plant Pathology**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Plant Pathology Department

### **Plant Pathology Program Information**

A student may pursue studies in one of several basic areas of plant pathology. These areas include fungal plant pathology, plant bacteriology, plant virology, diagnostics, control, and also molecular and biochemical aspects of host-pathogen systems, biological control of pathogens and weeds, epidemiology, etiology, genetics of host-pathogen systems, soil microbiology, and pathogen taxonomy. In Florida, the variety of cultivated plants, coupled with an environment ideal for plant disease development, offers the student opportunities to study diseases of many crops as they develop. First-hand knowledge can be gained of diseases of field, fruit, ornamental, pasture, range, turf, and vegetable crops in temperate, subtropical, and tropical environments. Students who anticipate study in plant pathology at the University of Florida should include in their undergraduate programs training in botany, chemistry (through biochemistry), genetics, and microbiology.

Courses in nematology are offered by the Department of Entomology and Nematology.

### **Degrees Offered with a Major in Plant Pathology**

Doctor of Philosophy

without a concentration

concentration in Toxicology

Master of Science

### **Plant Pathology Departmental Courses**

- PLP 5005C: General Plant Pathology
- PLP 5102: Theory and Practice of Plant Disease Control
- PLP 5115C: Citrus Pathology
- PLP 5155: Microbiological Control of Plant Diseases and Weeds
- PLP 6656C: Fungal Biology
- PLP 6223C: Viral Pathogens of Plants
- PLP 6241C: Bacterial Plant Pathogens
- PLP 6262C: Fungal Plant Pathogens
- PLP 6291: Plant Disease Diagnosis
- PLP 6303: Host-Parasite Interactions II
- PLP 6404: Epidemiology of Plant Disease
- PLP 6502: Host-Parasite Interactions I
- PLP 6621C: Pop Genetics Microbes
- PLP 6636: Frontiers in Plant Biotechnology
- PLP 6905: Problems in Plant Pathology
- PLP 6910: Supervised Research
- PLP 6921: Colloquium in Principles of Plant Pathology
- PLP 6932: Seminar in Plant Pathology
- PLP 6940: Supervised Teaching
- PLP 6942: Professional Internship in Plant Disease Clinic
- PLP 6971: Research for Master's Thesis
- PLP 7946: Plant Pathology Internship
- PLP 7979: Advanced Research
- PLP 7980: Research for Doctoral Dissertation

### **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study

- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## School of Forest Resources and Conservation

College of Agricultural and Life Sciences

*Director:* T. L. White.

*Graduate Coordinator:* T.V. Stein

*Complete faculty listing by department:* Follow this link.

Since 1937 the School of Forest Resources & Conservation has prepared students for professional careers caring for natural resources. We emphasize the role of people in managing both terrestrial and aquatic systems, to produce the myriad of benefits and services they provide. Our faculty have a broad range of interests, including ecology, economics/policy, and recreation/education, and are united by an interest in environmental resources, rather than by traditional academic discipline. The School is composed of three programmatic areas: Fisheries and Aquatic Sciences, Forest Resources and Conservation, and Geomatics. Combined, these programs offer seven different degree options (including two professional masters degrees), as well as concentrations and certificates in a diversity of specific areas. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

**Joint program:** Students may simultaneously earn a juris doctorate from the College of Law and a graduate degree (M.F.R.C., M.S., or Ph.D.) in Forest Resources and Conservation.

**Combined programs:** The School offers a combined bachelor's/master's degree program, which allows qualified students to earn both a bachelor's degree and a master's degree with a savings of 1 semester. Ph.D. students may pursue a co-major with the Department of Statistics (see below).

**Concentration in geomatics:** Students completing 15 or more credits with an SUR designation, as part of an SFRC graduate degree, may earn the concentration in geomatics. Geomatics is the collection, analysis, and management of spatial information and includes such fields as surveying, mapping, land tenure, cadastral systems, geographic information systems, and remote sensing.

**Concentration in ecological restoration:** This concentration is available to M.S. non-thesis students. To earn this concentration a student must complete Ecosystem Restoration Principles and Practice and four of the following courses: Ecological Distribution and Management of Invasive Plants, Ecology and Restoration of Invaded Ecosystems, Ecology and Restoration of Longleaf Pine Ecosystem, Watershed Restoration and Management, Natural Resource Policy and Administration, or Agroforestry in the Southeastern US. Ecological restoration seeks to return ecosystems to a close approximation of condition before a disturbance.

**Statistics co-major:** Ph.D. students with the School may elect the co-major offered jointly with the Department of Statistics. Students focusing on forest genetics, tree improvement, and other statistics-intensive aspects of natural resource management are potential candidates for this option.

**Certificates:** The School administers the Graduate Certificate in Agroforestry, and SFRC students regularly earn certificates in Geographic Information Systems and in Environmental Education and Communication. Requirements are described under *Interdisciplinary Graduate Certificates and Concentrations* in this catalog.

For additional information, please visit the School's web page at <http://sfrc.ufl.edu>.

For details on what terms courses will be offered, please visit <http://sfrc.ufl.edu/gradcourses.html>.

## **Fisheries and Aquatic Sciences**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

School of Forest Resources and Conservation

### **Fisheries and Aquatic Sciences Program**

*Director:* T. L. White

*Graduate Coordinator:* William J. Lindberg

*Complete faculty listing by department:* Follow this link.

Since 1937 the School of Forest Resources & Conservation has prepared students for professional careers caring for natural resources. We emphasize the role of people in managing both terrestrial and aquatic systems, to produce the myriad of benefits and services they provide. Our faculty have a broad range of interests, including ecology, economics/policy, and recreation/education, and are united by an interest in environmental resources, rather than by traditional academic discipline. The School is composed of three programmatic areas: Fisheries and Aquatic Sciences, Forest Resources and Conservation, and Geomatics. Combined, these programs offer seven different degree options (including two professional masters degrees), as well as concentrations and certificates in a diversity of specific areas.

The School's program in Fisheries and Aquatic Sciences leads to the Master of Science, Master of Fisheries and Aquatic Sciences (nonthesis), and Doctor of Philosophy degrees with a program in Fisheries and Aquatic Sciences. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Fisheries and Aquatic Sciences program also offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

The School of Forest Resources and Conservation's program in Fisheries and Aquatic Sciences conducts research, teaching, and extension programs in four broad areas:

- Sustainable fisheries
- Aquaculture
- Aquatic animal health
- Conservation and management of aquatic environments

Faculty encompass both freshwater and marine environments, as well as managed aquaculture systems.

Collaborators include the UF College of Veterinary Medicine, National Biological Survey, National Marine Fisheries

Service, Harbor Branch Oceanographic Institute, Mote Marine Laboratory, the US Geologic Survey, the Florida Fish and Wildlife Conservation Commission, and others. Academic programs are structured to emphasis direct engagement of students with faculty. Further information, including specific degree options, faculty biographies, and information on the admissions process, is available at: <http://sfrc.ufl.edu>.

## **Degrees Offered with a Major in Fisheries and Aquatic Sciences**

### Doctor of Philosophy

without a concentration

concentration in Geographic Information Systems

concentration in Natural Resource Policy and Administration

concentration in Wetland Sciences

### Master of Fisheries and Aquatic Sciences

without a concentration

concentration in Geographic Information Systems

concentration in Natural Resource Policy and Administration

concentration in Wetland Sciences

### Master of Science

without a concentration

concentration in Geographic Information Systems

concentration in Natural Resource Policy and Administration

concentration in Wetland Sciences

## **School of Forest Resources and Conservation Courses**

### Geomatics Concentration Courses

- GIS 6103: GIS Programming and Customization
- GIS 6116: Geographic Information Systems Analysis



- SUR 5365: Digital Mapping
- SUR 5385: Remote Sensing Applications
- SUR 5386: Image Processing for Remote Sensing
- SUR 5391C: Geomatics: Spatial Foundations of GIS
- SUR 5425: Cadastral Information Systems
- SUR 5525: Least Squares Adjustment Computations
- SUR 6375: Terrain Analysis and Mapping
- SUR 6395: Topics in Geographic Information Systems
- SUR 6427: Land Tenure and Administration
- SUR 6535: GPS-INS Integration
- SUR 6905: Special Problems in Geomatics
- SUR 6934: Topics in Geomatics

### Fisheries and Aquatic Sciences Program Courses

- FAS 5203C: Biology of Fishes
- FAS 5255C: Diseases of Warmwater Fish
- FAS 5276C: Field Ecology of Aquatic Organisms
- FAS 5335C: Applied Fisheries Statistics
- FAS 5901: Scientific Thinking in Ecology
- FAS 6154: Aquatic Invertebrate Ecological Physiology
- FAS 6171: Applied Phycology
- FAS 6176: Algae Biology and Ecology
- FAS 6256: Fish and Aquatic Invertebrate Histology
- FAS 6272: Marine Ecological Processes
- FAS 6337C: Fish Population Dynamics
- FAS 6339C: Advanced Quantitative Fisheries Assessment
- FAS 6355C: Fisheries Management
- FAS 6905: Individual Study
- FAS 6910: Supervised Research
- FAS 6932: Special Topics in Fisheries and Aquatic Sciences
- FAS 6933: Graduate Symposium
- FAS 6935: Contemporary Problems in Fisheries and Aquatic Sciences
- FAS 6940: Supervised Teaching
- FAS 6971: Research for Master's Thesis
- FAS 7979: Advanced Research
- FAS 7980: Research for Doctoral Dissertation

### Forest Resources and Conservation Program Courses

- FNR 5072C: Environmental Education Program Development
- FNR 5335: Agroforestry
- FNR 5462: Spatial Models and Decision Analysis
- FNR 5608: Research Planning
- FNR 6564: Ecohydrology
- FOR 5157: Ecosystem Restoration Principles and Practice
- FOR 5159: Ecology and Restoration of Longleaf Pine Ecosystems

- FOR 5161: Forest Productivity and Health
- FOR 5435: Forest Information Systems
- FOR 5615: Forest Conservation and Management Policies and Issues
- FOR 5625: Forest Water Resources Management
- FOR 5756: Non-Timber Forest Products
- FOR 6005: Conservation Behavior
- FOR 6154: Analysis of Forest Ecosystems
- FOR 6156: Simulation Analysis of Forest Ecosystems
- FOR 6164: Silviculture: Concepts and Application
- FOR 6170: Tropical Forestry
- FOR 6172C: Tropical Forestry Field Course
- FOR 6215: Fire Paradigms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6340: Physiology of Forest Trees
- FOR 6345C: Plant Water Relations Techniques
- FOR 6543: Natural Resource Economics and Valuation
- FOR 6628: Community Forest Management
- FOR 6665: Landscape Planning for Ecotourism
- FOR 6905: Research Problems in Forest Resources and Conservation
- FOR 6910: Supervised Research
- FOR 6933: Seminar
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 6940: Supervised Teaching
- FOR 6971: Research for Master's Thesis
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 6555: Introduction to Quantitative Genetics

### **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

### **Forest Resources and Conservation**

## **College**

College of Agricultural and Life Sciences

## **Department/School**

School of Forest Resources and Conservation

## **Forest Resources and Conservation Program Information**

Since 1937 the School of Forest Resources & Conservation has prepared students for professional careers caring for natural resources. We emphasize the role of people in managing both terrestrial and aquatic systems, to produce the myriad of benefits and services they provide. Our faculty have a broad range of interests, including ecology, economics/policy, and recreation/education, and are united by an interest in environmental resources, rather than by traditional academic discipline. The School is composed of three programmatic areas: Fisheries and Aquatic Sciences, Forest Resources and Conservation, and Geomatics. Combined, these programs offer seven different degree options (including two professional masters degrees), as well as concentrations and certificates in a diversity of specific areas.

The SFRC offers graduate programs leading to the Master of Forest Resources and Conservation (professional, non-thesis), Master of Science (thesis and non-thesis), and Doctor of Philosophy degrees in Forest Resources and Conservation. The Master of Science non-thesis degree may be taken entirely online. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Forest Resources and Conservation program prepares students to work with the ecological, economic, and social aspects of natural resources, including the management of spatial information gathered through traditional surveying as well as remote sensing. Faculty have a wide variety of specializations, including fire ecology, land tenure, tree genetics, recreation management, environmental education, geographic information systems, silviculture, forest economics, and environmental policy. Further information, including specific degree options, faculty biographies, and information on the admissions process, is available at: <http://sfrc.ufl.edu>.

## **Degrees Offered with a Major in Forest Resources and Conservation**

Doctor of Philosophy

without a concentration

concentration in Agroforestry

concentration in Geographic Information Systems

concentration in Geomatics

concentration in Hydrologic Sciences

concentration in Natural Resource Policy and Administration

concentration in Tropical Conservation and Development

concentration in Toxicology

concentration in Wetland Sciences

## Master of Forest Resources and Conservation

without a concentration

concentration in Agroforestry

concentration in Geographic Information Systems

concentration in Geomatics

concentration in Natural Resource Policy and Administration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Master of Science

without a concentration

concentration in Agroforestry

concentration in Ecological Restoration

concentration in Geographic Information Systems

concentration in Geomatics

concentration in Hydrologic Sciences

concentration in Natural Resource Policy and Administration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## School of Forest Resources and Conservation Courses

### Geomatics Concentration Courses

- GIS 6103: GIS Programming and Customization
- GIS 6116: Geographic Information Systems Analysis

- SUR 5365: Digital Mapping
- SUR 5385: Remote Sensing Applications
- SUR 5386: Image Processing for Remote Sensing
- SUR 5391C: Geomatics: Spatial Foundations of GIS
- SUR 5425: Cadastral Information Systems
- SUR 5525: Least Squares Adjustment Computations
- SUR 6375: Terrain Analysis and Mapping
- SUR 6395: Topics in Geographic Information Systems
- SUR 6427: Land Tenure and Administration
- SUR 6535: GPS-INS Integration
- SUR 6905: Special Problems in Geomatics
- SUR 6934: Topics in Geomatics

### Fisheries and Aquatic Sciences Program Courses

- FAS 5203C: Biology of Fishes
- FAS 5255C: Diseases of Warmwater Fish
- FAS 5276C: Field Ecology of Aquatic Organisms
- FAS 5335C: Applied Fisheries Statistics
- FAS 5901: Scientific Thinking in Ecology
- FAS 6154: Aquatic Invertebrate Ecological Physiology
- FAS 6171: Applied Phycology
- FAS 6176: Algae Biology and Ecology
- FAS 6256: Fish and Aquatic Invertebrate Histology
- FAS 6272: Marine Ecological Processes
- FAS 6337C: Fish Population Dynamics
- FAS 6339C: Advanced Quantitative Fisheries Assessment
- FAS 6355C: Fisheries Management
- FAS 6905: Individual Study
- FAS 6910: Supervised Research
- FAS 6932: Special Topics in Fisheries and Aquatic Sciences
- FAS 6933: Graduate Symposium
- FAS 6935: Contemporary Problems in Fisheries and Aquatic Sciences
- FAS 6940: Supervised Teaching
- FAS 6971: Research for Master's Thesis
- FAS 7979: Advanced Research
- FAS 7980: Research for Doctoral Dissertation

### Forest Resources and Conservation Program Courses

- FNR 5072C: Environmental Education Program Development
- FNR 5335: Agroforestry
- FNR 5462: Spatial Models and Decision Analysis
- FNR 5608: Research Planning
- FNR 6564: Ecohydrology
- FOR 5157: Ecosystem Restoration Principles and Practice
- FOR 5159: Ecology and Restoration of Longleaf Pine Ecosystems

- FOR 5161: Forest Productivity and Health
- FOR 5435: Forest Information Systems
- FOR 5615: Forest Conservation and Management Policies and Issues
- FOR 5625: Forest Water Resources Management
- FOR 5756: Non-Timber Forest Products
- FOR 6005: Conservation Behavior
- FOR 6154: Analysis of Forest Ecosystems
- FOR 6156: Simulation Analysis of Forest Ecosystems
- FOR 6164: Silviculture: Concepts and Application
- FOR 6170: Tropical Forestry
- FOR 6172C: Tropical Forestry Field Course
- FOR 6215: Fire Paradigms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6340: Physiology of Forest Trees
- FOR 6345C: Plant Water Relations Techniques
- FOR 6543: Natural Resource Economics and Valuation
- FOR 6628: Community Forest Management
- FOR 6665: Landscape Planning for Ecotourism
- FOR 6905: Research Problems in Forest Resources and Conservation
- FOR 6910: Supervised Research
- FOR 6933: Seminar
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 6940: Supervised Teaching
- FOR 6971: Research for Master's Thesis
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 6555: Introduction to Quantitative Genetics

### **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

### **School of Natural Resources and Environment**

*Graduate coordinator: T. Frazer*

*Complete faculty listing by department: Follow this link.*

The University of Florida School of Natural Resources and Environment offers interdisciplinary coursework in the basic and applied science of ecology, the related social sciences, and sustainability, leading to M.S. and Ph.D. degrees. Choose from about 450 courses, 280 faculty advisors, and 44 participating departments. Research areas of ecology graduate students range across natural resource ecology, environmental policy and management, and sustainable development.

Environmental problems are fundamentally human problems and should be understood in terms of human motivations and actions in a biophysical context. Their solution requires holistic thinking about dynamic ecological systems and the social, economic, and political forces driving human action. To this end, the goal of the Interdisciplinary Ecology graduate program is to provide advanced training in ecosystems thinking and the main theories and methodologies of the biophysical and social sciences to foster integrative approaches to complex real-world problems. Interdisciplinary Ecology students are intensely interested in the sustainability problem, and they welcome the challenge of addressing it through more than one traditional discipline.

## **Interdisciplinary Ecology**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

School of Natural Resources and Environment

### **Interdisciplinary Ecology Program**

*Director of Academic Programs and Graduate Coordinator: T. Frazer*

Graduate students are advised by one of the 280 members of the School's affiliate faculty and have a supervisory committee with interdisciplinary composition. For the list of Graduate Faculty, see <http://sfrc.ufl.edu/fish/people/>. Graduate students are hosted in one of 44 participating academic units.

The School offers a program of study leading to the Master of Science (thesis and non-thesis options), and Doctor of Philosophy degrees in interdisciplinary ecology. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog. The course work requirements and curriculum are described in more detail at <http://www.snre.ufl.edu/>. Choices among 450 courses are custom-fitted by the student and the supervisory committee to meet the student's specific needs and interests.

The Interdisciplinary Ecology program views the social-ecological system as the proper framework for addressing the full scope of complex, adaptive systems comprising humans in the natural world. The degree program challenges students to understand both natural and human dynamics to obtain a holistic view and to foster integration of human activities with natural resources and the environment. The learning outcomes of the program are to develop a thorough understanding of the components, processes, and interactions of the social-ecological system, competence in scientific research methodologies, and experience in professional interaction with peers.

The degree programs combine 1) course work in the science of ecology and additional natural and social sciences; and 2) competence in a recognized discipline in one of these fields of study. The former is achieved with a core-

course and distribution requirement and the latter by extra course work for the master's and a concentration for the doctoral degree. A thesis or dissertation provides first-hand experience creating scientific knowledge. The non-thesis master's option provides rapid, advanced preparation for the job market in 3 to 4 semesters, without research experience. Course requirements are 36 semester hours for the thesis option, 38 hours for the non-thesis option, and 60 hours beyond the master's degree for the doctoral degree.

## **Degrees Offered with a Major in Interdisciplinary Ecology**

### **Doctor of Philosophy**

without a concentration

concentration in Agricultural and Biological Engineering

concentration in Agricultural Education and Communication

concentration in Agronomy

concentration in Anthropology

concentration in Architecture

concentration in Biochemistry and Molecular Biology

concentration in Botany

concentration in Business Administration

concentration in Chemistry

concentration in Civil Engineering

concentration in Climate Science

concentration in Coastal and Oceanographic Engineering

concentration in Economics

concentration in English

concentration in Entomology and Nematology

concentration in Environmental Engineering Sciences

concentration in Family, Youth and Community Sciences

concentration in Farming Systems



concentration in Fisheries and Aquatic Sciences

concentration in Food and Resource Economics

concentration in Food Science

concentration in Forest Resources and Conservation

concentration in Foundations of Education

concentration in Geographic Information Systems

concentration in Geography

concentration in Geology

concentration in Health and Human Performance

concentration in Horticultural Sciences

concentration in Hydrologic Sciences

concentration in Landscape Architecture

concentration in Mathematics

concentration in Microbiology and Cell Science

concentration in Nuclear and Radiological Engineering

concentration in Philosophy

concentration in Religion

concentration in Sociology

concentration in Soil and Water Science

concentration in Statistics

concentration in Tropical Conservation and Development

concentration in Urban and Regional Planning

concentration in Veterinary Medical Sciences

concentration in Wetland Sciences

concentration in Wildlife Ecology And Conservation

concentration in Women's/Gender Studies

concentration in Zoology

Master of Science

without a concentration

concentration in Agricultural and Biological Engineering

concentration in Agricultural Education and Communication

concentration in Agronomy

concentration in Anthropology

concentration in Architecture

concentration in Biochemistry and Molecular Biology

concentration in Botany

concentration in Business Administration

concentration in Chemistry

concentration in Civil Engineering

concentration in Climate Science

concentration in Coastal and Oceanographic Engineering

concentration in Economics

concentration in English

concentration in Entomology and Nematology

concentration in Environmental Engineering Sciences

concentration in Family, Youth and Community Sciences

concentration in Farming Systems

concentration in Fisheries and Aquatic Sciences

concentration in Food and Resource Economics

concentration in Food Science

concentration in Forest Resources and Conservation

concentration in Foundations of Education

concentration in Geographic Information Systems

concentration in Geography

concentration in Geology

concentration in Health and Human Performance

concentration in Horticultural Sciences

concentration in Hydrologic Sciences

concentration in Landscape Architecture

concentration in Mathematics

concentration in Microbiology and Cell Science

concentration in Nuclear and Radiological Engineering

concentration in Philosophy

concentration in Political Science

concentration in Religion

concentration in Sociology

concentration in Soil and Water Science

concentration in Statistics

concentration in Tropical Conservation and Development

concentration in Urban and Regional Planning

concentration in Veterinary Medical Sciences

concentration in Wetland Sciences

concentration in Wildlife Ecology And Conservation

concentration in Women's/Gender Studies

concentration in Zoology

## Courses

- [www.snre.ufl.edu/graduate/curriculum.htm](http://www.snre.ufl.edu/graduate/curriculum.htm)
- EVR 5322: Scientific Processes in Conservation and Development
- EVR 5705: Natural Resources and Innovation Systems
- EVR 6320: Sustainable Natural Resource Management
- EVR 6933: Seminar
- EVR 6934: Internship
- EVR 6979: Nonthesis Master's Project
- PCB 6971: Research for Master's Thesis
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation

## College of Agricultural and Life Sciences Courses

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## Soil and Water Science Department

*Chair:* K. Ramesh Reddy

*Graduate Coordinator:* Max Teplitski

*Complete faculty listing by department:* Follow this link.

The Soil and Water Science Department offers Master of Science (thesis or professional non-thesis option) and Doctor of Philosophy degrees in soil and water science with the following specializations: ecology, environmental science, hydrologic science, and soil science. The Department also offers Master of Science (thesis or professional option) specialization in environmental science via distance education for place bound students (<http://soils.ifas.ufl.edu/academics/degree-environscience.shtml>). Requirements for the M.S. and Ph.D. degrees are given in the Graduate Degrees section of this catalog.

Soil and Water are vital resources in urban, agricultural, and natural ecosystems. The Soil and Water Science Department (SWSD) provides highly visible leadership in teaching, research, and extension/outreach programs as related to improving the productivity of agriculture with environmentally sound management practices, improving water quality, and protection and conservation of natural resources. Our department is one of the few in the nation that offers a comprehensive research and educational programs (molecular to landscape level) involving terrestrial, wetlands and aquatic ecosystems of the landscape. In addition to traditional on-campus educational programs, we use innovative e-technologies to offer educational programs to place-bound students. Our graduates and

postdoctoral fellows are well placed at universities, state and federal agencies, and private industry.

The SWSD programs are designed to meet the changing needs of our clientele at state, national and international levels. To meet new challenges and explore new opportunities, the SWSD's research, teaching, and extension programs are focused in five areas, with broader implication to water quality, carbon sequestration, greenhouse gases, and climate change:

- Nutrient, Pesticide, and Waste Management
- Soil, Water, and Aquifer Remediation
- Carbon Dynamics and Ecosystem Services
- Landscape Analysis and Modeling
- Wetlands and Aquatic Ecosystems

The Department offers graduate level certificates in Biodegradation and Remediation, Sustainable Land Resource and Nutrient Management, Soil Ecosystem Services, and Wetland and Water Resource Management for both on-campus students and via distance education for place bound students (<http://soils.ifas.ufl.edu/academics/degree-certificates.shtml>).

An additional option offered by the Department is a combined bachelor's/master's degree program that permits a B.S in Soil and Water Science or Interdisciplinary Studies – Environmental Management in Agriculture and Natural Resources and M.S. Degree to be completed in five years. Contact the graduate coordinator for more information.

For more information, please see the program page below and our website: <http://soils.ifas.ufl.edu>.

## **Soil and Water Science**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Soil and Water Science Department

### **Soil and Water Science Program Information**

The Soil and Water Science Department offers Master of Science (thesis or professional non-thesis option) and Doctor of Philosophy degrees in soil and water science with the following specializations: ecology, environmental science, hydrologic science, and soil science. The department also offers Master of Science (thesis or professional option) specialization in environmental science via distance education for place bound students (<http://soils.ifas.ufl.edu/academics/degree-environscience.shtml>). Requirements for the M.S. and Ph.D. degrees are given in the Graduate Degrees section of this catalog.

Students can also develop specializations in several interdisciplinary areas including biogeochemistry, ecology, geographic information systems, hydrologic science, tropical agriculture, turfgrass management, and wetland science. The Department emphasizes (but is not limited to) the following research areas:

- Nutrient, Pesticide, and Waste Management
- Soil, Water, and Aquifer Remediation
- Carbon Dynamics and Ecosystem Services

- Landscape Analysis and Modeling
- Wetlands and Aquatic Ecosystems

Interests of the student and faculty, the facilities, and funding available will determine the student's research area. A specific program of study is prepared by an appointed supervisory committee for each student. Students will present a thesis or dissertation in their major field (M.S. thesis option and Ph.D.). In addition, Ph.D. candidates must pass a qualifying examination covering several areas of soil and water science and related fields.

**Prerequisites:** Students who expect to do graduate work in the Soil and Water Science Department should hold a bachelor's degree from an accredited college or university with a major in soil and water science or the equivalent background in another field of science. Graduate students should have backgrounds in biology, chemistry, physics, and mathematics and knowledge of basic soil and water science.

For more information, please see our website: <http://soils.ifas.ufl.edu>.

## **Degrees Offered with a Major in Soil and Water Science**

### **Doctor of Philosophy**

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science**

without a concentration

concentration in Agroecology

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## **Soil and Water Science Departmental Courses**

- AGG 5607: Communicating in Academia
- ALS 5027: Reusable Learning Objects
- ALS 5155: Global Agroecosystems
- CWR 6537: Contaminant Subsurface Hydrology
- SWS 5050: Soils for Environmental Professionals
- SWS 5050L: Soils for Environmental Professionals Laboratory

- SWS 5115: Environmental Nutrient Management
- SWS 5132: Tropical Soil Management
- SWS 5182: Earth System Analysis
- SWS 5208: Sustainable Agricultural and Urban Land Management
- SWS 5234: Environmental Soil, Water, and Land Use
- SWS 5235: South Florida Ecosystems
- SWS 5224: Environmental Biogeochemistry
- SWS 5246: Water Resource Sustainability
- SWS 5247: Hydric Soils
- SWS 5248: Wetlands and Water Quality
- SWS 5305C: Soil Microbial Ecology
- SWS 5308: Ecology of Waterborne Pathogens
- SWS 5406: Soil and Water Chemistry
- SWS 5424C: Soil Chemical Analysis
- SWS 5551: Soils, Water, and Public Health
- SWS 5605C: Environmental Soil Physics
- SWS 5716C: Environmental Pedology
- SWS 5721C: GIS in Land Resource Management
- SWS 5805: Environmental Soil and Water Monitoring Techniques
- SWS 6134: Soil Quality
- SWS 6136: Soil Fertility
- SWS 6161: Bioavailability of Soil Nutrients
- SWS 6262: Soil Contamination and Remediation
- SWS 6323: Advanced Microbial Ecology
- SWS 6325: Rhizosphere Biochemistry
- SWS 6366: Biodegradation and Bioremediation
- SWS 6448: Biogeochemistry of Wetlands and Aquatic Systems
- SWS 6454: Advanced Soil and Water Chemistry
- SWS 6456: Advanced Biogeochemistry
- SWS 6464C: Soil Mineralogy
- SWS 6622: Vadose Zone Hydrology
- SWS 6722: Soil-Landscape Modeling
- SWS 6905: Special Problems
- SWS 6910: Supervised Research
- SWS 6931: Seminar
- SWS 6932: Topics in Soils
- SWS 6940: Supervised Teaching
- SWS 6971: Research for Master's Thesis
- SWS 7979: Advanced Research
- SWS 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing

- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **Wildlife Ecology and Conservation Department**

College of Agricultural and Life Sciences

*Chair:* Eric C. Hellgren

*Graduate Coordinator:* Kathryn E. Sieving

*Complete faculty listing by department:* Follow this link.

The Department of Wildlife Ecology and Conservation offers Master of Science (thesis and nonthesis option) and Doctor of Philosophy degrees in wildlife ecology and conservation. Requirements for these degrees are described in the Graduate Degrees section of this catalog.

Program emphases include wildlife biology, ecology, and management; landscape ecology and restoration; human dimensions; tropical and international conservation; and conservation education. Graduate students should have appropriate undergraduate training in the biological, social, and physical sciences including physics, chemistry, and mathematics. Students with inadequate backgrounds may be required to take (without credit at the graduate level) remedial undergraduate courses pertinent to their fields of interest.

For more information, please see our website: <http://www.wec.ufl.edu>.

## **Wildlife Ecology and Conservation**

### **College**

College of Agricultural and Life Sciences

### **Department/School**

Wildlife Ecology and Conservation Department

### **Wildlife Ecology and Conservation Program**

The Department of Wildlife Ecology and Conservation offers a breadth of graduate programs that are designed to prepare students for professional employment in conservation of natural resources in a changing world. WEC faculty teach, conduct research, and provide service and extension in the following areas: avian ecology, behavioral ecology, community ecology, conservation biology, conservation education, conservation genetics, ecosystem management, environmental interpretation, habitat restoration, herpetofaunal ecology, human dimensions of wildlife management, international conservation, introduced species, landscape ecology, mammalian behavior, marine mammal ecology, plant ecology, population biology, range ecology, systems ecology, tropical conservation, urban wildlife relations, wetlands ecology, wildlife diseases, and wildlife management.



The **Doctor of Philosophy (PhD) program** in Wildlife Ecology and Conservation serves graduate students conducting advanced, original studies of fundamental ecological and social sciences (e.g., ecosystem, community, landscape ecology, human dimensions), usually with applications to further society's understanding of wildlife ecology and to improve conservation of wildlife resources.

The **Master of Science (MS) thesis program** in Wildlife Ecology and Conservation: (a) prepares graduate students for entry-level professional positions in areas of wildlife biology and ecology, natural resource management, conservation, and (b) provides a solid scientific foundation for further graduate work leading to the PhD degree.

The **Master of Science, non-thesis (MS) program** in Wildlife Ecology and Conservation provides advanced training for students in technical and professional aspects of wildlife management, conservation, and public education, emphasizing written and oral communication of scientific information.

For more information, please see our website: <http://www.wec.ufl.edu>.

## **Degrees Offered with a Major in Wildlife Ecology and Conservation**

### **Doctor of Philosophy**

without a concentration

concentration in Geographic Information Systems

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science**

without a concentration

concentration in Geographic Information Systems

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## **Courses**

- WIS 5323C: Impact of Diseases on Wildlife Population
- WIS 5376
- WIS 5496: Research Design in Wildlife Ecology
- WIS 5521: Plant-Animal Interactions
- WIS 5555C: Conservation Biology
- WIS 6444: Advanced Wetlands Ecology
- WIS 6455: Wildlife Population Ecology
- WIS 6466: Wildlife Population Modeling
- WIS 6468C: Pattern and Process in Landscape Ecology

- WIS 6525: Environmental Interpretation
- WIS 6544: Administration in Natural Resources
- WIS 6575: Mammalian Carnivores: Conservation and Management Issues
- WIS 6578: Human Dimensions of Biological Conservation
- WIS 6905: Research Problems in Wildlife and Range Sciences
- WIS 6910: Supervised Research
- WIS 6933: Seminar
- WIS 6934: Topics in Wildlife and Range Sciences
- WIS 6940: Supervised Teaching
- WIS 6971: Research for Master's Thesis
- WIS 6543: Wildlife and Agriculture
- WIS 7979: Advanced Research
- WIS 7980: Research for Doctoral Dissertation

## **College of Agricultural and Life Sciences Courses**

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory
- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **College of the Arts**

Dean: L. Lavelli

Complete faculty listings: Follow this link.

The arts program at UF began in the 1920s to serve the state of Florida's needs. Meeting these needs over the past 80 years has propelled the college to excel on a national and international level and has defined its mission to provide instruction for students seeking professional careers in the arts. In addition to providing rich educational experiences and programs in the arts, the college brings national and international recognition to the university through the high-level professionalism associated with the faculty and alumni, and the competence of students and graduates.

For more information about the College of the Arts, please see our website: <http://www.arts.ufl.edu>

Departments and Programs within the College of the Arts

College of the Arts Courses

## Arts in Medicine

### College

College of the Arts

### Arts in Medicine Program Information

*Center for Arts in Medicine Director:* Jill Sonke

*Center for Arts in Medicine Graduate Advisor:* Dylan Klempner

The Center for Arts in Medicine is committed to advancing research, education, and practice in the arts in healthcare, locally and globally. The Center offers an online Master of Arts in Arts in Medicine. Minimum requirements for the degree are available in the Graduate Degrees section of this catalog.

**Prerequisites and Requirements:** Admission to the MA in Arts in Medicine program requires a bachelor's degree in an arts, health, or related field of study, a GRE exam score or previous graduate degree, and completion of the Introduction to the Arts in Healthcare course at UF, or completion of an Arts in Healthcare Summer Intensive, or a minimum of one year of professional experience as an artist or administrator in the field of Arts in Medicine. Requirements of the degree include completion of 35 credits of coursework with a 3.0 or higher GPA.

**Commitment of time:** The MA in Arts in Medicine is designed to be completed in two years when students are enrolled in one class at a time (with one 8-week semester with two courses). Students should expect to dedicate 16 hours per week to each 8-week 3-credit hour course.

For more information, please see our website: <http://www.arts.ufl.edu/cam>.

### Degrees Offered with a Major in Arts in Medicine

Master of Arts

## Arts in Medicine Courses

### Core Curriculum

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- PHC 6104: Evidence-Based Management of Public Health Programs

### Practicum

- HUM 6358: Arts in Medicine Capstone Proposal

- HUM 6359: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum

## Electives

- ANG 6930: Special Topics in Anthropology
- GMS 6822: Measuring and Analyzing Health Outcomes II
- HSA 6114: U.S. Health Care System
- HUM 6930: Special Topics in Fine Arts
- MVV 6651: Vocal Pedagogy
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- THE 6905: Individual Study

## College of the Arts Courses

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## School of Art and Art History

College of the Arts

Director: Richard C. Heipp

Graduate Coordinator: Patrick Grigsby

Complete faculty listing: [Follow this link.](#)

The School of Art and Art History offers the M.F.A. degree in art with specializations in art + technology, ceramics, creative photography, drawing, graphic design, painting, printmaking, and sculpture. The school also offers Master of Arts degrees in art education, art history, and museology (museum studies) and the Doctor of Philosophy degree in art history. Requirements for these degrees can be found in the Graduate Degrees section of this catalog, and information about each of these graduate programs can be found at the links below.

For more information, please see our website: <http://www.arts.ufl.edu/welcome/art>

## Art

### College

College of the Arts

## Department/School

School of Art and Art History

## Art Program

**Master of Fine Arts degree:** The school offers the M.F.A. degree in art with specializations in art + technology, ceramics, creative photography, drawing, graphic design, painting, printmaking, and sculpture. Enrollment is competitive and limited. Candidates for admission should have adequate undergraduate training in art. Deficiencies may be corrected before beginning graduate study. Applicants must submit a portfolio for admission consideration (for comprehensive admission information: <http://www.arts.ufl.edu/programs/grad.aspx>). A minimum of 3 years residency is normally needed to complete the requirements for this degree, which for studio students culminates with an M.F.A. exhibition.

The M.F.A. requires a minimum of 60 credit hours: 24 hours must be in an area of specialization. Normal course requirements include:

- 12 hours of studio electives outside the area of specialization
- 6 hours of art history electives
- 3 hours of outside SA+AH electives (research/discipline appropriate)
- 6 hours of electives
- 6 hours of individual project or thesis research.

Although the M.F.A. is a thesis degree, students usually produce a creative project in lieu of thesis. Students should see the graduate program adviser for the School's requirements for the creative project.

## Degrees Offered with a Major in Art

Master of Fine Arts

## School of Art and Art History Departmental Courses

- ARE 6049: History of Teaching Art
- ARE 6148: Curriculum in Teaching Art
- ARE 6246C: Principles of Teaching Art
- ARE 6247C: Teaching Art: The Study of Practice
- ARE 6386: Teaching Art in Higher Education
- ARE 6641: Issues in Art Education
- ARE 6746: Methods of Research in Art Education
- ARE 6905: Individual Study
- ARE 6910: Capstone Project
- ARE 6933: Special Topics in Art Education
- ARE 6944: Internship in Teaching Art
- ARE 6971: Research for Master's Thesis
- ARE 6973: Individual Project
- ARH 5357: French Art of the Ancien Regime: 1680-1780
- ARH 5420: Art in the Age of Revolution
- ARH 5440: Beginnings of Modernism

- ARH 5527: Arts of Central Africa
- ARH 5528: Art of West Africa
- ARH 5529: Clothing and Textiles in Africa
- ARH 5655: Indigenous American Art
- ARH 5667: Colonial Andean Art
- ARH 5816: Methods of Research and Bibliography
- ARH 5877: Gender, Representation, and the Visual Arts: 1600-1900
- ARH 5905: Individual Study
- ARH 6141: Greek Art Seminar
- ARH 6292: Medieval Art Seminar
- ARH 6394: Renaissance Art Seminar
- ARH 6422: Beginnings of Modernism. Realism to Post-Impressionism 1848-1890
- ARH 6477: Eighteenth-Century European Art Seminar
- ARH 6481: Contemporary Art Seminar
- ARH 6496: Modern Art Seminar
- ARH 6596: Chinese Art Seminar
- ARH 6597: African Art Seminar
- ARH 6654: Pre-Columbian Art Seminar
- ARH 6666: Colonial Latin American Art Seminar
- ARH 6694: Nineteenth-Century Art–Seminar
- ARH 6696: American Art Seminar
- ARH 6797: Museum Education
- ARH 6836: Exhibitions Seminar
- ARH 6895: Collections Management Seminar
- ARH 6900: Independent Study in Museology
- ARH 6910: Supervised Research
- ARH 6911: Advanced Study
- ARH 6914: Independent Study in Ancient Art History
- ARH 6915: Independent Study in Medieval Art History
- ARH 6916: Independent Study in Renaissance and Baroque Art History
- ARH 6917: Independent Study in Modern Art History
- ARH 6918: Independent Study in Non-Western Art History
- ARH 6930: Special Topics in Museology
- ARH 6938: Seminar in Museum Studies
- ARH 6941: Supervised Internship
- ARH 6946: Museum Practicum
- ARH 6948: Gallery Practicum
- ARH 6971: Research for Master's Thesis
- ARH 7979: Advanced Research
- ARH 7980: Research for Doctoral Dissertation
- ART 5674C: Digital Fabrication
- ART 5905C: Directed Study
- ART 5930C: Special Topics
- ART 6410C: Printmaking Seminar: Mastering Process and Content
- ART 6411C: Printmaking Seminar: Transformation and Change
- ART 6412C: Printmaking Seminar: Ideation, Studies, and Completed Works
- ART 6413C: Printmaking Seminar: Interdisciplinary Studio
- ART 6671C: Advanced Experiments in Digital Art
- ART 6672: Hypermedia

- ART 6673C: Video Art
- ART 6675C: Digital Art and Animation
- ART 6691: Digital Art Studio
- ART 6794C: Vessel Aesthetic 1
- ART 6795C: Vessel Aesthetic 2
- ART 6797C: Ceramic Sculpture 2
- ART 6835C: Research in Methods and Materials of the Artist
- ART 6849C: Reactive Environments
- ART 6897: Professional Practices for the Visual Artist
- ART 6910C: Supervised Research
- ART 6925C: Art + Technology Workshop
- ART 6926C: Advanced Study I
- ART 6927C: Advanced Study II
- ART 6928C: Advanced Study III
- ART 6929C: Advanced Study IV
- ART 6933: Area Methods: Rotating Topics
- ART 6971: Research for Master's Thesis
- ART 6973C: Individual Project
- DIG 6746C: Graduate Seminar in Sensors and Electronics
- IDC 6505C: Programming for Artists

## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## **Art Education**

### **College**

College of the Arts

### **Department/School**

School of Art and Art History

### **Art Education Program**

**Master of Arts degree in Art Education:** The School offers the M.A. in art education. In addition to meeting requirements of the Graduate School for admission, prospective students should:

- Hold a degree in studio art, art history, design, or art education
- Send up to 10 images of original works of art (on CD or in slide form) and a research paper, article, or other sample of academic writing
- Official transcripts from all colleges/universities previously attended
- Statement of professional goals for attending graduate school and earning an M.A. degree in art education
- Current Curriculum Vitae or Resume
- Submit three current letters of recommendation.

The M.A. in art education requires a minimum of 36 credit hours. ARE 6049, ARE 6148, and ARE 6641 are required. The basic plan of study includes 3 credits of an approved art education elective; 9 credits in studio courses; 3 credits in art history; 6 credits in art history, studio, art education, or education electives; 3 credits of ARE 6746 ; and 3 credits of ARE 6971 or ARE 6973. To be admitted to candidacy, students must pass a comprehensive examination at the beginning of the second year. The program culminates in an oral examination on the thesis or project in lieu of thesis.

### **Degrees Offered with a Major in Art Education**

Master of Arts

### **School of Art and Art History Departmental Courses**

- ARE 6049: History of Teaching Art
- ARE 6148: Curriculum in Teaching Art
- ARE 6246C: Principles of Teaching Art
- ARE 6247C: Teaching Art: The Study of Practice
- ARE 6386: Teaching Art in Higher Education
- ARE 6641: Issues in Art Education
- ARE 6746: Methods of Research in Art Education
- ARE 6905: Individual Study
- ARE 6910: Capstone Project
- ARE 6933: Special Topics in Art Education
- ARE 6944: Internship in Teaching Art
- ARE 6971: Research for Master's Thesis
- ARE 6973: Individual Project
- ARH 5357: French Art of the Ancien Regime: 1680-1780
- ARH 5420: Art in the Age of Revolution
- ARH 5440: Beginnings of Modernism
- ARH 5527: Arts of Central Africa
- ARH 5528: Art of West Africa
- ARH 5529: Clothing and Textiles in Africa
- ARH 5655: Indigenous American Art
- ARH 5667: Colonial Andean Art
- ARH 5816: Methods of Research and Bibliography



- ARH 5877: Gender, Representation, and the Visual Arts: 1600-1900
- ARH 5905: Individual Study
- ARH 6141: Greek Art Seminar
- ARH 6292: Medieval Art Seminar
- ARH 6394: Renaissance Art Seminar
- ARH 6422: Beginnings of Modernism. Realism to Post-Impressionism 1848-1890
- ARH 6477: Eighteenth-Century European Art Seminar
- ARH 6481: Contemporary Art Seminar
- ARH 6496: Modern Art Seminar
- ARH 6596: Chinese Art Seminar
- ARH 6597: African Art Seminar
- ARH 6654: Pre-Columbian Art Seminar
- ARH 6666: Colonial Latin American Art Seminar
- ARH 6694: Nineteenth-Century Art–Seminar
- ARH 6696: American Art Seminar
- ARH 6797: Museum Education
- ARH 6836: Exhibitions Seminar
- ARH 6895: Collections Management Seminar
- ARH 6900: Independent Study in Museology
- ARH 6910: Supervised Research
- ARH 6911: Advanced Study
- ARH 6914: Independent Study in Ancient Art History
- ARH 6915: Independent Study in Medieval Art History
- ARH 6916: Independent Study in Renaissance and Baroque Art History
- ARH 6917: Independent Study in Modern Art History
- ARH 6918: Independent Study in Non-Western Art History
- ARH 6930: Special Topics in Museology
- ARH 6938: Seminar in Museum Studies
- ARH 6941: Supervised Internship
- ARH 6946: Museum Practicum
- ARH 6948: Gallery Practicum
- ARH 6971: Research for Master's Thesis
- ARH 7979: Advanced Research
- ARH 7980: Research for Doctoral Dissertation
- ART 5674C: Digital Fabrication
- ART 5905C: Directed Study
- ART 5930C: Special Topics
- ART 6410C: Printmaking Seminar: Mastering Process and Content
- ART 6411C: Printmaking Seminar: Transformation and Change
- ART 6412C: Printmaking Seminar: Ideation, Studies, and Completed Works
- ART 6413C: Printmaking Seminar: Interdisciplinary Studio
- ART 6671C: Advanced Experiments in Digital Art
- ART 6672: Hypermedia
- ART 6673C: Video Art
- ART 6675C: Digital Art and Animation
- ART 6691: Digital Art Studio
- ART 6794C: Vessel Aesthetic 1
- ART 6795C: Vessel Aesthetic 2
- ART 6797C: Ceramic Sculpture 2

- ART 6835C: Research in Methods and Materials of the Artist
- ART 6849C: Reactive Environments
- ART 6897: Professional Practices for the Visual Artist
- ART 6910C: Supervised Research
- ART 6925C: Art + Technology Workshop
- ART 6926C: Advanced Study I
- ART 6927C: Advanced Study II
- ART 6928C: Advanced Study III
- ART 6929C: Advanced Study IV
- ART 6933: Area Methods: Rotating Topics
- ART 6971: Research for Master's Thesis
- ART 6973C: Individual Project
- DIG 6746C: Graduate Seminar in Sensors and Electronics
- IDC 6505C: Programming for Artists

## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## **Art History**

### **College**

College of the Arts

### **Department/School**

School of Art and Art History

### **Art History Program**

The School of Art & Art History offers graduate programs leading to the M.A. and Ph.D. degrees. Minimum requirements for these degrees are available in the Graduate Degrees section of this catalog. For complete details of the M.A. and Ph.D. degree requirements, see the Director of Graduate Studies—Art History. Art History students may participate in courses offered by the State University System's programs in Paris, London, and Florence. Other study-abroad programs may be approved by the director of graduate studies.

For the M.A. degree, the School offers areas of emphasis in Ancient, Medieval, Renaissance/Baroque, Modern, and non-Western art history (including African, Asian, and Oceanic). A minimum of 36 credit hours is required: ARH 5816 (3 credits), 27 hours of course work, and ARH 6971 (6 credits). Course work requires a graduate seminar in each of the following areas: Ancient, Renaissance/Baroque, Modern/Contemporary, and Non-West (a total of 12 credit hours). Nine credits may be taken in related areas with the graduate program adviser's approval. Reading proficiency in a foreign language appropriate to the major area of study must be demonstrated before thesis research is begun. Language courses cannot apply toward degree credit.

For the Ph.D. degree, the School offers the same areas of specialization as for the M.A. degree. Up to 30 credits from the M.A. degree may apply toward the 90 credit Ph.D. degree. A program of 60 credit hours beyond the M.A. degree is required. Core courses will consist of a minimum of 30 hours in art history:

- 18 hours in a primary area (5000-level or above)
- 9 hours in a secondary area (5000-level or above)
- 3 hours of theory/methodology of art history (if ARH 5816 or its equivalent has not been taken as part of the M.A.)
- An additional 12 hours of outside electives taken in other schools or departments are required in a discipline(s) related to the primary area of study
- Finally, 27 hours of dissertation research and writing is required.

By the end of the second semester or equivalent full-time study, students should form their supervisory committee that must include a minimum of four Graduate Faculty members; one of whom must agree to serve as primary dissertation adviser and supervisory committee chair. The supervisory committee will also act as the qualifying examination committee. Normally students will take the qualifying examination during the spring term of the third year in residence. The examination is both written and oral. It will cover the major and minor art history areas of emphasis as well as the student's preliminary formulation of a dissertation topic and provisional statement of the approaches to that topic as expressed in the dissertation prospectus. On successful completion of the qualifying examination, the approval by the supervisory committee of the dissertation prospectus, and fulfilling all other course and language requirements, the student makes formal application for a change of status to Ph.D. candidacy. Normally, a student will be expected to present the completed dissertation and defend it at an oral defense conducted by the supervisory committee by the end of the sixth year in the program. For Ph.D. students, reading knowledge of two research languages other than English must be demonstrated by the end of the second year of course work, or by the end of the first semester in the case of transfer students. Language courses are not applicable toward degree credit.

For more information, please see our website: <http://arts.ufl.edu/academics/art-and-art-history>.

## **Degrees Offered with a Major in Art History**

Doctor of Philosophy

Master of Arts

## **School of Art and Art History Departmental Courses**

- ARE 6049: History of Teaching Art
- ARE 6148: Curriculum in Teaching Art
- ARE 6246C: Principles of Teaching Art
- ARE 6247C: Teaching Art: The Study of Practice
- ARE 6386: Teaching Art in Higher Education

- ARE 6641: Issues in Art Education
- ARE 6746: Methods of Research in Art Education
- ARE 6905: Individual Study
- ARE 6910: Capstone Project
- ARE 6933: Special Topics in Art Education
- ARE 6944: Internship in Teaching Art
- ARE 6971: Research for Master's Thesis
- ARE 6973: Individual Project
- ARH 5357: French Art of the Ancien Regime: 1680-1780
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- ARH 5527: Arts of Central Africa
- ARH 5528: Art of West Africa
- ARH 5529: Clothing and Textiles in Africa
- ARH 5655: Indigenous American Art
- ARH 5667: Colonial Andean Art
- ARH 5816: Methods of Research and Bibliography
- ARH 5877: Gender, Representation, and the Visual Arts: 1600-1900
- ARH 5905: Individual Study
- ARH 6141: Greek Art Seminar
- ARH 6292: Medieval Art Seminar
- ARH 6394: Renaissance Art Seminar
- ARH 6422: Beginnings of Modernism. Realism to Post-Impressionism 1848-1890
- ARH 6477: Eighteenth-Century European Art Seminar
- ARH 6481: Contemporary Art Seminar
- ARH 6496: Modern Art Seminar
- ARH 6596: Chinese Art Seminar
- ARH 6597: African Art Seminar
- ARH 6654: Pre-Columbian Art Seminar
- ARH 6666: Colonial Latin American Art Seminar
- ARH 6694: Nineteenth-Century Art–Seminar
- ARH 6696: American Art Seminar
- ARH 6797: Museum Education
- ARH 6836: Exhibitions Seminar
- ARH 6895: Collections Management Seminar
- ARH 6900: Independent Study in Museology
- ARH 6910: Supervised Research
- ARH 6911: Advanced Study
- ARH 6914: Independent Study in Ancient Art History
- ARH 6915: Independent Study in Medieval Art History
- ARH 6916: Independent Study in Renaissance and Baroque Art History
- ARH 6917: Independent Study in Modern Art History
- ARH 6918: Independent Study in Non-Western Art History
- ARH 6930: Special Topics in Museology
- ARH 6938: Seminar in Museum Studies
- ARH 6941: Supervised Internship
- ARH 6946: Museum Practicum
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- ARH 7979: Advanced Research
- ARH 7980: Research for Doctoral Dissertation
- ART 5674C: Digital Fabrication
- ART 5905C: Directed Study
- ART 5930C: Special Topics
- ART 6410C: Printmaking Seminar: Mastering Process and Content
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- ART 6797C: Ceramic Sculpture 2
- ART 6835C: Research in Methods and Materials of the Artist
- ART 6849C: Reactive Environments
- ART 6897: Professional Practices for the Visual Artist
- ART 6910C: Supervised Research
- ART 6925C: Art + Technology Workshop
- ART 6926C: Advanced Study I
- ART 6927C: Advanced Study II
- ART 6928C: Advanced Study III
- ART 6929C: Advanced Study IV
- ART 6933: Area Methods: Rotating Topics
- ART 6971: Research for Master's Thesis
- ART 6973C: Individual Project
- DIG 6746C: Graduate Seminar in Sensors and Electronics
- IDC 6505C: Programming for Artists

## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## **Museology**

## College

College of the Arts

## Department/School

School of Art and Art History

## Museology Program Information

**Master of Arts degree in Museology (Museum Studies):** The School offers this interdisciplinary program that consists of both academic and practical work. The curriculum allows students to do graduate work in a disciplinary emphasis (art history, anthropology, history, education, or the natural sciences, for example) and at the same time complete a concentrated study in professional museum practice. The M.A. degree in museology requires 48 credit hours including:

- 15 credits of museum studies courses (museology seminar, 3 credits; collections management, 3 credits; museum education, 3 credits; exhibitions, 3 credits; special topics, 3 credits)
- 15 graduate credits in a disciplinary focus
- 6 credits of internship
- 6 credits of electives
- 6 credits of individual credit.

Several on-campus sites provide the program with laboratories for training students in museum work, including the University Galleries, Harn Museum of Art, Florida Museum of Natural History, and the gallery at the Reitz Union. Students must complete a 6-credit internship of at least 320 hours at an approved museum. In this experience, students undertake specific projects in which they gain first-hand experience in museum work. The Harn Museum of Art or the Florida Museum of Natural History may be able to oversee a few interns, but students are encouraged to apply for internships at other U.S. institutions or abroad.

A project-in-lieu-of-thesis (or thesis) is selected, researched, and carried out under the direction of a supervisory committee.

## Degrees Offered with a Major in Museology

Master of Arts

concentration in Historic Preservation

without a concentration

## School of Art and Art History Departmental Courses

- ARE 6049: History of Teaching Art
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- ARH 6666: Colonial Latin American Art Seminar
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- ART 6897: Professional Practices for the Visual Artist
- ART 6910C: Supervised Research
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- ART 6928C: Advanced Study III
- ART 6929C: Advanced Study IV
- ART 6933: Area Methods: Rotating Topics
- ART 6971: Research for Master's Thesis
- ART 6973C: Individual Project
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- IDC 6505C: Programming for Artists

## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
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- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management



## Digital Worlds Institute

College of the Arts

*Director:* James C. Oliverio

*Graduate Coordinator:* Marko Suvajdzic

*Complete faculty listing:* Follow this link.

The Digital Worlds Institute exists to nurture leading edge education between the arts, communications, engineering and the sciences, utilizing advanced media systems and digital culture. By bringing together the diverse talents of University of Florida faculty, students, and staff in a multifaceted collaborative environment, the Institute serves as a platform for interdisciplinary research and teaching that would not have occurred within the confines of any one college or department. Through the use of interactive tools and technologies, the Institute promotes transdisciplinary creativity across classrooms, continents and cultures.

For more information, please see the program page below and our website: <http://www.digitalworlds.ufl.edu>.

## Digital Arts and Sciences (Arts)

### College

College of the Arts

### Department/School

Digital Worlds Institute

### Digital Arts and Sciences (Arts) Program Information

The Master of Arts in Digital Arts & Sciences (DAS) degree seeks to allow students from diverse academic backgrounds the opportunity to develop fluency in the technologies, design practices and collaborative interdisciplinary teamwork increasingly required by the media, communications and entertainment industries. Graduates holding the M.A. in DAS degree would typically seek employment in the creative services sector, applying digital techniques and technologies in a variety of professions. Opportunities range from traditional cinema to interactive games; from broadcast media to online international networks to emergent industries.

Although this is a thesis degree, students usually produce a creative project in lieu of thesis. Students should see the graduate coordinator for the requirements for the creative project, which are also provided in the DAS Student Handbook.

Students seeking admission are expected to have an undergraduate background including:

- A degree in one of the fine arts or liberal arts
- A body of work that demonstrates accomplishment in the intended area
- A body of work that can clearly be enhanced with skills to be acquired in the DAS program.

Deficiencies may be corrected before beginning graduate study. In addition to appropriate academic credentials and prior scholastic achievement, admission into the program requires a well-constructed Statement of Purpose and

media-related support material (i.e. samples of design, programming, video, web, writing, etc.) that demonstrates both prior interest and/or achievement in New Media/Digital Arts & Sciences.

## **Degrees Offered with a Major in Digital Arts and Sciences**

Master of Arts

### **Digital Worlds Departmental Courses**

- DIG 5555C: Digital Media Projection Design I
- DIG 5931C: Special Topics
- DIG 6027C: Interactive Storytelling
- DIG 6028: Roots of Digital Culture
- DIG 6050C: Entertainment Technology
- DIG 6125C: Digital Design & Visualization
- DIG 6126C: Interaction Design
- DIG 6256C: Audio Design For Digital Production
- DIG 6358C: APPLIED 3D MODELING
- DIG 6556C: Digital Media Projection Design II
- DIG 6589C: Digital Portfolio
- DIG 6719: Videogame Theory and Analysis
- DIG 6744C: Movement, Media and Machines
- DIG 6746C: Graduate Seminar in Sensors and Electronics
- DIG 6751C: Protocols for Multimedia Interfaces
- DIG 6788C: Digital Production & Game Design
- DIG 6840C: Interdisciplinary Research Seminar in Digital Arts & Sciences
- DIG 6850C: Digital Arts & Sciences Convergence
- DIG 6906: Independent Study - Graduate Level
- DIG 6950C: Digital Performance Production
- DIG 6971: Research for Master's Thesis
- DIG 6973: Capstone Project in Lieu of Thesis
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers

### **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## Music Department

College of the Arts

*Director:* J. A. Duff.

*Graduate Coordinator:* L. S. Odom.

*Complete faculty listing by department:* Follow this link.

The School of Music offers programs leading to the Master of Music degree in music and music education. Program concentrations in music include choral conducting, composition, instrumental conducting, musicology, ethnomusicology, music theory, performance, and sacred music. In addition, the School of Music offers the Doctor of Philosophy degree in music and in music education.

The Ph.D. program in music education emphasizes college music teaching. The Ph.D. program in music includes concentrations in:

- Music history and literature, with options in traditional musicology and ethnomusicology
- Composition, with options in acoustic and electroacoustic specialization

All Ph.D. students are encouraged to find opportunities to teach and lecture in their specializations; and with the assistance of their principal professors, to prepare papers, workshops, and clinics for presentation at professional conferences, in the public schools, and at colleges and universities. Students also are encouraged to publish their research in appropriate journals. Minimum requirements for the M.M. and Ph.D. degrees are given in the General Information section of this catalog. The week before classes begin, students must take placement examinations in music history and in music theory. Students wanting to study privately in a performance studio must be auditioned and accepted by the appropriate area faculty. Voice students must demonstrate appropriate skills in language and diction. All deficiencies must be remedied.

For more information, please see the program pages below and our website: <http://www.arts.ufl.edu/welcome/music>.

## Music

### College

College of the Arts

### Department/School

Music Department

### Music Program Information

The Master of Music (M.M.) degree is offered in music or music education. The music program offers the following concentrations: choral conducting, composition, electronic music, ethnomusicology, instrumental conducting, music education, music history and literature, music theory, performance, and sacred music. The M.M. degree prepares students for careers as teachers in studios, schools, and universities; performers; music historians; music critics; church musicians; composers; conductors; and accompanists.

For more information, please see our website: <http://www.arts.ufl.edu/welcome/music>

## Degrees Offered with a Major in Music

### Doctor of Philosophy

without a concentration

concentration in Composition

concentration in Music History and Literature

### Master of Music

without a concentration

concentration in Choral Conducting

*optional second concentration in Composition*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Sacred Music*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Music Education*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

concentration in Composition

*optional second concentration in Choral Conducting*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Music Education*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

concentration in Electronic Music

*optional second concentration in Choral Conducting*

*optional second concentration in Composition*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Sacred Music*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Music Education*

*optional second concentration in Ethnomusicology*

concentration in Ethnomusicology

*optional second concentration in Choral Conducting*

*optional second concentration in Composition*

*optional second concentration in Electronic Music*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Sacred Music*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Music Education*

concentration in Instrumental Conducting

*optional second concentration in Composition*

*optional second concentration in Choral Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Sacred Music*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Music Education*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

concentration in Music Education

*optional second concentration in Composition*

*optional second concentration in Choral Conducting*

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*optional second concentration in Music Education*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

## **Music Departmental Courses**

- DIG 6288: Music and Sound Design for Digital Media
- MUC 5315: Introduction to Electroacoustic Music
- MUC 6444: Composition of Electronic Music
- MUC 6445: Electroacoustic Music Composition: Digital I
- MUC 6446: Electroacoustic Music Composition--Digital II
- MUC 6900: Secondary Graduate Composition
- MUC 6930: Graduate Composition
- MUC 6932: Composition Seminar



- MUC 7447: Advanced Seminar in Electroacoustic Music
- MUC 7931: Advanced Graduate Composition
- MUC 7938: Seminar in Digital Sound Processing, Control, and Composition
- MUE 6080: Historical and Philosophical Foundations of Music Education
- MUE 6385: Music in Higher Education
- MUE 6399: Creative Thinking in Music
- MUE 6444: Materials and Methods of String Class Teaching
- MUE 6497: Public School Orchestral Literature
- MUE 6647: Trends in Teaching and Learning Music
- MUE 6696: Technology Assisted Music Learning
- MUE 6747: Assessing Music Learning
- MUE 6785: Research in Music Education
- MUE 6790: Capstone Project for Music Education
- MUE 6931: Instructional Design in Music Education
- MUE 7746: Measurement and Evaluation of Music
- MUE 7938: Music Education Seminar
- MUG 6105: Graduate Conducting
- MUG 7106: Advanced Graduate Conducting
- MUH 5219: Graduate Music History Review
- MUH 5505: Introduction to Ethnomusicology
- MUH 5684: Introduction to Historical Musicology
- MUH 6515: Musics of the World
- MUH 6526: American Vernacular Music
- MUH 6545: The Guitar in Latin American Culture
- MUH 6548: Seminar in Caribbean Music
- MUH 6549: Seminar in Brazilian Music
- MUH 6635: Seminar in American Music
- MUH 6665: History of Opera
- MUH 6671: Seminar in Renaissance Music
- MUH 6672: Seminar in Baroque Music
- MUH 6673: Seminar in Classical Music
- MUH 6674: Seminar in Nineteenth-Century Music
- MUH 6675: Seminar in Twentieth-Century Music
- MUH 6931: Nationalism in Music
- MUH 6935: Special Topics in Music History
- MUH 7411: Medieval and Renaissance Notation
- MUH 7938: Musicology Seminar
- MUL 6435: String Literature
- MUL 6486: Piano Literature
- MUL 6495: Graduate Organ Literature
- MUL 6555: Survey of Wind Literature
- MUL 6565: Chamber Music Literature
- MUL 6645: Choral Literature
- MUN 6010: Graduate Ensemble
- MUN 6125: Concert Band
- MUN 6135: Symphonic Band
- MUN 6145: Symphonic Wind Ensemble
- MUN 6215: University Orchestra
- MUN 6315: University Choir

- MUN 6325: Women's Chorale
- MUN 6335: Men's Glee Club
- MUN 6445: Percussion Ensemble
- MUN 6495: Steel Drum Ensemble
- MUN 6496: World Music Ensemble
- MUN 6497: New Music Ensemble
- MUN 6715: Jazz Band
- MUR 6206: Survey of Hymnody
- MUR 6705: Sacred Music Literature
- MUS 5911: Directed Study
- MUS 6685: Psychology of Music
- MUS 6716: Methods of Musical Research and Bibliography
- MUS 6905: Projects and Problems
- MUS 6910: Supervised Research
- MUS 6940: Supervised Teaching
- MUS 6971: Research for Master's Thesis
- MUS 6973: Individual Project
- MUS 7656: Teaching Music and the Creative Process
- MUS 7905: Projects and Problems
- MUS 7979: Advanced Research
- MUS 7980: Research for Doctoral Dissertation
- MUT 6051: Graduate Music Theory Review
- MUT 6445: Advanced Counterpoint
- MUT 6531: Figured Bass and Continuo Performance
- MUT 6565: Late Nineteenth- and Twentieth-Century Styles
- MUT 6576: Contemporary Styles
- MUT 6617: Approaches to Theoretical Analysis in Music Education
- MUT 6624: Seminar in Set Theory
- MUT 6627: Seminar in Reductive Analysis
- MUT 6629: Analytical Techniques
- MUT 6751: Pedagogy of Music Theory
- MUT 6936: Music Theory Seminar
- MUT 7316: Advanced Orchestration
- MUT 7585: Seminar in Musical Style
- MUT 7760: History of Music Theory
- MVK 5156: Improvisational Keyboard Skills and Related Technology
- MVK 6605: Organ Pedagogy
- MVK 6651: Piano Pedagogy
- MVK 6661: Advanced Piano Pedagogy
- MVO 6250: Secondary Music Performance
- MVO 6460: Music Performance
- MVO 7460: Music Performance
- MVS 6651: String Pedagogy I
- MVV 6651: Vocal Pedagogy

## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine

- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## **Music Education**

### **College**

College of the Arts

### **Department/School**

Music Department

### **Music Education Program Information**

The Master of Music (M.M.) degree is offered in music or music education. The music education program offers the following concentrations: choral conducting, composition, electronic music, ethnomusicology, instrumental conducting, music history and literature, music theory, performance, and piano pedagogy. The M.M. degree prepares students for careers as teachers in studios, schools, and universities; performers; music historians; music critics; church musicians; composers; conductors; and accompanists.

For more information, please see our website: <http://www.arts.ufl.edu/welcome/music>

### **Degrees Offered with a Major in Music Education**

Doctor of Philosophy

Master of Music

Without a Concentration

Concentration in Choral Conducting

*optional second concentration in Piano Pedagogy*

*optional second concentration in Composition*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

#### *Concentration in Composition*

*optional second concentration in Choral Conducting*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

#### *Concentration in Electronic Music*

*optional second concentration in Choral Conducting*

*optional second concentration in Composition*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Piano Pedagogy*

optional second concentration in *Ethnomusicology*

Concentration in Ethnomusicology

optional second concentration in Choral Conducting

optional second concentration in *Composition*

optional second concentration in *Instrumental Conducting*

optional second concentration in *Music History and Literature*

optional second concentration in *Music Theory*

optional second concentration in *Performance*

optional second concentration in *Electronic Music*

optional second concentration in *Piano Pedagogy*

Concentration in Instrumental Conducting

*optional second concentration in Piano Pedagogy*

*optional second concentration in Composition*

*optional second concentration in Choral Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

Concentration in Music History and Literature

*optional second concentration in Choral Conducting*

*optional second concentration in Piano Pedagogy*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Composition*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Electronic Music*

*optional second concentration in Ethnomusicology*

Concentration in Music Theory

optional second concentration in Choral Conducting

optional second concentration in *Composition*

optional second concentration in *Instrumental Conducting*

optional second concentration in *Music History and Literature*

optional second concentration in *Piano Pedagogy*

optional second concentration in *Performance*

optional second concentration in *Electronic Music*

optional second concentration in *Ethnomusicology*

Concentration in Performance

optional second concentration in Choral Conducting

optional second concentration in *Piano Pedagogy*

optional second concentration in *Instrumental Conducting*

optional second concentration in *Music History and Literature*

optional second concentration in Composition

optional second concentration in *Performance*

optional second concentration in *Electronic Music*

optional second concentration in *Ethnomusicology*

Concentration in Piano Pedagogy

*optional second concentration in Choral Conducting*

*optional second concentration in Composition*

*optional second concentration in Instrumental Conducting*

*optional second concentration in Music History and Literature*

*optional second concentration in Music Theory*

*optional second concentration in Performance*

*optional second concentration in Electronic Music*

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## **College of the Arts Courses**

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

## **Music Departmental Courses**

- DIG 6288: Music and Sound Design for Digital Media
- MUC 5315: Introduction to Electroacoustic Music
- MUC 6444: Composition of Electronic Music
- MUC 6445: Electroacoustic Music Composition: Digital I
- MUC 6446: Electroacoustic Music Composition--Digital II
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- MUC 6930: Graduate Composition
- MUC 6932: Composition Seminar
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- MUC 7931: Advanced Graduate Composition
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- MUE 6399: Creative Thinking in Music
- MUE 6444: Materials and Methods of String Class Teaching
- MUE 6497: Public School Orchestral Literature
- MUE 6647: Trends in Teaching and Learning Music
- MUE 6696: Technology Assisted Music Learning
- MUE 6747: Assessing Music Learning
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- MUE 6931: Instructional Design in Music Education
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- MUH 6548: Seminar in Caribbean Music
- MUH 6549: Seminar in Brazilian Music
- MUH 6635: Seminar in American Music
- MUH 6665: History of Opera
- MUH 6671: Seminar in Renaissance Music
- MUH 6672: Seminar in Baroque Music
- MUH 6673: Seminar in Classical Music
- MUH 6674: Seminar in Nineteenth-Century Music
- MUH 6675: Seminar in Twentieth-Century Music
- MUH 6931: Nationalism in Music
- MUH 6935: Special Topics in Music History
- MUH 7411: Medieval and Renaissance Notation
- MUH 7938: Musicology Seminar
- MUL 6435: String Literature
- MUL 6486: Piano Literature
- MUL 6495: Graduate Organ Literature
- MUL 6555: Survey of Wind Literature



- MUL 6565: Chamber Music Literature
- MUL 6645: Choral Literature
- MUN 6010: Graduate Ensemble
- MUN 6125: Concert Band
- MUN 6135: Symphonic Band
- MUN 6145: Symphonic Wind Ensemble
- MUN 6215: University Orchestra
- MUN 6315: University Choir
- MUN 6325: Women's Chorale
- MUN 6335: Men's Glee Club
- MUN 6445: Percussion Ensemble
- MUN 6495: Steel Drum Ensemble
- MUN 6496: World Music Ensemble
- MUN 6497: New Music Ensemble
- MUN 6715: Jazz Band
- MUR 6206: Survey of Hymnody
- MUR 6705: Sacred Music Literature
- MUS 5911: Directed Study
- MUS 6685: Psychology of Music
- MUS 6716: Methods of Musical Research and Bibliography
- MUS 6905: Projects and Problems
- MUS 6910: Supervised Research
- MUS 6940: Supervised Teaching
- MUS 6971: Research for Master's Thesis
- MUS 6973: Individual Project
- MUS 7656: Teaching Music and the Creative Process
- MUS 7905: Projects and Problems
- MUS 7979: Advanced Research
- MUS 7980: Research for Doctoral Dissertation
- MUT 6051: Graduate Music Theory Review
- MUT 6445: Advanced Counterpoint
- MUT 6531: Figured Bass and Continuo Performance
- MUT 6565: Late Nineteenth- and Twentieth-Century Styles
- MUT 6576: Contemporary Styles
- MUT 6617: Approaches to Theoretical Analysis in Music Education
- MUT 6624: Seminar in Set Theory
- MUT 6627: Seminar in Reductive Analysis
- MUT 6629: Analytical Techniques
- MUT 6751: Pedagogy of Music Theory
- MUT 6936: Music Theory Seminar
- MUT 7316: Advanced Orchestration
- MUT 7585: Seminar in Musical Style
- MUT 7760: History of Music Theory
- MVK 5156: Improvisational Keyboard Skills and Related Technology
- MVK 6605: Organ Pedagogy
- MVK 6651: Piano Pedagogy
- MVK 6661: Advanced Piano Pedagogy
- MVO 6250: Secondary Music Performance
- MVO 6460: Music Performance

- MVO 7460: Music Performance
- MVS 6651: String Pedagogy I
- MVV 6651: Vocal Pedagogy

## **School of Theatre and Dance**

Director: J. Dickey

Graduate Performance Program Coordinator: Ralf Remshardt

Graduate Design Program Coordinator: S. Kaye

*Complete faculty listing by department:* Follow this link.

The graduate program offered by the School of Theatre and Dance leads to the degree of Master of Fine Arts in Theatre. Minimum requirements for this degree are given in the *General Information* section of this catalog.

The M.F.A. degree prepares students for professional entry in acting, production, or teaching. Placement in the M.F.A. program is determined by audition/portfolio review, academic credentials, and personal interview. Candidates for admission should have adequate training in theatre. Deficiencies may be corrected before beginning graduate study.

The program emphasizes the study and practice of theatre as an art and discipline. Students of acting and design study concepts of theatre together while working in their areas of specialization. Focus is on the collaboration and synthesis of theatre artistry. Each incoming class is composed of approximately 12 to 18 students in acting and all design areas.

The student's artistic and academic progress will be reviewed at the end of each semester. The *School of Theatre Handbook* gives details on the form and focus of each review. This information is online at <http://www.arts.ufl.edu/theatreanddance/pages/whatyouneedtoknow/downloads/downloads.asp>.

During the final year of study, each student must successfully complete the comprehensive examination and oral defense. The project in lieu of thesis includes research, analysis, rehearsal process, and evaluation. Development and execution of the project includes public performance (acting or design). The written document and oral defense of the project which follow must demonstrate the ability to communicate the creative process.

Graduate acting students audition for all departmental productions.

## **Theatre**

### **College**

College of the Arts

### **Department/School**

School of Theatre and Dance

### **Degrees Offered with a Major in Theatre**

## Master of Fine Arts

### College of the Arts Courses

- HUM 5357: Creativity and Health: Foundations of the Arts in Medicine
- HUM 5595: Arts in Medicine in Practice
- HUM 6340: Arts Advocacy and Public Policy
- HUM 6353: Arts in Medicine Professional Seminar
- HUM 6354: Arts in Medicine Advanced Professional Seminar
- HUM 6358: Arts in Medicine Capstone Proposal
- HUM 6359: Arts in Medicine Capstone
- HUM 6596: Arts in Medicine Capstone
- HUM 6942: Arts in Medicine Graduate Practicum
- HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

### Theatre and Dance Departmental Courses

- ARC 6670: Lighting Design Seminar
- DAN 6436: Laban Movement Analysis
- DAA 6757: Pilates Technique for the Dancer
- DAA 6905: Graduate Dance Project
- DAN 6949: Dance Clinical Practice
- THE 5238: African-American Theatre History and Practice
- THE 5287: History of Decor and Architecture for the Stage
- THE 5910: Introduction to Graduate Study in Theatre
- THE 6265: Costume History
- THE 6525: History, Literature, and Criticism I
- THE 6526: History, Literature, and Criticism II
- THE 6565: Seminar in Creative Process
- THE 6905: Individual Study
- THE 6933: Arts and Public Health Professional Seminar
- THE 6940: Supervised Teaching
- THE 6941: Internship
- THE 6948: Arts and Public Health Practicum
- THE 6950: Applied Theatre
- THE 6955: Summer Repertory Theatre
- THE 6971: Research for Master's Thesis
- THE 6973C: Project in Lieu of Thesis
- TPA 5025: Lighting Design I
- TPA 5047: Costume Design I
- TPA 5067: Scene Design I
- TPA 5072: Drawing and Rendering
- TPA 5079: Graduate Scene Painting
- TPA 5082: Advanced Theatre Graphics
- TPA 5236: Costume Technologies Workshop
- TPA 6005: Design I

- TPA 6006: Design II
- TPA 6009: Design Studio
- TPA 6026: Lighting Design II
- TPA 6048: Costume Design II
- TPA 6054: Detail Design for Costume Designers
- TPA 6069: Scene Design II
- TPA 6235: Costume Construction
- TPA 6237: Pattern Making: Flat Patterning
- TPA 6243: Pattern Making: Draping
- TPA 6258: Computer Drafting 2D
- TPA 6357: Programming and Presentation for the Lighting Designer
- TPP 5234: Mutli-Cultural Performance Workshop
- TPP 6115: Graduate Acting I: Modern Acting Theory and Practice
- TPP 6116: Graduate Acting II: Shakespeare and High Style
- TPP 6145: Graduate Acting III: Period Styles
- TPP 6149: Acting IV: Contemporary Realism
- TPP 6225: Professional Seminar: Acting
- TPP 6237: MFA Company Acting Workshop
- TPP 6266: Acting for the Camera
- TPP 6285: Voice and Movement I
- TPP 6286: MFA Voice and Speech II: Shakespeare and High Styles
- TPP 6297: The Alexander Technique I
- TPP 6298: The Alexander Technique II
- TPP 6299: The Alexander Technique III
- TPP 6385: Directing
- TPP 6515: Graduate Movement Training
- TPP 6536: Graduate Stage Combat
- TPP 6717: MFA Voice and Speech III: Period Styles
- TPP 6718: MFA Voice and Speech IV: Advanced Vocal Training for the Actor
- TPP 6946: Performance Practicum

## **Warrington College of Business Administration**

*Dean:* John Kraft

Complete faculty listings: Follow this link.

The Warrington College of Business Administration's mission is to build a better society by creating influential research and educating tomorrow's business leaders. The mission emphasizes service to society, a key feature of a Land Grant university. The activities through which the College achieves this global aim are research and teaching. These two activities are highly complementary, indeed intertwined, and both are vital to the continued excellence of the Warrington College. The Hough Graduate School of Business has specialized programs tailored to fit students' strengths and interests.

Graduate degrees offered by the Warrington College of Business Administration are the Doctor of Philosophy with major programs in business administration; the Master of Science with major programs in Business Administration, in Finance, in Management, and in Real Estate; the Master of Business Administration; the Master of Entrepreneurship; the Master of Science in Information Systems and Operations Management; the Master of International Business; and the Master of Accounting. Fields of concentration and minimum requirements for the M.B.A. are given in the Graduate Degrees section of this catalog, as well as admission and degree requirements for the Ph.D.

For more information, please see the associated department and program pages in this catalog, and our website:  
<http://warrington.ufl.edu>.

Departments and Programs within Warrington College of Business Administration

Warrington College of Business Courses

## **Business Administration (M.A.)**

### **College**

Warrington College of Business Administration

### **Degrees Offered with a Major in Business Administration**

Master of Arts

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation

- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy

- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development

- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics



- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams

- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management

- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work

- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Business Administration (M.B.A)**

### **College**

Warrington College of Business Administration

### **Business Administration (M.B.A) Program Information**

The Master of Business Administration (M.B.A.) degree gives students (1) conceptual knowledge for understanding the functions and behaviors common to business organizations and (2) analytical, problem-solving, and decision-making skills essential for effective management. Emphasis is on developing the student's capacities and skills for business decision making. All programs (except the Executive, which requires eight years) require at least two years of full-time, post-undergraduate work experience as well as a bachelor's degree from an accredited four year institution.

The MBA program is structured so that students may complete coursework through a variety of educational platforms. Students may earn the MBA degree in our full-time "traditional" format, attending class during the week in Gainesville; on the weekends, once a month in Gainesville; and online, participating mostly via online lectures and discussions and attending class in Gainesville twice per term.

For more information, please see our website: <http://floridamba.ufl.edu>.

### **Program Options**

#### **Full-time**

- Traditional MBA Two-Year Option:
  - 48 credit program requires 4 terms of full-time study over two academic years.
  - Students are admitted for the fall term only.
  - Students spend the summer between academic years working at internships.
- Traditional MBA One-Year, Option A:
  - 48 credit program requires 3 terms, students are expected to complete coursework within 12 months.
  - Program starts in late spring/ early summer.
- Traditional MBA One-Year, Option B:
  - 32 credit program requires two and a half terms
  - Program starts in mid-summer and students expected to complete all course work within 10 months.
  - Applicants to this program are required to have a bachelor's degree in business from a four-year accredited institution (conferred within the last seven years) and at least two years of post-undergraduate work experience.

#### **Executive**

- Executive MBA Program:

- 48 credit, 20-month program for working professionals, students attend classes one extended weekend per month (Friday-Sunday).
- Program is divided into five terms each lasting about four months.
- Program requires and includes a one-week two credit international experience.
- This option requires eight years of post-undergraduate work experience, and students are expected to have people or project management responsibilities in their current positions.

#### **Professional (class one weekend per month)**

- Professional Two-Year MBA:
  - 27-month program is five terms.
  - Students attend classes one weekend per month (Saturday-Sunday) and must attend a one-week in-residence elective class.
- Professional One-Year MBA:
  - 16-month, three term option starts only in January.
  - Students attend classes one weekend per month (Saturday-Sunday) and must attend a one-week in-residence elective class. The first meeting includes a one-week, on-campus foundations review of basic course work.
  - Applicants to this program are required to have a bachelor's degree in business from a four-year accredited institution (conferred within the last seven years) and at least two years of post-undergraduate work experience.
- Professional MBA in South Florida:
  - 24 month, five term program and students attend classes once every three weeks (Saturday-Sunday) at the UF MBA Sunrise Center in Sunrise, Florida.
  - Program requires and includes a one-week two credit international experience.

#### **Online**

- Internet Two-Year MBA:
  - 27-month program allows students to earn their MBA primarily through class lectures downloaded to their computer. Students interact with faculty and classmates via e-mail, synchronous group discussion software, asynchronous class presentation software, and multimedia courseware.
  - Students visit campus one weekend (Saturday-Sunday) every four months.
- Internet One-Year MBA:
  - 16-month option gives students and faculty the same interactive technology as the Internet Two-Year MBA.
  - Students visit campus one weekend (Saturday-Sunday) every four months. The first meeting includes a one week, on-campus foundations review of basic course work.
  - Applicants to this program are required to have a bachelor's degree in business from a four-year accredited institution (conferred within the last seven years) and at least two years of post-undergraduate work experience.

#### **Full-time Joint Degree Options**

**M.B.A./M.S. in medical sciences (biotechnology) program:** Concurrent studies leading to the Master of Business Administration and Master of Science degrees, offered in cooperation with the College of Medicine, are in response to the needs of businesses engaged in biotechnological sciences. Both degrees can be obtained in 3 years. The program requires 1 year of science courses, 1 year of business courses, and a year devoted to research and electives in business and science. Research is done in one of the Interdisciplinary Center for Biotechnology Research core laboratories. Students must meet the admission and curriculum requirements of both degrees. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. A student must at all times remain in good standing in both degree programs to remain in the M.B.A. program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./Ph.D. in medical sciences program:** Concurrent studies leading to the Master of Business Administration and Doctor of Philosophy degrees are offered in cooperation with the College of Medicine. This 120-credit program trains research scientists to assume responsibilities as managers of biotechnical industries. Estimated time to

complete both degrees is 5 to 7 years. Students must meet the admission and curriculum requirements of both programs. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**MBA/J.D. program:** A program of joint studies leading to the Master of Business Administration and Juris Doctor degrees is offered under the joint auspices of the Warrington College of Business Administration and the Levin College of Law. Current M.B.A. or J.D. students must declare their intent to apply for the second degree during their first year. Applications are then due according to admission schedules for that year. Both degrees are awarded after a 4-year course of study. Students must take both the LSAT and the GMAT before admission and meet the admission and curriculum requirements of both degrees. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./Pharm.D. program in management and pharmacy administration:** A program of concurrent studies culminating in both the Master of Business Administration and Doctor of Pharmacy degrees allows students interested in both management and pharmacy administration to obtain the appropriate education in both areas. Candidates must meet the entrance requirements and follow the entrance procedures of both the Warrington College of Business Administration and the College of Pharmacy. The degrees may be granted after 5 years of study. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. Applicants are expected to have previous professional work experience prior to starting the MBA program.

**M.B.A./M.I.M. program in international management:** A dual degree program between the University of Florida (UF) and the American Graduate School of International Management (Thunderbird) makes it possible to earn both degrees after 3 years of study. Students start the program at UF and apply to Thunderbird in their first year. Requirements of the M.B.A. program are those in effect when an applicant is admitted to the program. This program requires 2 years of post-undergraduate work experience.

**Exchange programs:** The M.B.A. program offers students exchange opportunities at numerous international universities. Currently, exchange programs exist with schools in Australia, Belgium, Brazil, Chile, China, Canada, Denmark, England, Finland, France, Germany, Italy, Japan, Korea, Liechtenstein, the Netherlands, Norway, Poland, Spain, Sweden, Taiwan, Thailand, and Turkey. For a complete list of exchange partners, see <http://warrington.ufl.edu/graduate/academics/maib/exchange.asp>.

## **Degrees Offered with a Major in Business Administration**

Master of Business Administration

without a concentration

concentration in Competitive Strategy

concentration in Entrepreneurshi

concentration in Finance

concentration in Global Management

concentration in Graham-Buffett Security Analysis

concentration in Human Resource Management

concentration in Information Systems and Operations Management

concentration in International Studies

concentration in Latin American Business

concentration in Management

concentration in Marketing

concentration in Real Estate

concentration in Sports Administration

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation

- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy



- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development

- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics

- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams

- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management

- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work

- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Business Administration (M.S.)**

### **College**

Warrington College of Business Administration

### **Business Administration (M.S.) Program Information**

Specialized Masters of Sciences degrees offered are:

- Master of Science in Information Systems and Operations Management
- Master of Science in Entrepreneurship
- Master of Science in Finance
- Master of Science in Management
- Master of Science in Real Estate

For more information, please see the program pages above or our website:  
<http://warrington.ufl.edu/graduate/academics>.

### **Degrees Offered with a Major in Business Administration**

Master of Science

without a concentration

concentration in Retailing

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation

- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management

- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance



- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce

- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions

- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations

- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research

- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Business Administration (Ph.D.)**

### **College**

Warrington College of Business Administration

### **Business Administration (Ph.D.) Program Information**

For the Ph.D. in Business Administration, students must have a concentration in one of the following:

- Accounting
- Finance
- Information Systems and Operation Management
- Insurance
- Management
- Quantitative Finance
- Marketing
- Real Estate and Urban Analysis

Minimum requirements for the various departments and specialties are given in the Graduate Degrees section in this catalog.

All candidates for the Ph.D. in business administration must satisfy the following general requirements:

**Breadth requirement:** All applicants for Ph.D. in the business administration program are expected to have completed prior business-related course work at either the advanced undergraduate or graduate level. Students entering without prior work are required to take a minimum of three graduate courses in at least two fields other than their chosen area of concentration. Most often, the appropriate courses will be found in the M.B.A. first-year core; the particular courses to be taken by a student will be decided in consultation with the student's academic adviser. After a

student enters the Ph.D. program, the courses taken to satisfy the breadth requirement must be taken in the College of Business Administration.

**Research foundations requirement:** All students must complete a six-course research skills sequence that prepares them for scholarly research in their chosen area of concentration. Research foundations are defined as essential methodological tools (e.g., statistics, quantitative analysis) and/or substantive content domains (e.g., psychology, economics) outside the student's major field that are considered essential to conducting high quality research in the chosen field. The specific research skills required by each area of concentration can be found in the field descriptions in this Catalog.

**Other requirements** include satisfactory completion of graduate course work in the major field of concentration, as well as one or two minor fields designed to add depth to the student's research training. Minors are selected by the student in consultation with his or her advisory committee, and may be within or outside the College of Business Administration.

For more information, please see the links above and our website: <http://warrington.ufl.edu/graduate/academics>.

## **Degrees Offered with a Major in Business Administration**

Doctor of Philosophy

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation

- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory

- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis



- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

### **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
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- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning

- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior

- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management

- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

### **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment

- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## Fisher School of Accounting

Warrington College of Business Administration

*Director:* Gary A. McGill

*Graduate Coordinators:* Stephen Asare and John Laibson

*Complete faculty listing by department:* Follow this link.

As a professional school in a major public research university, the Fisher School of Accounting (FSOA) is committed to scholarly research, teaching, and service to advance knowledge and prepare future leaders for business, professional, and academic careers.

The Fisher School of Accounting offers graduate work leading to the Master of Accounting (M.Acc.) degree with a major in accounting, and the Ph.D. degree with a major in business administration and an accounting concentration. Requirements for these degrees are available in the Graduate Degrees section of this catalog.

For more information, please see the program pages below, or visit our website: <http://warrington.ufl.edu/accounting>.

## Accounting

### College

Warrington College of Business Administration

### Department/School

Fisher School of Accounting

### Accounting Program Information

**Master of Accounting:** Three variations of the Master of Accounting degree program are available. These allow students to select one of three tracks: Audit, Tax, and Generalist. Minimum admission requirements include an acceptable score on the Graduate Management Admission Test (GMAT), with a minimum score of 550 and completion of essays with a minimum score of 4. International students must submit a satisfactory score on the following: TOEFL (Test of English as a Foreign Language: paper-based=570, internet-based=86). Additional information, including minimum GPA standards for admission, may be viewed at <http://warrington.ufl.edu/accounting/academics/macc>.

**Combined degree program:** The recommended curriculum to prepare for a professional career in accounting is the 3/2 five-year program with a joint awarding of the Bachelor of Science in Accounting and Master of Accounting degrees upon completion of the 150-hour program. The entry point into the 3/2 program is the beginning of the senior year.

**Traditional Master of Accounting program:** Students who have already completed an undergraduate degree in accounting may enter the 1-year M.Acc. degree program which requires satisfactory completion of 34 hours of course work. A minimum of 28 credits must be in graduate-level courses; a minimum of 20 credits must be in graduate-level accounting courses. The remaining credits are selected from recommended elective courses that vary by area of specialization. Students are cautioned to seek early advisement, since many graduate courses are offered only once a year.

**J.D./M.Acc. program:** A joint program leading to the Juris Doctor and Master of Accounting degrees is offered by the Fisher School of Accounting and Levin College of Law. Specific details for the M.Acc., J.D./M.Acc., and Ph.D. programs are available at <http://warrington.ufl.edu/accounting/academics/jd-macc>.

## **Degrees Offered with a Major in Accounting**

Master of Accounting

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation

- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Business Administration (Accounting)**

### **College**

Warrington College of Business Administration

### **Department/School**

Fisher School of Accounting

### **Business Administration (Accounting) Program Information**

The Ph.D. program offers a broad-based interdisciplinary training that prepares students to conduct both empirical and analytical research. The curriculum consists of course work of four types: the major field, a breadth requirement, a research foundation requirement, and a minor or supporting field. In addition, students must demonstrate competence in conducting research and teaching, and must complete a dissertation on an accounting topic.

The major field in accounting consists of at least 18 credit hours of course work including research analysis, archival research, analytical research, experimental research, readings, and a research project. The breadth requirement consists of at least 13 credit hours of course work including microeconomic theory, corporate finance theory, game theory, asset pricing, and information economics. The research foundation requirement consists of at least 12 hours of graduate course work in mathematical economics, statistics, or econometrics. The minor or supporting field requirement is met by completing a minimum of 12 hours of graduate course work in the selected field.

Students demonstrate competency in conducting research by completing a research project in the summers of the first and second year. The teaching competence is demonstrated by completing at least 1 hour (but no more than 5 hours) of supervised teaching, and by teaching for at least 2 semesters. Admission requirements include a history of academic excellence, adequate score on the GMAT (the average score of recently admitted applicants is 690 for GMAT), competence in written and spoken English (TOEFL Internet-Based test (iBT) required for applicants whose native language is not English), appreciation of accounting issues, and institutional and math competency. The school requires a total score of 91, including a minimum of 26 on the speaking section.

### **Degrees Offered with a Major in Business Administration**

Doctor of Philosophy

concentration in Accounting

## **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance



- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance

- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I

- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis

- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management

- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management

- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Finance, Insurance, and Real Estate Department**

*Chair:* Michael D. Ryngaert

*Graduate Coordinator:* Mahen Nimalendran

*Complete faculty listing:* Follow this link.

The Department of Finance, Insurance, and Real Estate offers graduate work leading to the Master of Science degree with major programs in finance and real estate; the Master of Science in Entrepreneurship (M.S.E.); and the Doctor of Philosophy degree in business administration with a concentration in finance, insurance, quantitative analysis, or real estate. Complete descriptions of the minimum requirements for the M.S., M.S.E, and Ph.D. degrees are provided in the *Graduate Degrees* section of this catalog.

Finance, Real Estate, and Entrepreneurship are also available as concentrations within the M.B.A program. For information about the M.B.A. program, please consult that listing in the *Graduate Degrees* section.

For more information see the program pages below, and visit our website: <http://warrington.ufl.edu/departments/fire>.

## **Business Administration (Finance, Insurance, and Real Estate)**

### **College**

Warrington College of Business Administration

### **Department/School**

Finance, Insurance, and Real Estate Department

### **Business Administration (Finance, Insurance, and Real Estate) Program Information**

The Ph.D. in Business Administration - Finance and Real Estate program prepares students to engage in productive scholarly research and teaching in the broad area of financial and real estate economics. Graduates of this program typically are placed with major universities in the United States, although some students choose to work in research positions at non-academic institutions.

The Ph.D. program has a strong emphasis on scholarly research training. Admission requirements include (a) minimum grade point average of 3.5 in the last two years of an undergraduate program and in any previous graduate-level work, (b) minimum GRE score of 1300 or GMAT score of 600 (both verbal and quantitative scores must exceed the sixtieth percentile), and (c) (for nonnative speakers of English) a minimum score of 550 on the TOEFL. Generally students will not be admitted to the Ph.D. program unless they have been offered financial assistance by the University.

### **Finance**

The student pursuing a concentration in finance typically specializes in corporate finance, financial markets and institutions, or investments. The Ph.D. curriculum consists of course work of four types: research foundations, the major field, a minor or supporting field, and a breadth requirement.

The research foundation requirements are comprised of courses in microeconomic theory, macroeconomic theory, mathematical methods and applications to economics, mathematical statistics, and econometrics. The actual courses will depend on the student's background and proposed thesis research.

The major field in finance consists of at least 16 credit hours in graduate course work in finance including financial theory, corporate finance, and seminars in empirical methods, market micro structure, and special topics. Students may elect to have one "strong" minor (16 credit hours), two "weak" minors (8 credit hours each), or a supporting field which is not declared as a minor. If a supporting field is chosen, at least 16 hours of course work acceptable to the student's supervisory committee must be taken. The supporting field option is selected when a student wishes to take courses across a number of departments. The department offers a combined B.S./M.S. program. Contact the graduate coordinator for information.

The breadth requirement applies only to students with no prior course work in business and consists of financial and managerial accounting or their equivalents, plus two courses out of the following areas: managerial economics, production operations management, or problems and methods in marketing management.

## **Real Estate**

The research foundations are identical to those listed above for finance. The major field, minor, and supporting field requirements have the same credit stipulation as those outlined above for finance, except that the major work is in real estate.

The breadth requirement, as in all concentrations for the business administration program, applies only to students entering without prior course work in business. It consists of at least three courses from the following list (two or more fields must be represented): managers and legal environment of business, finance, money and capital markets, problems and methods of marketing management, consumer behavior, and financial and managerial accounting.

Other degree requirements are listed in the Graduate Degrees section of this catalog.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/phd-fre>.

## **Degrees Offered with a Major in Business Administration**

Doctor of Philosophy

concentration in Finance

concentration in Insurance

concentration in Quantitative Finance

concentration in Real Estate and Urban Analysis

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets



- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop

- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching

- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

### **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems

- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management

- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research

- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business

- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Entrepreneurship**

### **College**

Warrington College of Business Administration

### **Department/School**

Finance, Insurance, and Real Estate Department

### **Entrepreneurship Program Information**

The Masters of Science in Entrepreneurship (M.S.E.) program is a one-year, 36-credit, campus-based program designed for young and aspiring entrepreneurs and change-makers. Offered to both business and non-business majors alike, the program is a combination of classroom delivery and experiential learning activities with a focus on opportunity assessment, feasibility analysis, lean entrepreneurial concept testing, business plan development, entrepreneurial leadership, and the sourcing of capital. Students are exposed to cutting edge entrepreneurial theory, which they apply immediately by consulting for small business, commercializing UF technology, and creating their own businesses.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/mse>.

### **Degrees Offered with a Major in Entrepreneurship**

Master of Science in Entrepreneurship

### **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation

- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II



- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review

- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## Finance

### College

Warrington College of Business Administration

### Department/School

Finance, Insurance, and Real Estate Department

### Finance Program Information

The student pursuing a major in finance typically specializes in corporate finance, financial markets and institutions, or investments.

**Master of Science degree in Finance, non-thesis option:** This M.S. program option consists of at least 32 credits in letter-graded courses. It is designed to ensure that each student acquires a basic knowledge of the major financial economics subject areas: corporate finance, derivatives, fixed income securities, investments, international finance, and real estate. The program is designed to prepare students for positions in commercial banking, asset management, investment banking, securities markets and more. See the program's website or contact the Associate Director for further information and criteria.

Contact the admissions director for information regarding the **combined bachelor's/master's program**.

**Master of Science degree in Finance/Juris Doctorate joint degree program:** This joint degree program culminates in the M.S. and J.D. degrees. Applicants must meet the entrance requirements for both the Warrington College of Business Administration and the Levin College of Law. Admission to the second degree program is required no later than the end of the second consecutive semester after beginning one degree in the joint program.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/msf>.

### Degrees Offered with a Major in Finance

Master of Science

### Finance, Insurance, and Real Estate Departmental Courses

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment

- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## Real Estate

### College

Warrington College of Business Administration

### Department/School

Finance, Insurance, and Real Estate Department

### Real Estate Program Information

The ten-month, full-time in residence, Nathan S. Collier Master of Science in Real Estate (MSRE) Program, housed in the Warrington College of Business Administration (WCBA), thrives on innovation, a dynamic student body, significant interaction with high-level working professionals, and nationally recognized professors. The program is a unique combination of theory and practice that will both enhance your real estate education and develop your professional skills.

**Master of Science degree in real estate, nonthesis option:** This M.S. option consists of at least 34 credits of letter-graded courses. It is designed to ensure that each student acquires a basic knowledge of the various functional areas in real estate, real estate finance and investment, real estate development, real estate law and institutions, real estate asset management, international real estate, and advanced training in specialized areas. The capstone course (REE 6948) involves actual projects in which students work in teams to undertake a real estate problem for real clients. This two-tiered program of study provides both a firm theoretical foundation for later professional effectiveness and an applied bridge to professional practice.

**Master of Science degree in real estate/juris doctorate joint program:** This joint degree program culminates in the M.S. and J.D. degrees. Applicants must meet the entrance requirements for both the Warrington College of Business Administration and the Levin College of Law. Admission to the second degree program is required no later than the end of the second consecutive semester after beginning one degree of the joint program.

The Department also offers a combined bachelor's / master's program for all undergraduate disciplines.

For more information, please contact the admissions director and see our website: <http://warrington.ufl.edu/graduate/academics/msre>.

## **Degrees Offered with a Major in Real Estate**

Master of Science

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities

- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies

- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Information Systems and Operations Management Department**

Warrington College of Business Administration

*Chair:* Haldun Aytug

*Graduate Coordinator:* Praveen Pathak

*Complete faculty listing:* Follow this link.

The primary mission of the Department of Information Systems & Operations Management is a commitment to scholarly research, teaching and service to advance the state of knowledge in information systems and supply chain management and to train future leaders for professional and academic careers.

The Department offers graduate courses leading to the Master of Science in Information Systems and Operations Management (M.S.ISOM); the Ph.D. degree in Business Administration; and a concentration in the Master of Business Administration (M.B.A.) program. Minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.

**Combined Bachelor/Master of Science:** The Department also offers a combined bachelor's/master's degree program. This program allows qualified students to earn both the bachelor's and master's degrees, using 12 to 16 credit hours of graduate-level courses for both degrees.

For more information, please see the program pages below and our website:  
<http://warrington.ufl.edu/departments/isom>.

## **Business Administration (Information Systems and Operations Management)**



## **College**

Warrington College of Business Administration

## **Department/School**

Information Systems and Operations Management Department

## **Business Administration (Information Systems and Operations Management)**

The Department of Information Systems & Operations Management offers graduate courses leading to the Master of Science in Information Systems and Operations Management (M.S.ISOM); the Ph.D. degree in Business Administration; and a concentration in the Master of Business Administration (M.B.A.) program. Minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.

**Doctor of Philosophy:** The mission of the Ph.D. Program is to educate scholars who will make substantial contributions in their field of research. Our primary goal is to train graduate students to make such contributions. To achieve this goal, we attempt to place students in productive academic research environments. The major areas of study within the department are Information Systems/Information Technology (IS/IT) and Operations Management (OM).

Students come from a variety of backgrounds, with the most common being engineering computer sciences, mathematics, business, and statistics. Students admitted for the Ph.D. choose to specialize either in information systems/information technology or in operations management. The course schedule taken by each student is always personalized to fit the background of the student and is developed in consultation with the Ph.D. program coordinator and/or chair of the dissertation committee. Additionally, doctoral students will be required to attend all ISOM Workshops and the Department Seminar Series (regardless of area of specialization) held at the University of Florida.

Admission requirements for the Ph.D. include

- A minimum grade point average of 3.2
- A minimum GMAT score of 650, or GRE scores acceptable to the program
- For nonnative speakers of English, submit an acceptable score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute program.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/phd-isom>.

## **Degrees Offered with a Major in Business Administration**

Doctor of Philosophy

concentration in Information Systems and Operations Management

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations

- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research

- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## Finance, Insurance, and Real Estate Departmental Courses

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing

- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## Management Departmental Courses

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project

- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching

- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Information Systems and Operations Management**

### **College**

Warrington College of Business Administration

### **Department/School**

Information Systems and Operations Management Department

### **Information Systems and Operations Management Program Information**

The Department of Information Systems & Operations Management offers graduate courses leading to the Master of Science in Information Systems and Operations Management (M.S.ISOM); the Ph.D. degree in Business Administration; and a concentration in the Master of Business Administration (M.B.A.) program. Minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.



**Master of Science:** The M.S.ISOM program provides computing, analytical, and application skills to be used in a business setting. The primary areas of emphasis in the M.S.ISOM program are business intelligence and analytics, information systems/information technology, and supply chain management. Requirements span traditional academic disciplines to produce a multiple-discipline focus. Typical positions for graduates include decision support specialist, information systems specialist, systems analyst, and logistic support specialist.

For a student with a bachelor's degree in business or economics, the M.S.ISOM non-thesis on-campus program consists of a minimum of 36 credit hours, normally requiring a minimum of three semesters of study, not including summer. For students without a bachelor's degree in business or economics, the M.S.ISOM non-thesis on-campus program consists of a minimum of 40 credit hours, normally requiring a minimum of four semesters of study, not including summer.

All M.S.ISOM candidates must complete 26 credits of core coursework:

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6485: Electronic Commerce and Logistics (capstone course)
- MAN 6581: Project Management
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II

All M.S.ISOM candidates must also complete 6 credits of track coursework for the information technology, supply chain management, or business intelligence and analytics track:

#### Information Technology Track

- ISM 6216: Business Database Systems II
- ISM 6236: Business Objects I
- ISM 6259: Business Programming

#### Supply Chain Management Track

- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management

#### Business Intelligence and Analytics Track

- ISM 6216: Business Database Systems II
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support

These required courses total 32 credit hours. In addition, each M.S.ISOM student with an undergraduate major or minor in business must take a minimum of 4 additional hours of approved graduate business electives for a total of 36 credit hours required for the M.S.ISOM degree. For students without an undergraduate business degree or minor, instead of graduate business electives, they must complete four of the following core business courses: ACG 5005, ACG 5075, ECP 5702, FIN 5437, FIN 5439, MAN 5246, MAR 5806.

**Bachelor/Master of Science:** The Department also offers a combined bachelor's/master's degree program. This program allows qualified students to earn both the bachelor's and master's degrees, using 12 to 16 credit hours of graduate-level courses for both degrees.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/ms-isom>.

## **Degrees Offered With a Major in Information Systems and Operations Management**

Master of Science in Information Systems and Operations Management

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning

- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Management Department**

Warrington College of Business Administration

*Chair:* Robert E. Thomas

*Graduate Coordinator:* Amir Erez

*Complete faculty listing:* Follow this link.

The Management Department offers graduate work leading to a Ph.D. degree with a major in Business Administration and a concentration in Management; a Master of Business Administration degree with a concentration in Management; a Master of Science degree with a major in Management; and a Master of International Business (M.I.B.). Complete descriptions of the minimum requirements for these degrees are provided in the Graduate Degrees Section of this catalog.

The Department participates in combined bachelor's/master's degree programs for the Master of International Business (M.I.B.) and Master of Science (M.S.) with a major in management. The Master of International Business is open to students pursuing a bachelor's degree in a business discipline or minor in business administration. The M.S. with a major in management program is only open to non-business majors. Contact the graduate coordinator for information.

For more information, please see the program pages below and our website:  
<http://warrington.ufl.edu/departments/mgt>.

## **Business Administration (Management)**

### **College**

Warrington College of Business Administration

### **Department/School**

Management Department

## **Business Administration (Management) Program Information**

### **Doctor of Philosophy**

The Ph.D. program in business administration in the Department of Management prepares students for careers as faculty members of universities that emphasize teaching and research. The program is designed so that the student will (1) develop strong competence in the base discipline crucial to the study of organizations and organization processes and (2) follow a field of specialization in organizational behavior, organizational theory, human resource management, and strategic studies. Admission requirements for the Ph.D. include (a) a minimum grade point average of 3.0, (b) a minimum GRE score of 1000, and (c) for nonnative speakers of English, a minimum score of 550 on the TOEFL.

The research interests of the faculty are quite broad. For example, work is being done on defining the domain of performance in organizations, employee selection, performance appraisal, goal setting and incentives, aging, dispositions and job satisfaction, corporate governance, health care, innovation processes, organizational control and executive compensation practices, agency theory, and organizational processes. Faculty often work on interdisciplinary projects with other departments.

In addition, the student has exposure to scholars and faculty members from other universities, and from other departments in the University, who are invited to give workshops in the Department.

**Breadth Requirement:** All students pursuing the Ph.D. are expected to be well versed in the structure and functioning of business organizations and the environment within which they operate. This requirement may be met through undergraduate or master's level work in business administration. The student who does not meet the breadth requirement before entering the Ph.D. program must take at least three graduate courses in different functional areas

in the Warrington College of Business Administration but outside of the Department of Management. These courses should complement the major area of study selected by the student.

**Research Skills Requirement:** The general nature of the research requirement has been specified by the Graduate Committee of the Warrington College of Business. Students must take six approved courses to satisfy it. For the typical student in the Department of Management, the research foundation courses include at least 18 credits in courses such as philosophy of social science (e.g., PHI 5425 or PHI 5405 ), basic statistical methods (e.g., STA 6126), research methods (e.g., MAR 7786 , EDF 7486 , or PPE 6308 ), psychometrics (e.g., EDF 6436 , EDF 7439 ), multivariate analysis (EDF 7932 ), experimental design (MAR 7622 ), field research methods (POS 6757 ), and qualitative research (EDF 6475 , SYA 6315 ). The specific program is determined by the student's supervisory committee and will be tailored to fit the student's prior preparation and the specialization that the student chooses.

**Major Course Requirements:** The program of study for each student will include required seminars in Organizational Behavior, Organizational Theory, Strategic Management, and Human Resource Management Research, and the Management Workshop.

**Specialization Requirements:** Each student selects a specialization area. Courses must provide the depth of knowledge required to teach and conduct research successfully in the area of specialization. This part of the program will be developed by the supervisory committee in conjunction with the student. The specialization courses are primarily offered within the Department of Management, although it is quite common for students to take courses in related disciplines, such as Marketing, Finance, Economics, Psychology, Statistics, and Decision and Information Systems. Procedures for the qualifying examinations, dissertation, and final examination are given in the Requirements for the PhD. section of this catalog.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/phd-mgt>.

## Degrees Offered with a Major in Business Administration

Doctor of Philosophy

concentration in Management

## Management Departmental Courses

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management

- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research

- MAN 7980: Research for Doctoral Dissertation

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

### **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation

- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II



- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II

- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods

- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **International Business**

### **College**

Warrington College of Business Administration

### **Department/School**

Management Department

### **International Business Program**

The Master of International Business (M.I.B.) is a non-thesis interdisciplinary graduate business program designed to enhance a student's knowledge and understanding of global business trends and problems.

All M.I.B. candidates must complete the 30-credit curriculum, which consists of 14 core credits and 16 elective credits, with a grade point average (major and overall) of 3.0 or higher. The curriculum includes a mandatory global immersion experience and a non-thesis capstone project.

**Combined Degree:** The Master of International Business offers a combined bachelor's/master's degree option for students pursuing a bachelor's degree in a business discipline or minor in business administration.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/mib>.

### **Degrees Offered with a Major in International Business**

Master of International Business

## Management Departmental Courses

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project

- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation

- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory

- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis



- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

### **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning

- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management

- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Management**

### **College**

Warrington College of Business Administration

### **Department/School**

Management Department

### **Management Program Information**

**Master of Science degree with a major in Management, non-thesis option:** This M.S. program is designed to afford general business competency to students who possess little or no educational business background. The M.S. with a major in management program is only open to non-business majors. Students must complete the 32-credit curriculum, which consists of 22 core credits and 10 elective credits, with a grade point average (major and overall) of 3.0 or higher.

**Combined Degree Program:** The M.S. with a major in management offers a combined bachelor's/master's degree option.

For more information, please see our website: <http://warrington.ufl.edu/graduate/academics/msm>.

## **Degrees Offered with a Major in Management**

Master of Science

without a concentration

concentration in Health Care Risk Management

## **Management Departmental Courses**

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations

- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project
- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting
- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I

- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

### **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project
- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return

- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour
- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance

- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications
- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming



- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management

- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work

- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## Marketing Department

*Chair:* Joseph W. Alba

*Graduate Coordinator:* Lyle A. Brenner

Complete faculty listing: Follow this link

The Marketing Department at the University of Florida is a recognized leader in the discipline of marketing. For over a decade, our faculty has ranked as one of the most productive and influential in the field. Our faculty is known for conducting provocative, cutting-edge research that contributes both to the scientific understanding and practice of marketing. Our Ph.D. program has produced many leading researchers in the discipline. And the David F. Miller Center for Retailing Education and Research is known as one of the foremost centers for developing the science of retailing.

The Marketing Department offers graduate work leading to the Ph.D. degree in business administration, the M.S. degree in business administration, and a concentration in the Master of Business Administration (M.B.A.) program. Requirements for the M.B.A., M.S., and Ph.D. degrees are described in the Graduate Degrees section of this catalog.

For more information, please see our website: <http://warrington.ufl.edu/departments/mkt>.

## Business Administration (Marketing - Master's)

### College

Warrington College of Business Administration

### Department/School

Marketing Department

## Business Administration (Marketing - Master's)

The Masters of Business Administration (M.B.A) with a concentration in marketing focuses on consumer behavior, marketing management, and marketplace phenomena. Students study the critical linkages between an organization and its environment, particularly customers and competitors.

The M.S. degree in Business Administration with a concentration in marketing is intended for students whose ultimate objective is to earn a Ph.D. in marketing at another institution. Applicants must have (a) an undergraduate degree from a nationally accredited program, (b) a minimum 3.5 undergraduate GPA, (c) a minimum 600 GMAT (1250 GRE), and (d) evidence of a strong interest in academic research in marketing. The concentration requires 30 credits of graduate-level courses, at least half of which must be in marketing.

## Degrees Offered with a Major in Business Administration

## Master of Arts

concentration in Marketing

## Master of Science

concentration in Marketing

## Marketing Departmental Courses

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
- MAR 6335: Building and Managing Brand Equity
- MAR 6456: Business-to-Business Marketing
- MAR 6508: Customer Analysis
- MAR 6646: Marketing Research for Managerial Decision Making
- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research

- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **Business Administration (Marketing - Ph.D.)**

### **College**

Warrington College of Business Administration

### **Department/School**

Marketing Department

### **Business Administration (Marketing - Ph.D.)**

The doctoral program is research-focused and offers the opportunity for concentrated study in consumer behavior, marketing management, and quantitative or analytical modeling of marketplace phenomena.

The Ph.D. curriculum consists of course work in three areas: research foundations, the major field, and electives. In addition, students are required to complete a first-year summer research project, a third-year review paper, and a dissertation. Other requirements are outlined in the Graduate Degrees section of this catalog.

The research foundations requirement comprises a set of research methods and data analysis courses chosen from statistics, psychology, and/or economics. The major field course work is made up of a set of four required marketing seminars that are completed during the student's first 2 years in the program. Electives are selected from both advanced marketing seminars and other related disciplines to complement the student's research program.

### **Degrees Offered with a Major in Business Administration**

Doctor of Philosophy

concentration in Marketing

### **Marketing Departmental Courses**

- MAR 5805: Problems and Methods in Marketing Management
- MAR 5806: Problems and Methods in Marketing Management
- MAR 6157: International Marketing
- MAR 6158: International Marketing
- MAR 6237: The Art and Science of Pricing
- MAR 6256: Strategy and Tactics of Pricing
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- MAR 6648: Marketing Research for Managerial Decision Making
- MAR 6722: Web-Based Marketing
- MAR 6725: Introduction to Electronic Commerce
- MAR 6816: Advanced Marketing Management (MBA)
- MAR 6818: Advanced Marketing Management
- MAR 6833: Product Development and Management
- MAR 6834: Marketing of Science and Technology
- MAR 6835: Marketing of Science and Technology
- MAR 6837: Consumer-Centered Product Design
- MAR 6861: Customer Relationship Management
- MAR 6862: Customer Relationship Management
- MAR 6905: Individual Work
- MAR 6910: Supervised Research
- MAR 6930: Special Topics in Marketing
- MAR 6940: Supervised Teaching
- MAR 6957: International Studies in Marketing
- MAR 6971: Research for Master's Thesis
- MAR 6973: Project in Lieu of Thesis
- MAR 7507: Perspectives on Consumer Behavior
- MAR 7588: Consumer Information Processing and Decision Making
- MAR 7589: Judgment and Decision Making
- MAR 7626: Multivariate Statistical Methods in Marketing
- MAR 7636: Research Methods in Marketing
- MAR 7666: Marketing Decision Models
- MAR 7786: Marketing Literature
- MAR 7925: Workshop in Marketing Research
- MAR 7979: Advanced Research
- MAR 7980: Research for Doctoral Dissertation

### **Accounting Departmental Courses**

- ACG 5005: Financial Accounting
- ACG 5065: Financial and Managerial Accounting

- ACG 5075: Managerial Accounting
- ACG 5226: Advanced Accounting
- ACG 5505: Governmental Accounting
- ACG 5637: Auditing I
- ACG 5647: Auditing II
- ACG 5815: Accounting Regulation
- ACG 6136: Accounting Theory
- ACG 6175: Financial Reporting and Analysis
- ACG 6207: Accounting for Risk
- ACG 6265: International Accounting and Taxation
- ACG 6635: Issues in Audit Practice
- ACG 6685: Forensic Accounting
- ACG 6691: International Auditing
- ACG 6697: Information Systems Assurance
- ACG 6905: Individual Work in Accounting
- ACG 6935: Special Topics in Accounting
- ACG 6940: Supervised Teaching
- ACG 7885: Accounting Research I
- ACG 7886: Accounting Research II
- ACG 7887: Research Analysis in Accounting
- ACG 7939: Theoretical Constructs in Accounting
- ACG 7979: Advanced Research
- ACG 7980: Research for Doctoral Dissertation
- TAX 5005: Introduction to Federal Income Taxation
- TAX 5025: Federal Income Tax 1
- TAX 5027: Federal Income Tax 2
- TAX 5065: Tax Professional Research
- TAX 6105: Corporate Taxation
- TAX 6115: Advanced Corporate Taxation
- TAX 6205: Partnership Taxation
- TAX 6526: International Taxation
- TAX 6726: Executive Tax Planning
- TAX 6877: State and Local Taxation

## **Finance, Insurance, and Real Estate Departmental Courses**

- ENT 5275: Family Business Management
- ENT 6006: Entrepreneurship
- ENT 6008: Entrepreneurial Opportunity
- ENT 6016: Venture Analysis
- ENT 6116: Business Plan Formation
- ENT 6416: Venture Finance
- ENT 6506: Social Entrepreneurship
- ENT 6616: Creativity in Entrepreneurship
- ENT 6905: Individual Work in Entrepreneurship
- ENT 6930: Special Topics
- ENT 6933: Entrepreneurship Lecture Series
- ENT 6946: Entrepreneurial Consulting Project

- ENT 6950: Integrated Technology Ventures
- ENT 6957: International Studies in Entrepreneurship
- FIN 5405: Business Financial Management
- FIN 5437: Finance I: Asset Valuation, Risk, and Return
- FIN 5439: Finance II: Capital Structure and Risk Management Issues
- FIN 6108: Personal Financial Management
- FIN 6246: Money and Capital Markets
- FIN 6296: Capitalism
- FIN 6306: Investment Banking
- FIN 6418: International Cash Flow Management
- FIN 6425: Corporation Finance
- FIN 6427: Measuring and Managing Value
- FIN 6429: Financial Decision Making
- FIN 6432: Asset Valuation and Corporate Finance
- FIN 6434: Private Equity
- FIN 6438: Study in Valuation
- FIN 6465: Financial Statement Analysis
- FIN 6477: Entrepreneurial Finance
- FIN 6489: Financial Risk Management
- FIN 6496: Mergers & Acquisitions
- FIN 6518: Investment Concepts
- FIN 6525: Asset Management Project
- FIN 6526: Portfolio Theory
- FIN 6528: Asset Allocation and Investment Strategy
- FIN 6537: Derivative Securities
- FIN 6545: Fixed Income Security Valuation
- FIN 6547: Interest Rate Risk Management
- FIN 6549: Special Topics in Fixed Income Securities
- FIN 6575: Emerging Markets Finance I
- FIN 6576: Emerging Markets Finance II
- FIN 6585: Securities Trading
- FIN 6595: Investment Analytics
- FIN 6596: Introduction to Computational Methods & Derivative Pricing
- FIN 6608: Financial Management of the Multinational Corporation
- FIN 6626: International Finance
- FIN 6638: International Finance
- FIN 6643: Project Analysis in a Global Environment
- FIN 6727: Economic Organizations and Markets
- FIN 6728: Capitalism and Regulation
- FIN 6729: Economics Organizations and Markets
- FIN 6785: Investment Banking and Corporate Financial Modeling I
- FIN 6786: Investment Banking and Corporate Financial Modeling II
- FIN 6905: Individual Work in Finance
- FIN 6930: Special Topics in Finance
- FIN 6935: Finance Professional Speaker Series
- FIN 6936: Special Topics In Investment Finance
- FIN 6940: Supervised Teaching
- FIN 6957: International Studies in Finance
- FIN 6958: International Finance Study Tour



- FIN 6971: Research for Master's Thesis
- FIN 7446: Financial Theory I
- FIN 7447: Financial Theory II
- FIN 7808: Corporate Finance
- FIN 7809: Investments
- FIN 7848: Marketing Microstructure
- FIN 7938: Finance Research Workshop
- FIN 7979: Advanced Research
- FIN 7980: Research for Doctoral Dissertation
- GEB 5114: Entrepreneurship and Venture Finance
- GEB 5118: New Venture Creation
- GEB 6157: Entrepreneurship Experiential Learning Project
- GEB 6366: Fundamentals of International Business
- GEB 6924: Entrepreneurship Professional Speaker Series
- REE 6045: Introduction to Real Estate
- REE 6058: Construction Considerations in Real Estate
- REE 6105: Real Estate Appraisal
- REE 6206: Primary Mortgage Markets and Institutions
- REE 6208: Secondary Mortgage Markets and Securitization
- REE 6315: Real Estate Market and Transaction Analysis
- REE 6395: Investment Property Analysis
- REE 6397: Real Estate Securities and Portfolios
- REE 6705: Geographic Information Systems and Location Analysis
- REE 6737: Real Estate Development
- REE 6905: Individual Work in Real Estate
- REE 6910: Supervised Research
- REE 6930: Special Topics in Real Estate
- REE 6935: Real Estate Case Studies
- REE 6940: Supervised Teaching
- REE 6948: Capstone Seminar and Applied Project
- REE 6957: International Studies in Real Estate
- REE 7979: Advanced Research
- REE 7980: Research for Doctoral Dissertation

## **Information Systems and Operations Management Departmental Courses**

- ISM 5021: Information Systems in Organizations
- ISM 6022: Management Information Systems
- ISM 6123: Systems Analysis and Design
- ISM 6128: Advanced Business Systems Design and Development I
- ISM 6129: Advanced Business Systems Design and Development II
- ISM 6215: Business Database Systems I
- ISM 6216: Business Database Systems II
- ISM 6217: Database Management Systems
- ISM 6222: Business Telecom Strategy and Applications I
- ISM 6223: Business Telecom Strategy and Applications II
- ISM 6224: Business Telecom Strategy and Applications III
- ISM 6226: Business Telecom Strategy and Applications

- ISM 6236: Business Objects I
- ISM 6239: Business Objects II
- ISM 6257: Intermediate Business Programming
- ISM 6258: Advanced Business Programming
- ISM 6259: Business Programming
- ISM 6405: Business Intelligence
- ISM 6423: Data Analysis for Decision Support
- ISM 6485: Electronic Commerce and Logistics
- ISM 6486: eCommerce Technologies
- ISM 6487: Risks and Controls in eCommerce
- ISM 6942: Electronic Commerce Practicum
- ISM 7166: Advanced Business Systems Design and Development III
- MAN 5501: Management
- MAN 5502: Production and Operations Management
- MAN 6508: Management of Service Operations
- MAN 6511: Production Management Problems
- MAN 6528: Principles of Logistics/Transportation Systems
- MAN 6573: Purchasing and Materials Management
- MAN 6575: Purchasing and Supplier Relationship Management
- MAN 6581: Project Management
- MAN 6586: Project Management
- MAN 6598: Logistics and Distribution Management
- MAN 6599: Tactical Logistics Planning
- MAN 6617: International Operations/Logistics
- MAN 6619: International Logistics
- QMB 5303: Managerial Statistics
- QMB 5304: Introduction to Managerial Statistics
- QMB 5305: Advanced Managerial Statistics
- QMB 6358: Statistical Analysis for Managerial Decisions I
- QMB 6359: Statistical Analysis for Managerial Decisions II
- QMB 6607: Decision Processes Under Uncertainty I
- QMB 6616: Business Process Analysis
- QMB 6693: Quality Management and Control Systems
- QMB 6697: Optimization in Simulation Modeling I
- QMB 6755: Managerial Quantitative Analysis I
- QMB 6756: Managerial Quantitative Analysis II
- QMB 6905: Individual Work in Information Systems and Operations Management
- QMB 6910: Supervised Research
- QMB 6930: Special Topics in Information Systems and Operations Management
- QMB 6940: Supervised Teaching
- QMB 6941: Internship
- QMB 6957: International Studies in Quantitative Methods
- QMB 6971: Research for Master's Thesis
- QMB 7931: Special Topics in Information Systems and Operations Management
- QMB 7933: Seminar in Information Systems and Operations Management
- QMB 7979: Advanced Research
- QMB 7980: Research for Doctoral Dissertation

## Management Departmental Courses

- BUL 5445: Ethical Role of the Manager
- BUL 5810: Legal Environment of Business
- BUL 5811: Managers and Legal Environment of Business
- BUL 5831: Commercial Law
- BUL 5832: Commercial Law for Accountants
- BUL 6440: Business Ethics and Corporation Social Responsibility
- BUL 6441: Business Ethics and Corporate Social Responsibility
- BUL 6516: Law of Real Estate Transactions
- BUL 6652: Law and Ethics of Corporate Governance
- BUL 6656: Law for Entrepreneurs
- BUL 6821: Cyberlaw and Ethics
- BUL 6841: Employment Law
- BUL 6851: International Business Law
- BUL 6852: International Business Law
- BUL 6891: Legal Aspects of Technology Management
- BUL 6905: Individual Work
- BUL 6930: Special Topics
- ENT 6706: Global Entrepreneurship
- MAN 5141: Leadership Skills
- MAN 5245: Organizational Behavior
- MAN 5246: Organizational Behavior
- MAN 5265: Managing Groups and Teams
- MAN 6107: Motivation in Organizational Setting
- MAN 6128: Management Skills and Personal Development
- MAN 6149: Developing Leadership Skills
- MAN 6257: Power and Politics in Organizations
- MAN 6266: Managing Groups and Teams in Organizations
- MAN 6286: Managing Strategic Processes and Change in Organizations
- MAN 6296: Designing Effective Organizations
- MAN 6321: Human Resource Management
- MAN 6331: Compensation in Organizations
- MAN 6351: Training and Development in Organizations
- MAN 6365: Organizational Staffing
- MAN 6366: Organizational Staffing
- MAN 6385: Strategic Human Resource Management
- MAN 6446: Negotiations
- MAN 6447: Art and Science of Negotiation
- MAN 6537: Managing Technology in Organizations
- MAN 6627: Cross Cultural Negotiation
- MAN 6635: International Aspects of Human Resource Management
- MAN 6636: Global Strategic Management
- MAN 6637: Global Strategic Management
- MAN 6721: Business Policy
- MAN 6724: Strategic Management
- MAN 6900: Capstone Project

- MAN 6905: Individual Work in Management
- MAN 6910: Supervised Research
- MAN 6930: Special Topics
- MAN 6940: Supervised Teaching
- MAN 6957: International Studies in Management
- MAN 6958: International Study Program
- MAN 6973: Project in Lieu of Thesis
- MAN 7108: Seminar in Research Concepts and Methods in Management
- MAN 7109: Seminar in Motivation and Attitudes
- MAN 7146: Seminar in Leadership
- MAN 7207: Seminar on Foundations of Organizational Theory
- MAN 7208: Seminar in Contemporary Approaches to Organizations
- MAN 7267: Seminar on Groups and Teams Research
- MAN 7275: Organizational Behavior
- MAN 7328: Seminar on Staffing and Selection
- MAN 7778: Seminar in Strategic Adaptation to Environment
- MAN 7779: Strategic Processes and Structure in Organizations
- MAN 7933: Seminar in Management
- MAN 7979: Advanced Research
- MAN 7980: Research for Doctoral Dissertation

## **Warrington College of Business Administration Courses**

- GEB 5212: Professional Writing in Business
- GEB 5215: Professional Communication in Business
- GEB 5217: Executive Communication
- GEB 5225: Advanced Business Writing
- GEB 5929: Foundations Review
- GEB 6229: Professional Communication for Accountants
- GEB 6365: International Business
- GEB 6368: Globalization and the Business Environment
- GEB 6905: Individual Work
- GEB 6928: Professional Development Module IV
- GEB 6930: Special Topics
- GEB 6941: Internship
- GEB 6957: International Studies in Business

## **College of Dentistry**

Interim Dean: Boyd Robinson

Associate Dean & Director: Roberta Pileggi

Complete faculty listings: [Follow this link.](#)

Advanced education has progressed over the years to be an integral component of the College of Dentistry, growing from six certificate residency programs, with an enrollment of only 36 students in 1979, to fourteen certificate programs and various fellowship programs. Enrollment is now over 140. In 1993, the college started master degree programs in endodontics, orthodontics, periodontics and prosthodontics, and continues today to grow.

Follow this link for more information about UF's College of Dentistry graduate programs:  
<http://admissions.dental.ufl.edu/advanced-graduate-programs/programs-application-process/>

Departments and Programs within the College of Dentistry

College of Dentistry Courses

## Dental Sciences Department

College of Dentistry

Endodontics Chair and Graduate Coordinator: Roberta Pileggi

Orthodontics Chair and Graduate Coordinator: Calogero Dolce

Periodontology Chair: Ikramuddin Aukhil; Graduate Coordinator: Rodrigo Neiva

Restorative Dental Sciences Interim Chair: William Willis; Graduate Coordinator: Edgar O'Neill

*Complete faculty listing:* Follow this link.

The College of Dentistry offers the Master of Science degree in dental sciences with concentrations in endodontics, orthodontics, periodontics, and prosthodontics. These concentrations include a minimum of 38 hours of appropriate course work and research in topics relevant to each specialization. Requirements for the master's degree include a minimum of 38 hours of appropriate course work and research in topics relevant to each specialization. Requirements for the master's degree include

- Satisfactory completion of all course work
- Meeting the requirements for clinical certification in the respective dental specialty
- Thesis or project based on research.

Prerequisites for admission, in addition to those of the Graduate School, include

- D.D.S. or D.M.D. degree
- Completion of Parts I and II of the American Dental Association's National Board of Dental Examinations.

The application deadline for Endodontics, Periodontics, and Prosthodontics is August 1

The application deadline of Orthodontics is September 2

Send applications to:

Master of Science Program,  
College of Dentistry,  
P.O. Box 100402,  
Health Science Center,  
University of Florida,  
Gainesville, FL 32610-0402

Requirements for the M.S. degree are provided in the Graduate Degrees section of this catalog.

For further information, see the Dental Science program link below.

## Dental Sciences

### College

College of Dentistry

## **Department/School**

Dental Sciences Department

## **Dental Sciences Program Information**

The College of Dentistry offers the Master of Science degree in dental sciences with concentrations in endodontics, orthodontics, periodontics, and prosthodontics. These concentrations include a minimum of 38 hours of appropriate course work and research in topics relevant to each specialization. Requirements for the master's degree include

- Satisfactory completion of all course work
- Meeting the requirements for clinical certification in the respective dental specialty
- Thesis or project based on research.

Prerequisites for admission, in addition to those of the Graduate School, include

- D.D.S. or D.M.D. degree
- Completion of Parts I and II of the American Dental Association's National Board of Dental Examinations.

The application deadline for Endodontics, Periodontics, and Prosthodontics is August 1

The application deadline of Orthodontics is September 2

Send applications to:

Master of Science Program,  
College of Dentistry,  
P.O. Box 100402,  
Health Science Center,  
University of Florida,  
Gainesville, FL 32610-0402.

Those not in Dentistry are given in-department graduate credit. Registration in the courses listed below is restricted to students currently admitted to a program in the College of Dentistry.

## **Degrees Offered with a Major in Dental Sciences**

Master of Science

without a concentration

concentration in Endodontics

concentration in Orthodontics

concentration in Periodontics

concentration in Prosthodontics

## **General Courses**

- DEN 6937
- DEN 6674: Advanced Oral Pathology
- DEN 6675: Craniofacial Pain
- DEN 6678: Advanced Oral Medicine and Drug Interactions in Dentistry
- DEN 6679: Advanced Radiology and Interpretation
- DEN 6905: Individual Study
- DEN 6910: Supervised Research
- DEN 6934: Special Topics in Dentistry
- DEN 6935: Special Topics in Dentistry
- DEN 6936: Practice Management
- DEN 6940: Supervised Teaching
- DEN 6941: Clinical Teaching in Dentistry
- DEN 6942: Grand Rounds
- DEN 6971: Research for Master's Thesis
- DEN 6973: Project in Lieu of Thesis

## **Endodontics Courses**

- DEN 6642: Introduction to Advanced Endodontics
- DEN 6643: Treatment Planning/Cases Presentation
- DEN 6644: Nonsurgical Endodontic Care I
- DEN 6645: Nonsurgical Endodontic Care II
- DEN 6646: Surgical Endodontics I
- DEN 6647: Surgical Endodontics II

## **Orthodontics Courses**

- DEN 6602: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 1: Class I Treatment
- DEN 6603: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 2: Class II Treatment
- DEN 6604: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 3: Class II Treatment and Overbite Treatments
- DEN 6605: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 4: Class II Treatment and Overbite Treatments
- DEN 6606: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 5: Class III and Crossbite Treatments and Soft Tissue Considerations
- DEN 6607: Orthodontic Treatment—Appliance Management and Effect of Treatment Part 6: Impactions, Transplantations and Stability
- DEN 6608: Analysis, Diagnosis, and Treatment Planning: Part I
- DEN 6609: Analysis, Diagnosis, and Treatment Planning: Part II
- DEN 6610: Biology of Tooth Movement: Part I
- DEN 6612: Orthodontic Biomechanics: Part I
- DEN 6613: Orthodontic Biomechanics: Part II
- DEN 6614: Ortho-Perio Relationships: Part I
- DEN 6615: Ortho-Perio Relationships: Part II
- DEN 6616: Orthognathic Surgery: Part I
- DEN 6617: Orthognathic Surgery: Part II
- DEN 6618: Postnatal Growth and Development

- DEN 6670: Craniofacial Anomalies
- DEN 6671: Prenatal Growth and Development
- DEN 6672: Materials in Orthodontics

## **Periodontics Courses**

- DEN 6652: Review of Periodontics Literature I
- DEN 6653: Review of Periodontics Literature II
- DEN 6654: Review of Periodontics Literature III
- DEN 6655: Review of Periodontics Literature IV
- DEN 6656: Introduction to Advanced Periodontology
- DEN 6657: Periodontal Histology and Histopathology
- DEN 6658: Treatment Planning in Periodontal Therapy

## **Prosthodontics Courses**

- DEN 6622: Principles of Occlusion
- DEN 6623: Maxillofacial Prosthetics
- DEN 6624: Dental Implant Restoration
- DEN 6625: Fixed Prosthodontic Ceramics
- DEN 6626: Advanced Removable Partial Dentures
- DEN 6627: Treatment Planning Seminar

## **College of Design, Construction, and Planning**

Dean: C. Silver

Complete faculty listings: [Follow this link.](#)

DCP is home to five independent professional disciplines: architecture, construction management, interior design, landscape architecture and urban and regional planning. The college also is home to an interdisciplinary program in historic preservation, which allows graduate students to gain expertise in research and application of historic preservation in the United States and abroad.

## **Accreditation and Degrees**

The academic programs in the college have an accreditation process from the professional organizations of each discipline.

- Architecture – National Architectural Accrediting Board
- Construction Management – American Council for Construction Education
- Interior Design – Foundation for Interior Design Education Research
- Landscape Architecture – American Society of Landscape Architects
- Urban and Regional Planning – Planning Accreditation Board

DCP offers both undergraduate and graduate degrees and programs. Through its academic units, the college offers doctoral, master's, and bachelor's degrees, as well as distance education programs, combined degrees, joint degrees, certificate programs, and academic minors.



## **College Institutes, Centers and Programs**

Research and service projects conducted through the research centers and institutes often entail multidisciplinary, cross-campus student input and effort. Each division of the college is involved in on-going projects that advance both scholarly study and professional practice. The college contributes to community, state, regional and national efforts to conserve and improve the quality of the natural and built environments through its research centers. The college's teaching and research programs have national and international prominence.

For more information, please see our website: <http://www.dcp.ufl.edu>

Departments and Programs within the College of Design, Construction, and Planning

College of Design, Construction, and Planning Courses

## **Design, Construction, and Planning (Ph.D.)**

### **College**

College of Design, Construction, and Planning

### **Design, Construction, and Planning (Ph.D.) Program Information**

The Department of Design, Construction and Planning offers a Doctor of Philosophy degree. The department also offers Doctor of Philosophy degrees with the following specializations: historic preservation, urban and regional planning, landscape architecture, construction management, interior design, and geographic information systems.

### **Degrees Offered with a Major in Design, Construction, and Planning**

Doctor of Philosophy

without a concentration

concentration in Construction Management

*optional second concentration in Geographic Information Systems*

concentration in Geographic Information Systems

concentration in Historic Preservation

*optional second concentration in Geographic Information Systems*

concentration in Interior Design

*optional second concentration in Geographic Information Systems*

concentration in Landscape Architecture

*optional second concentration in Geographic Information Systems*

concentration in Urban and Regional Planning

*optional second concentration in Geographic Information Systems*

### **Architecture Departmental Courses**

- ARC 5791: Topics in Architectural History
- ARC 5800: Survey of Architectural Preservation, Restoration, and Reconstruction
- ARC 5810: Techniques of Architectural Documentation
- ARC 6176: Advanced Computer-Aided Design
- ARC 6212: Topics in Phenomena and Architecture
- ARC 6226: Intercultural Perspectives in Architecture
- ARC 6228: Film and Architecture
- ARC 6241: Advanced Studio I
- ARC 6242: Research Methods
- ARC 6280: Advanced Topics in Architectural Practice
- ARC 6281: Professional Practice
- ARC 6355: Advanced Studio II
- ARC 6356: Advanced Studio III
- ARC 6357: Advanced Topics in Architectural Design
- ARC 6391: Architecture, Energy, and Ecology
- ARC 6393: Advanced Architectural Connections
- ARC 6399: Advanced Topics in Urban Design
- ARC 6505: Architectural Structural Systems: Wood, Steel, and Concrete
- ARC 6576: Architectural Structures
- ARC 6611: Advanced Topics in Architectural Technology
- ARC 6621: Graduate Environmental Technology 2
- ARC 6642: Architectural Acoustic Design Laboratory
- ARC 6643: Architectural Acoustics
- ARC 6670: Lighting Design Seminar
- ARC 6685: Life Safety, Sanitation, and Plumbing Systems
- ARC 6686: LEED for Sustainable Design and Construction
- ARC 6705: Graduate Architectural History 3
- ARC 6711: Architecture of the Ancient World
- ARC 6750: Architectural History: America
- ARC 6773: Strains of Modernism
- ARC 6793: Advanced Topics in Regional Architecture
- ARC 6805: Architectural Conservation
- ARC 6821: Preservation Problems and Processes

- ARC 6822: Preservation Programming and Design
- ARC 6851: Technology of Preservation: Materials and Methods I
- ARC 6852: Technology of Preservation: Materials and Methods II
- ARC 6883: Vernacular Architecture & Sustainability
- ARC 6911: Architectural Research
- ARC 6912: Architectural Research II
- ARC 6913: Architectural Research III
- ARC 6932: Advanced Topics in Architectural Methods
- ARC 6933: Sustainable Site Design
- ARC 6934: European Approach to Sustainable Design
- ARC 6935: Seminar in Sustainable Design
- ARC 6940: Supervised Teaching
- ARC 6971: Research for Master's Thesis
- ARC 6979: Master's Research Project

### **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating
- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods
- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management
- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law
- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management

- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis
- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism
- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment
- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management
- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **Interior Design Departmental Courses**

- IND 5023: Introduction to Architectural Interiors
- IND 5106: History of Interior Design I
- IND 5136: History of Interior Design II
- IND 5212C: Architectural Interiors I
- IND 5213C: Introduction to Architectural Interiors Lab
- IND 5227C: Advanced Architectural Interiors I
- IND 5231C: Architectural Interiors II
- IND 5232C: Advanced Architectural Interiors II
- IND 5317C: Interior Design Communication Systems
- IND 5427C: Interior Design Construction Documents
- IND 5428: Materials for Interior Design
- IND 5434C: Interior Lighting

- IND 5445C: Furniture Design
- IND 5454C: Advanced Interior Design Detailing and Construction Documents
- IND 5464C: Computer Applications in Three-Dimensional Design
- IND 5466: Interior Environmental Technology
- IND 5508: Business and Professional Practices for Interior Designers
- IND 5638: Design Environments and Human Interaction
- IND 5937: Current Topics in Interior Design
- IND 6239: Advanced Topics in Interior Design Studio
- IND 6639: Methods of Interior Design Research
- IND 6906: Independent Studies and Readings
- IND 6940: Supervised Teaching
- IND 6941: Interior Design Internship
- IND 6971: Research for Master's Thesis

### **Landscape Architecture Departmental Courses**

- LAA 5331: Site Design Methodologies
- LAA 5366: Principles of Landscape Architecture
- LAA 6231: Landscape Architecture Theory
- LAA 6322: Project Management for Landscape Architects
- LAA 6342: Landscape Architecture Criticism
- LAA 6349C: Design Communications for Landscape Architects
- LAA 6382: Ecological and Environmental Policy
- LAA 6525L: Advanced Landscape Construction Design
- LAA 6536: Landscape Management
- LAA 6656C: Advanced Landscape Architectural Design
- LAA 6713: Cultural Landscapes
- LAA 6716: History of Landscape Architecture
- LAA 6905: Directed Study
- LAA 6931: Water Conservation through Site Design and Green Roofs
- LAA 6931C: Special Topics
- LAA 6933: Topics in European Design: Paris, France
- LAA 6935: Gardens of the World
- LAA 6941: Supervised Internship
- LAA 6952C: European Landscape Architecture Studio
- LAA 6971: Research for Master's Thesis
- LAA 6979: Terminal Project

### **Urban and Regional Planning Departmental Courses**

- URP 6042: Urban Economy
- URP 6061: Planning Administration and Ethics
- URP 6100: Planning Theory and History
- URP 6122: Alternative Conflict Management
- URP 6131: Growth Management Powers I
- URP 6132: Growth Management Seminar
- URP 6203: Planning Research Design

- URP 6231: Quantitative Data Analysis for Planners
- URP 6270: Survey of Planning Information Systems
- URP 6271: Planning Information Systems
- URP 6272: Spatial Analysis for Urban Planners
- URP 6274: GPS for Planners: Introduction to Global Positioning System
- URP 6275: Spatial Database Design and Development
- URP 6312: Land Development Planning and Evaluation
- URP 6341: Urban Planning Project
- URP 6421: Environmental Impact Statements
- URP 6424: Sustainable Urbanism in the Americas
- URP 6428: Advanced Environmental Planning
- URP 6429: Natural Resources Planning and Management
- URP 6445: Planning for Climate Change
- URP 6526: Health and the Built Environment
- URP 6541: Economic Development Planning
- URP 6542: Urban Land Economics
- URP 6543: Seminar in Capital Improvement Finance
- URP 6547: Local Public Finance for Urban Planners
- URP 6601: State Planning
- URP 6603: Development Review
- URP 6610: International Development Planning
- URP 6716: Transportation Policy and Planning
- URP 6718: Bikeways Planning and Design
- URP 6745: Housing, Public Policy, and Planning
- URP 6746: Topical Debates in Housing
- URP 6821: Transportation and Land-Use Modeling
- URP 6871: Planning and Design I
- URP 6872: Planning and Design II
- URP 6880: Defensible Space and CPTED in Urban Design
- URP 6884: Community Conservation and Revitalization
- URP 6905: Exploration and Directed Study
- URP 6910: Supervised Research
- URP 6920: Colloquium
- URP 6931: Topical Seminar
- URP 6933: Planning Information Seminar
- URP 6940: Supervised Teaching
- URP 6941: Urban Planning Internship
- URP 6971: Research for Master's Thesis
- URP 6979: Terminal Project

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation

- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **Historic Preservation**

### **College**

College of Design, Construction, and Planning

### **Degrees Offered with a Major in Historic Preservation**

Master of Historic Preservation

### **Architecture Departmental Courses**

- ARC 5791: Topics in Architectural History
- ARC 5800: Survey of Architectural Preservation, Restoration, and Reconstruction
- ARC 5810: Techniques of Architectural Documentation
- ARC 6176: Advanced Computer-Aided Design
- ARC 6212: Topics in Phenomena and Architecture
- ARC 6226: Intercultural Perspectives in Architecture
- ARC 6228: Film and Architecture
- ARC 6241: Advanced Studio I
- ARC 6242: Research Methods
- ARC 6280: Advanced Topics in Architectural Practice
- ARC 6281: Professional Practice
- ARC 6355: Advanced Studio II

- ARC 6356: Advanced Studio III
- ARC 6357: Advanced Topics in Architectural Design
- ARC 6391: Architecture, Energy, and Ecology
- ARC 6393: Advanced Architectural Connections
- ARC 6399: Advanced Topics in Urban Design
- ARC 6505: Architectural Structural Systems: Wood, Steel, and Concrete
- ARC 6576: Architectural Structures
- ARC 6611: Advanced Topics in Architectural Technology
- ARC 6621: Graduate Environmental Technology 2
- ARC 6642: Architectural Acoustic Design Laboratory
- ARC 6643: Architectural Acoustics
- ARC 6670: Lighting Design Seminar
- ARC 6685: Life Safety, Sanitation, and Plumbing Systems
- ARC 6686: LEED for Sustainable Design and Construction
- ARC 6705: Graduate Architectural History 3
- ARC 6711: Architecture of the Ancient World
- ARC 6750: Architectural History: America
- ARC 6773: Strains of Modernism
- ARC 6793: Advanced Topics in Regional Architecture
- ARC 6805: Architectural Conservation
- ARC 6821: Preservation Problems and Processes
- ARC 6822: Preservation Programming and Design
- ARC 6851: Technology of Preservation: Materials and Methods I
- ARC 6852: Technology of Preservation: Materials and Methods II
- ARC 6883: Vernacular Architecture & Sustainability
- ARC 6911: Architectural Research
- ARC 6912: Architectural Research II
- ARC 6913: Architectural Research III
- ARC 6932: Advanced Topics in Architectural Methods
- ARC 6933: Sustainable Site Design
- ARC 6934: European Approach to Sustainable Design
- ARC 6935: Seminar in Sustainable Design
- ARC 6940: Supervised Teaching
- ARC 6971: Research for Master's Thesis
- ARC 6979: Master's Research Project

## **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating
- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods
- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management



- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law
- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management
- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis
- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism
- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment
- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management

- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **Interior Design Departmental Courses**

- IND 5023: Introduction to Architectural Interiors
- IND 5106: History of Interior Design I
- IND 5136: History of Interior Design II
- IND 5212C: Architectural Interiors I
- IND 5213C: Introduction to Architectural Interiors Lab
- IND 5227C: Advanced Architectural Interiors I
- IND 5231C: Architectural Interiors II
- IND 5232C: Advanced Architectural Interiors II
- IND 5317C: Interior Design Communication Systems
- IND 5427C: Interior Design Construction Documents
- IND 5428: Materials for Interior Design
- IND 5434C: Interior Lighting
- IND 5445C: Furniture Design
- IND 5454C: Advanced Interior Design Detailing and Construction Documents
- IND 5464C: Computer Applications in Three-Dimensional Design
- IND 5466: Interior Environmental Technology
- IND 5508: Business and Professional Practices for Interior Designers
- IND 5638: Design Environments and Human Interaction
- IND 5937: Current Topics in Interior Design
- IND 6239: Advanced Topics in Interior Design Studio
- IND 6639: Methods of Interior Design Research
- IND 6906: Independent Studies and Readings
- IND 6940: Supervised Teaching
- IND 6941: Interior Design Internship
- IND 6971: Research for Master's Thesis

## **Landscape Architecture Departmental Courses**

- LAA 5331: Site Design Methodologies
- LAA 5366: Principles of Landscape Architecture
- LAA 6231: Landscape Architecture Theory
- LAA 6322: Project Management for Landscape Architects
- LAA 6342: Landscape Architecture Criticism
- LAA 6349C: Design Communications for Landscape Architects
- LAA 6382: Ecological and Environmental Policy
- LAA 6525L: Advanced Landscape Construction Design
- LAA 6536: Landscape Management
- LAA 6656C: Advanced Landscape Architectural Design
- LAA 6713: Cultural Landscapes

- LAA 6716: History of Landscape Architecture
- LAA 6905: Directed Study
- LAA 6931: Water Conservation through Site Design and Green Roofs
- LAA 6931C: Special Topics
- LAA 6933: Topics in European Design: Paris, France
- LAA 6935: Gardens of the World
- LAA 6941: Supervised Internship
- LAA 6952C: European Landscape Architecture Studio
- LAA 6971: Research for Master's Thesis
- LAA 6979: Terminal Project

## **Urban and Regional Planning Departmental Courses**

- URP 6042: Urban Economy
- URP 6061: Planning Administration and Ethics
- URP 6100: Planning Theory and History
- URP 6122: Alternative Conflict Management
- URP 6131: Growth Management Powers I
- URP 6132: Growth Management Seminar
- URP 6203: Planning Research Design
- URP 6231: Quantitative Data Analysis for Planners
- URP 6270: Survey of Planning Information Systems
- URP 6271: Planning Information Systems
- URP 6272: Spatial Analysis for Urban Planners
- URP 6274: GPS for Planners: Introduction to Global Positioning System
- URP 6275: Spatial Database Design and Development
- URP 6312: Land Development Planning and Evaluation
- URP 6341: Urban Planning Project
- URP 6421: Environmental Impact Statements
- URP 6424: Sustainable Urbanism in the Americas
- URP 6428: Advanced Environmental Planning
- URP 6429: Natural Resources Planning and Management
- URP 6445: Planning for Climate Change
- URP 6526: Health and the Built Environment
- URP 6541: Economic Development Planning
- URP 6542: Urban Land Economics
- URP 6543: Seminar in Capital Improvement Finance
- URP 6547: Local Public Finance for Urban Planners
- URP 6601: State Planning
- URP 6603: Development Review
- URP 6610: International Development Planning
- URP 6716: Transportation Policy and Planning
- URP 6718: Bikeways Planning and Design
- URP 6745: Housing, Public Policy, and Planning
- URP 6746: Topical Debates in Housing
- URP 6821: Transportation and Land-Use Modeling
- URP 6871: Planning and Design I
- URP 6872: Planning and Design II

- URP 6880: Defensible Space and CPTED in Urban Design
- URP 6884: Community Conservation and Revitalization
- URP 6905: Exploration and Directed Study
- URP 6910: Supervised Research
- URP 6920: Colloquium
- URP 6931: Topical Seminar
- URP 6933: Planning Information Seminar
- URP 6940: Supervised Teaching
- URP 6941: Urban Planning Internship
- URP 6971: Research for Master's Thesis
- URP 6979: Terminal Project

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **School of Architecture**

Director: M. Gold.

Graduate Coordinator: N. M. Clark.

Complete faculty listing: [Follow this link.](#)

**Doctor of Philosophy:** The college offers an interdisciplinary program leading to the Doctor of Philosophy degree in design, construction, and planning. Areas of specialization in this program include architecture, building construction, interior design, landscape architecture, and urban and regional planning. For information, write to the Ph.D. Director, College of Design, Construction, and Planning Doctoral Program, 331 ARCH, Box 115701.

**Master of Architecture:** The School of Architecture offers graduate work leading to the first professional degree, Master of Architecture. During graduate studies, each student has the opportunity to focus on one or more areas, including design, history and theory, urban design, preservation, structures, and technology. Concentrations and certificates are available in historic preservation, sustainable architecture, and sustainable design. The student's overall college experience, both undergraduate and graduate programs, is intended to be a complete unit of professional education leading to practice in architecture or related fields.

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted a 6-year, 3-year, or 2-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The University of Florida School of Architecture offers the following NAAB-accredited degree programs:

Master of Architecture (pre-professional degree + 52 graduate credits) Master of Architecture (professional degree + 30 graduate credits) Master of Architecture (non-pre-professional degree + 54 undergraduate credits + 52 graduate credits)

*Master of Architecture (pre-professional degree + 52 graduate credits)* : For those students who have a 4-year baccalaureate degree from an accredited architectural program, 2 years in residence (52 credits) are normally required to complete the Master of Architecture degree; notification of program length is part of the letter of acceptance and is determined by portfolio and transcript review. ARC 6241, ARC 6355, and ARC 6356 are required of all graduate students in this track and are prerequisites for the required thesis or master's project. Course sequences in history and theory, technology, structures, and practice must also be completed.

*Master of Architecture (professional degree + 30 graduate credits):* For students who have a baccalaureate degree with an architecture or related major (interior design, landscape architecture) and who have completed 4 or 6 architecture or design studies courses, three years of residence (83 credits, approximately) are normally required to complete the Master of Architecture degree; notification of program length is part of the letter of acceptance and is determined by portfolio and transcript review. ARC 4073, ARC 4074, ARC 6241, ARC 6355, and ARC 6356 are required of all graduate students in this track and are prerequisites for the required thesis or master's project. (Undergraduate courses 3000 and 4000 level in the major do not count toward the minimum requirements for the graduate degree.) Course sequences in history and theory, materials and methods, technology, structures, and practice must be completed.

*Master of Architecture (non-pre-professional degree + 54 undergraduate credits + 52 graduate credits):* For students with a baccalaureate degree in a nonrelated academic area and have completed fewer than 4 design studies courses, 4 years of residence (112 credits, approximately) are normally required to complete the Master of Architecture degree; notification of program length is part of the letter of acceptance and is determined by portfolio and transcript review. ARC 4071, ARC 4072, ARC 4073, ARC 4074, ARC 6241, ARC 6355, and ARC 6356 are required of all graduate students in this track and are prerequisites for the required thesis or project. Undergraduate courses 3000 and 4000 level in the major do not count toward the 52-hour minimum requirements for the graduate

degree. Course sequences in history and theory, materials and methods, technology, structures, and practice must be completed.

*Accredited 5-year professional base:* For students with a baccalaureate degree in architecture from an accredited 5-year professional degree program, a 1-year degree program is available. In these cases, a specialized curriculum is developed that compliments the needs of the applicant. Minimum registration is 30 credits; however, the minimum may increase if transcript reviews show that further course work is needed to meet registration and curriculum requirements. ARC 6356 is a prerequisite for the thesis or master's project.

Most states require individuals intending to become architects to hold an accredited degree. The National Architectural Accrediting Board acknowledges two types of degrees: the Bachelor of Architecture (minimum 5 five years of study); and the Master of Architecture (minimum 3 years of study after an unrelated bachelor's degree, or 2 years after a related pre-professional bachelor's degree). These professional degrees educate those who aspire to registration and licensure to practice as architects.

**Student work:** The College may retain student work for the purpose of record, exhibition, or instruction.

**Master of Science in Architectural Studies:** The M.S.A.S. is a nonprofessional degree for advanced investigations in specialized areas of architectural history, architectural pedagogy, theory, technology, design, preservation, or practice. Students with a bachelor's degree in any discipline from an accredited university are eligible to apply to this program; the proposed area of focus should be precisely defined in the application. This is a 3- to 4-semester program (32 hours minimum) that includes a thesis. (No more than 6 hours of ARC 6971 may be counted in the minimum credit hours for the degree.) Interdisciplinary study is encouraged. Concentrations and certificates are available in historic preservation, sustainable architecture, and sustainable design.

The School sponsors special curricula in architecture to enhance the academic program. *Preservation Institute: Caribbean, Preservation Institute: Nantucket, and Vicenza Institute of Architecture (Italy)* accepts students from the University of Florida, and also from academic circles throughout the United States and the world for year-round study. Any student in a graduate architecture program at the University of Florida may apply for one or more of these programs.

Requirements for the M.Arch., M.S.A.S., and Ph.D. degrees are described in the *General Information* section of this catalog.

The School also participates in a program granting an Interdisciplinary Concentration and Certificate in Sustainable Architecture. For more information, see the *Interdisciplinary Graduate Studies* section of this catalog.

**Applications:** All applications for fall term graduate admission (including official transcripts, GRE scores, and TOEFL scores, if necessary) must be received by the Office of the Registrar by January 15. In addition to satisfying University requirements for admission, applicants are required to submit to the Graduate Program Assistant, School of Architecture, 231 ARCH, Box 115702, the following: a portfolio of their creative work; a scholarly statement of intent and objectives; and three letters of recommendation. This material must be received by January 15 to be considered for admission in the next fall term. Students may apply after the January 15 deadline but will only be considered if spaces become available. (Updates of portfolios are accepted after January 15; however, applications will not be considered until they are complete.)

The School reserves the right to retain student work for purposes of record, exhibition, or instruction. Field trips are required of all students; students should plan to have adequate funds available. It may be necessary to assess studio fees to defray costs of base maps and other generally used materials.

## Architecture

**College**

College of Design, Construction, and Planning

**Department/School**

School of Architecture

**Degrees Offered with a Major in Architecture**

Master of Science in Architectural Studies

without a concentration

concentration in Historic Preservation

concentration in Sustainable Architecture

concentration in Sustainable Design

Master of Architecture

without a concentration

concentration in Historic Preservation

concentration in Sustainable Architecture

concentration in Sustainable Design

**Courses**

- ARC 6512: Structural Modeling
- ARC 6116: Drawing toward Architecture
- ARC 6311C: Building Information Modeling
- ARC 6383: St. Augustine Interdisciplinary Design Studio
- DCP 6710: History and Theory of Historic Preservation

- DCP 6715: Preservation Building Technology
- DCP 6971: Research for Master's Thesis
- URP 6272: Spatial Analysis for Urban Planners

## **Architecture Departmental Courses**

- ARC 5791: Topics in Architectural History
- ARC 5800: Survey of Architectural Preservation, Restoration, and Reconstruction
- ARC 5810: Techniques of Architectural Documentation
- ARC 6176: Advanced Computer-Aided Design
- ARC 6212: Topics in Phenomena and Architecture
- ARC 6226: Intercultural Perspectives in Architecture
- ARC 6228: Film and Architecture
- ARC 6241: Advanced Studio I
- ARC 6242: Research Methods
- ARC 6280: Advanced Topics in Architectural Practice
- ARC 6281: Professional Practice
- ARC 6355: Advanced Studio II
- ARC 6356: Advanced Studio III
- ARC 6357: Advanced Topics in Architectural Design
- ARC 6391: Architecture, Energy, and Ecology
- ARC 6393: Advanced Architectural Connections
- ARC 6399: Advanced Topics in Urban Design
- ARC 6505: Architectural Structural Systems: Wood, Steel, and Concrete
- ARC 6576: Architectural Structures
- ARC 6611: Advanced Topics in Architectural Technology
- ARC 6621: Graduate Environmental Technology 2
- ARC 6642: Architectural Acoustic Design Laboratory
- ARC 6643: Architectural Acoustics
- ARC 6670: Lighting Design Seminar
- ARC 6685: Life Safety, Sanitation, and Plumbing Systems
- ARC 6686: LEED for Sustainable Design and Construction
- ARC 6705: Graduate Architectural History 3
- ARC 6711: Architecture of the Ancient World
- ARC 6750: Architectural History: America
- ARC 6773: Strains of Modernism
- ARC 6793: Advanced Topics in Regional Architecture
- ARC 6805: Architectural Conservation
- ARC 6821: Preservation Problems and Processes
- ARC 6822: Preservation Programming and Design
- ARC 6851: Technology of Preservation: Materials and Methods I
- ARC 6852: Technology of Preservation: Materials and Methods II
- ARC 6883: Vernacular Architecture & Sustainability
- ARC 6911: Architectural Research
- ARC 6912: Architectural Research II
- ARC 6913: Architectural Research III
- ARC 6932: Advanced Topics in Architectural Methods
- ARC 6933: Sustainable Site Design



- ARC 6934: European Approach to Sustainable Design
- ARC 6935: Seminar in Sustainable Design
- ARC 6940: Supervised Teaching
- ARC 6971: Research for Master's Thesis
- ARC 6979: Master's Research Project

## College of Design, Construction, and Planning Courses

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## M.E. Rinker, Sr., School of Construction Management

*Director:* Robert Ries

*Director of Master's Programs:* Robert E. Minchin

*Complete faculty listing:* Follow this link.

**Doctor of Philosophy:** The college offers an interdisciplinary doctoral program in design, construction, and planning. Areas of specialization in the program include architecture, construction management, interior design, landscape architecture, and urban and regional planning. Within the area of construction management, specialization options include sustainable construction, information systems, construction safety, affordable housing, productivity, and human resource management. These specializations prepare students to assume college-level faculty positions and industry research positions in construction management and the building sciences. For more information on the Ph.D. program, write to the Ph.D. Director, College of Design, Construction, and Planning Doctoral Program, 331 ARCH,

P.O. Box 115701. For information on the specializations in the Rinker School of Construction Management, write to the Director of Graduate and Distance Education, Rinker School of Construction Management, 304 Rinker Hall, P.O. Box 115703.

The M.E. Rinker Sr. School offers courses leading to the degrees of Master of Science in Construction Management (thesis), Master of Construction Management (nonthesis), and Master of International Construction Management (nonthesis distance education program for experienced professionals). An individual plan of study is prepared for each student to insure that the student's goals are achieved within the broad policy guidelines of the Rinker School. Specialization may be in such areas as construction management, sustainable construction, information systems, construction safety, and construction law. Requirements for the M.B.C., M.S.B.C., M.I.C.M., and Ph.D. degrees are given in the General Information section of this catalog.

**Master of Construction Management (M.C.M.) or Master of Science in Construction Management (M.S.C.M.):**

To be eligible for admission to the M.C.M. or M.S.C. programs, a student must hold a 4-year undergraduate degree in building construction or its equivalent in related fields. "Equivalent in related fields" should include studies in construction materials and methods, structures, and management. Students with deficiencies in these related fields may need longer residence for the master's degree, as they will be required to take specified basic courses to provide a foundation for advanced courses. There is no foreign language requirement.

No more than 3 credits of BCN 6971 may be used to satisfy the credit requirements for the M.S.C.M. degree without written permission of the Director of Master's Programs.

**Master of International Construction Management (M.I.C.M.):** This program prepares students to assume upper-level management responsibilities in a multinational company. To be eligible for admission to the M.I.C.M. program, a student must have

- A 4-year undergraduate degree
- At least 5 years of meaningful, supervisory-level construction management experience
- Acceptable GRE scores (verbal and quantitative)
- A grade point average of 3.0 on a 4.0 scale
- Employer sponsorship
- International students must submit an acceptable score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute program.

No more 3 credits of ICM 6934 may be used to satisfy the credit requirements for the M.I.C.M. without written permission of the Director. All candidates are required to take ICM 6930. In addition to these 6 research-oriented graduate credit hours, the student selects one or two areas of emphasis and then takes the rest of the required 33 credit hours from the remaining courses and special electives. All candidates are required to pass a comprehensive oral and/or written examination at the completion of the course work and their master's research report/project.

The M.E. Rinker Sr. School reserves the right to retain student work for purposes of record, exhibition, or instruction.

**Research facilities:** The Shimberg Center for Housing Studies, operating within the School, researches the problems and possible solutions associated with developing and producing affordable housing. The Powell Center for Construction and the Environment conducts research on implementing sustainability in creating, operating, and constructing a built environment. The Fluor Program for Construction Safety researches and disseminates information on matters related to construction safety and health. The Center for Advanced Construction Information Modeling educates members of the AECO industry about new and emerging technologies in virtual design and construction.

**Combined program:** The School offers a combined bachelor's/master's degree program. Contact the Director of Master's Programs for information.

For more information, please see our website: <http://www.bcn.ufl.edu>.

## **Construction Management**

### **College**

College of Design, Construction, and Planning

### **Department/School**

M.E. Rinker, Sr., School of Construction Management

### **Degrees Offered with a Major in Construction Management**

Master of Construction Management

without a concentration

concentration in Historic Preservation

concentration in Sustainable Construction

concentration in Sustainable Design

Master of Science in Construction Management

without a concentration

concentration in Historic Preservation

concentration in Sustainable Construction

concentration in Sustainable Design

### **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating
- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods

- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management
- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law
- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management
- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis
- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism
- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment

- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management
- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **Fire and Emergency Services**

### **College**

College of Design, Construction, and Planning

### **Department/School**

M.E. Rinker, Sr., School of Construction Management

## **Fire and Emergency Services Program Information**

The Master of Science in Fire and Emergency Services degree program focuses on Emergency Services/Disaster Management (ES/DM) and is designed for individuals who are seeking knowledge in emergency planning, hazard mitigation and preparedness, disaster response and recovery, and homeland security. The goal is to create broad experience that includes the many elements of current cases in ES/DM and emphasizes both the critical thinking and leadership skills necessary to advance in the field.

The M.S.F.E.S. degree provides post-professional advancement for the critical technical issues beyond the initial fire science practices and administrative studies. Major research topics include interdisciplinary studies in material sciences, suppression systems, advanced planning and geographic systems, pre- and post-disaster mitigation planning, computer applications, and technological innovations.

The M.S.F.E.S. is an online distance education program. All courses are conveniently delivered utilizing a web-based e-Learning system.

For more information, please see our website: <http://www.bcn.ufl.edu/academics/masters/msfesedsm>.

## **Degrees Offered with a Major in Fire and Emergency Services**

Master of Science in Fire and Emergency Services

## **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating
- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods
- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management
- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law

- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management
- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis
- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism
- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment
- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management
- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio

- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **International Construction Management**

### **College**

College of Design, Construction, and Planning

### **Department/School**

M.E. Rinker, Sr., School of Construction Management

### **Degrees Offered with a Major in International Construction Management**

Master of International Construction Management

without a concentration

concentration in Historic Preservation

### **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating



- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods
- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management
- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law
- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management
- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis
- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism

- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment
- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management
- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **Sustainable Construction**

### **College**

College of Design, Construction, and Planning

## **Department/School**

M.E. Rinker, Sr., School of Construction Management

## **Degrees Offered with a Major in Sustainable Construction**

Master of Science in Construction Management

## **Construction Management Departmental Courses**

- BCN 5470: Construction Methods Improvements
- BCN 5618C: Comprehensive Estimating
- BCN 5625: Construction Cost Analysis
- BCN 5705C: Project Management for Construction
- BCN 5715: Advanced Construction Labor Problems
- BCN 5722: Advanced Construction Planning and Control
- BCN 5729: Design-Build Delivery Methods
- BCN 5737: Advanced Issues in Construction Safety and Health
- BCN 5754C: Site Development
- BCN 5776: International Construction Business Management
- BCN 5778: Facilities Operation and Maintenance
- BCN 5789C: Construction Project Delivery
- BCN 5874: Equipment and Methods for Heavy Construction
- BCN 5885: Methods and Management for Heavy Construction
- BCN 5905: Special Studies in Construction
- BCN 5949: Graduate Construction Management Internship
- BCN 5957: Advanced International Studies in Construction
- BCN 6036: Research Methods in Construction
- BCN 6580: High-Performance Green Building Delivery Systems
- BCN 6585: Sustainable Construction
- BCN 6586: Construction Ecology and Metabolism
- BCN 6621: Bidding Strategy
- BCN 6641: Construction Value Engineering
- BCN 6748: Construction Law
- BCN 6755: Construction Financial Management
- BCN 6756: Housing Economics and Policy
- BCN 6777: Construction Management Processes
- BCN 6785: Construction Information Systems
- BCN 6905: Directed Independent Study in Construction
- BCN 6910: Supervised Research
- BCN 6933: Advanced Construction Management
- BCN 6934: Construction Research
- BCN 6940: Supervised Teaching
- BCN 6971: Research for Master's Thesis

- FES 6705: Communications in Emergency Management
- FES 6724: Fire and Emergency Services Response Planning
- FES 6726: Hazard Mitigation and Preparedness
- FES 6735: International Emergency/Disaster Management
- FES 6736: Homeland Security and Emergency Management
- FES 6786: Research Methods in FES
- FES 6806: Disaster Response and Recovery
- FES 6826: Emergency Services - Disaster Planning
- FES 6827: Business Continuity and Disaster Planning
- FES 6836: Impacts of Natural and Man-made Disasters on Buildings
- FES 6916: Research for Master's Report
- FES 6940: Practicum in FES
- ICM 5905: Special Studies
- ICM 6420: Commercial Management and Cost Control
- ICM 6440: Construction Value Management
- ICM 6680: Principles of International Sustainable Construction
- ICM 6682: Construction Ecology and Metabolism
- ICM 6684: High-Performance Green Building Delivery Systems
- ICM 6710: Construction Human Resource Management
- ICM 6750: Managing Construction Information Technology
- ICM 6751: International Construction Management
- ICM 6752: Construction Finance and Investment
- ICM 6761: Advanced Planning, Scheduling, and Logistics
- ICM 6762: Construction Risk Management
- ICM 6770: Advanced Project Safety Management
- ICM 6772: International Strategic Management
- ICM 6905: Directed Independent Study in International Construction
- ICM 6910: Supervised Research
- ICM 6930: Construction Communication and Research
- ICM 6934: International Construction Research

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning

- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## Interior Design Department

*Chair:* M. Portillo.

*Graduate Coordinator:* N. Park

*Complete faculty listing by department:* Follow this link.

### Doctor of Philosophy:

The College offers an interdisciplinary program leading to the Doctor of Philosophy degree in design, construction, and planning. Areas of specialization within this program include architecture, building construction, interior design, landscape architecture, and urban and regional planning. For information, write to the Ph.D. Director, College of Design, Construction, and Planning Doctoral Program, 331 ARCH, P.O. Box 115701.

### Master of Interior Design:

The Master of Interior Design (M.I.D.) provides opportunities for students to direct their attention toward a variety of topics, including

- Design pedagogy and processes
- Sustainable, safe, and secure environments
- Creative performance and innovation
- Built heritage conservation.

Regardless of the study emphasis selected by the student, the M.I.D. program has a central focus with three categories of course work:

- Design studio
- Seminars in current interior design topics
- Theories and methods of research.

All M.I.D. students must complete an approved research topic with a written thesis. Requirements for the M.I.D. and Ph.D. degrees are given in the *General Information* section of this catalog.

### Applications:

All applications must include acceptable GRE scores, transcripts for all previous academic work, and if the applicant's native language is not English, a satisfactory score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute. This information must be received in the Office of the Registrar by February 2. In addition to satisfying University requirements for admission, the applicants are required to submit to the Graduate Program Assistant, Department of Interior Design, 336 Architecture, P.O. Box 115705, University of Florida, Gainesville, FL 32611-5705, the following:

- A portfolio of your design work (if applicable). The portfolio must be accompanied by a self-addressed, stamped envelope.
- A written essay on your goals and aspirations related to graduate studies
- Three letters of recommendation.
- A personal interview is not required, but many applicants choose to visit the campus and Department as a part of the application process.

Students enrolled in the Bachelor of Interior Design program at the University of Florida may apply to the M.I.D. program during their junior year (see below).

The Department reserves the right to retain student course work for the purposes of record, exhibition, or instruction. Field trips are required for all students; students should plan to have adequate funds available. Students are required to purchase a computer for course work. It may be necessary to assess studio fees to defray costs of base maps, plans, and other generally used materials.

**Admission:** Applications are processed through February 2 for fall term and all applicants are encouraged to apply as soon as possible. Admission decisions are made between February and the end of April. All new students begin their studies in the fall to coincide with curriculum sequencing.

**Graduate course requirements according to background:** After assessment of previous design work, leveling courses may be required to prepare the student for the M.I.D. 36 hours of graduate course work. Therefore, each student entering the Master of Interior Design program works with the graduate coordinator to evaluate the student's unique background to determine the specific courses needed to facilitate interest and experience. Estimated credit hours and length of study time vary according to each student's individual baccalaureate degree and experience.

There are four options.

- For students enrolled in the Bachelor of Design program at the University of Florida, 12 hours of graduate-level course work in the senior year can be counted for both the undergraduate and the M.I.D. degrees. An additional 24 graduate credit hours are required. Expect at least 1 additional year to complete the M.I.D.
- For students who graduated from a Council of Interior Design Accreditation (CIDA) accredited first professional degree program within an architectural framework, the course of study is estimated to be 36 graduate credit hours. Expect 2 years to complete the M.I.D.
- For students who graduated from a design-related (architecture or interior design) baccalaureate degree program, the course of study is estimated to be a maximum of 59 graduate credit hours (includes the 36-hour M.I.D.). Expect 3 years to complete leveling courses and the master's degree.
- For students with a bachelor's degree in a field other than design, the course of study is estimated to be 86 undergraduate and graduate credit hours. Expect 3 to 4 years to complete leveling courses and the M.I.D.

Estimates of the number of credit hours and length of study time may be adjusted based on the individual student's previous preparation including experience as a practicing designer, architect, or other professional.

**Program requirements:** After leveling courses are completed and with approval by the graduate coordinator and supervisory committee chair, a student completes 24 hours of departmentally approved graduate work in the Department of Interior Design. In addition, with the graduate coordinator's approval, the student is required to take 3 hours of course work in graduate statistics and 9 hours of multidisciplinary graduate electives that reinforce and extend the research.

Courses from such academic units as Psychology, Anthropology, Sociology, Engineering, Education, and Business Administration provide possible electives. The College of Design, Construction and Planning offers the Certificate in Historic Preservation. If the focus of a student is the renovation and preservation of built environments, then historic preservation courses leading to a certificate would strengthen the research and design effort. Likewise, existing appropriate courses in Architecture, Landscape Architecture, Urban and Regional Planning, and Building Construction offer both collaborative study and research opportunities for M.I.D. students.

Each student must select a two-member supervisory committee to guide course selection and to guide thesis selection, study, and production.

## **Interior Design**

### **College**

College of Design, Construction, and Planning

### **Department/School**

Interior Design Department

### **Degrees Offered with a Major in Interior Design**

Master of Interior Design

without a concentration

concentration in Historic Preservation

concentration in Sustainable Design

### **Courses**

- IND 5326: Color Theory Planning and Practice

### **Interior Design Departmental Courses**

- IND 5023: Introduction to Architectural Interiors
- IND 5106: History of Interior Design I
- IND 5136: History of Interior Design II
- IND 5212C: Architectural Interiors I
- IND 5213C: Introduction to Architectural Interiors Lab
- IND 5227C: Advanced Architectural Interiors I
- IND 5231C: Architectural Interiors II
- IND 5232C: Advanced Architectural Interiors II
- IND 5317C: Interior Design Communication Systems
- IND 5427C: Interior Design Construction Documents
- IND 5428: Materials for Interior Design
- IND 5434C: Interior Lighting
- IND 5445C: Furniture Design
- IND 5454C: Advanced Interior Design Detailing and Construction Documents
- IND 5464C: Computer Applications in Three-Dimensional Design

- IND 5466: Interior Environmental Technology
- IND 5508: Business and Professional Practices for Interior Designers
- IND 5638: Design Environments and Human Interaction
- IND 5937: Current Topics in Interior Design
- IND 6239: Advanced Topics in Interior Design Studio
- IND 6639: Methods of Interior Design Research
- IND 6906: Independent Studies and Readings
- IND 6940: Supervised Teaching
- IND 6941: Interior Design Internship
- IND 6971: Research for Master's Thesis

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## **Landscape Architecture Department**

College of Design, Construction, and Planning

*Chair:* Gina Gurucharri

*Graduate Coordinator:* Kevin Thompson

Complete faculty listing by department: [Follow this link](#)



The mission of the Department of Landscape Architecture is to advance the ethical, creative, and skillful application of the art and the science of planning and designing urban, rural and natural environments. The Master of Landscape Architecture seeks excellence through professional practice and service, and through research and scholarly pursuit.

Interstate field trips are required as a part of the normal program curriculum. Students should plan to have adequate funds for field trips and for studio materials. Students are also required to own a laptop computer meeting minimum department requirements. These specifications are available through the department of Landscape Architecture's website at URL: <http://www.dcp.ufl.edu/landscape>.

The Graduate program in Landscape Architecture offers flexibility in meeting the needs of applicants with varied backgrounds. Students entering the graduate program in landscape architecture follow one of the four following tracks:

### **Pre MLA Program**

Graduate students who do not possess an LAAB accredited professional degree in landscape architecture are invited to enroll in the Pre MLA program.

The Pre MLA Program aids the development of basic analytical, design and graphic skills. Upon successful completion of the Pre MLA Summer term, students advance into a two-semester sequence of articulation courses that provide a foundation of applied landscape design and planning theory as well as competencies in landscape construction.

### **MLA Advanced Graduate Studies Program**

Graduate students having completed the Pre MLA program or entering the MLA program with an LAAB accredited professional baccalaureate degree in Landscape Architecture commence a two year program of advanced graduate coursework towards the completion of the MLA degree.

### **MLA Program + Construction**

Graduate students with a non-accredited or non-LAAB accredited degree in Landscape Architecture may apply directly to the MLA program but may be required to take additional coursework to develop core competencies required for advanced graduate study.

### **MLA Research Degree**

Graduate students with an LAAB accredited professional degree in Landscape Architecture and a significant history of achievement in professional practice may tailor a program of advanced study to meet their specific needs. Proposals for the MLA Research Degree option are reviewed by the Graduate Coordinator and an approved course of study is determined through consultation with the Graduate Committee.

The normal tenure of advanced graduate study is five semesters which includes a summer semester internship. Students complete a minimum of 52 credit hours composed of lecture courses, seminars, design and construction studios, internship and individual study (special studies, supervised research and thesis or terminal project).

This time period would be extended should a student elect to expand the course work or seek a concurrent degree in a related field.

**Design studios:** Graduate design studios build on required lecture and seminar courses. A core of three advanced design studios are topically-oriented focusing on issues of human, ecological and regional concern. Each studio requires students to engage a method appropriate to the studio's selected projects, to analyze the findings generated by this research and to use the findings to build a rational argument that leads to a defensible design position. Interdisciplinary and multidisciplinary collaborations are encouraged on both a formal and an informal basis. Graduate studio projects also deal with current issues related to the mission of the Department with an additional focus on research and community service.

**Thesis or terminal project:** The Department recognizes that students have different professional goals and personal strengths and interests. A thesis is appropriate for students interested in further research or teaching, or in pursuing

advanced degrees. A project (with a significant research component) is appropriate for students interested in design or project-oriented aspects of landscape architecture, or if their specific areas of interest suggest a nontraditional approach.

**Programs, centers, and institutes:** The College of Design, Construction, and Planning has several research centers and institutes. The course work and summer sessions afforded by these programs offer both required and elective course work for graduate students in landscape architecture:

**The Center for Landscape Conservation Planning:** The Center for Landscape Conservation Planning conducts applied research on the relationship between conservation and land use while providing learning opportunities for students.

**The Center for International Design and Planning:** The Center for International Design and Planning conducts interdisciplinary research with a focus on emerging design and planning trends in an era of globalization with a focus on resilient development systems and adaptive design and planning strategies.

**The Preservation Institute:** Nantucket gives students an opportunity to receive specialized educational experience in a broad range of preservation topics using Nantucket as a resource for case-study projects.

**The Preservation Institute:** Caribbean gives students an opportunity to conduct and apply research regarding the conservation of the rich cultural traditions of the Greater Caribbean basin.

**The GEOPLAN Center** is dedicated to the development of geographic and spatial information systems. Graduate students receive instruction in geographic information systems and are involved in a multidisciplinary studio that applies the tools and systems understanding afforded by GIS.

**Graduate advisement:** Students are initially advised by the Graduate Coordinator. He or she has guided the student's application through the acceptance process and is familiar with the student's background and needs. A plan of study is developed that includes required and optional courses. By the end of the second semester of study, each student is required to form a supervisory committee composed of two faculty members. The primary purpose of the graduate committee is to advise the student on educational objectives and the thesis or terminal project course work.

### **Application Procedure**

Details of application procedure are found on the Department of Landscape Architecture's website. Applicants are encouraged to familiarize themselves with the details of the application procedures and the application requirements. Applications will ONLY be considered for the track for which they have been submitted. Make certain you are applying to the correct track based on your background and credentials and the criteria detailed above.

### **Application Dates**

Applications are to be completed and submitted prior to the deadline noted on the Department's website. Unless otherwise noted, international applications must be received by November 1st. Applications from within the US are to be received no later than February 1st. Early applications are encouraged.

### **Application materials to be submitted online and/or to the Office of the Registrar**

Application materials include the online application form accompanied by official transcripts, Letters of Recommendation, GRE scores, and TOEFL scores (applicants with English as a second language) to Office of the Registrar: Admissions Section, Criser Hall, University of Florida, Gainesville, Florida 32611.

### **Application Materials to be submitted directly to the Department**

In addition to the materials submitted to the registrar's office, applicants must also submit a letter of intention to the Department of Landscape Architecture (Graduate Program Assistant).

### **Application Portfolio**

All applicants are encouraged to submit a portfolio of creative works.

Post professional degree applicants applying for either the Pre MLA Fall Start or MLA Advanced Graduate Study program are required to submit a portfolio that both exhibits creative work experience and shows evidence of acquired technical proficiencies in the practice of landscape architecture.

All portfolio must be digital. PDF is preferred.

### **Application Status**

Applications will be processed once all material has been received and must be complete prior to the application deadline. Applicants will be contacted by the Program Assistant if their application is incomplete. Please respond quickly if you have been contacted to increase the chances of your application being considered in the current review period. Only completed applications will be processed for review.

Once the application has been processed for review, applicants will receive written notification of their application status, generally sometime in the middle of March. Please do not contact the department with inquiries of your application status prior to the end of March.

Preparatory courses (see Undergraduate Catalog): LAA 2330, LAA 2350, LAA 2360, LAA 2370, LAA 3420, LAA 3350, LAA 3352, LAA 3421, LAA 3550, LAA 6716 , and ORH 3513.

## **Landscape Architecture**

### **College**

College of Design, Construction, and Planning

### **Department/School**

Landscape Architecture Department

### **Landscape Architecture Program**

The Department of Landscape Architecture offers graduate programs leading to the Master of Landscape Architecture (M.L.A.) degree in Landscape Architecture. A Ph.D. degree with a concentration in Landscape Architecture is also offered through the College of Design, Construction and Planning. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

Master of Landscape Architecture: The MLA is a Landscape Architecture Accreditation Board (LAAB) accredited professional Master's degree in Landscape Architecture. Graduation from an accredited program is an essential first step toward licensing in Florida and other states that regulate the practice of landscape architecture.

For more information, please see our website: <http://www.dcp.ufl.edu/landscape>.

### **Degrees Offered with a Major in Landscape Architecture**

Master of Landscape Architecture

without a concentration

concentration in Geographic Information Systems

concentration in Historic Preservation

concentration in Sustainable Design

concentration in Wetland Sciences

### **Landscape Architecture Departmental Courses**

- LAA 5331: Site Design Methodologies
- LAA 5366: Principles of Landscape Architecture
- LAA 6231: Landscape Architecture Theory
- LAA 6322: Project Management for Landscape Architects
- LAA 6342: Landscape Architecture Criticism
- LAA 6349C: Design Communications for Landscape Architects
- LAA 6382: Ecological and Environmental Policy
- LAA 6525L: Advanced Landscape Construction Design
- LAA 6536: Landscape Management
- LAA 6656C: Advanced Landscape Architectural Design
- LAA 6713: Cultural Landscapes
- LAA 6716: History of Landscape Architecture
- LAA 6905: Directed Study
- LAA 6931: Water Conservation through Site Design and Green Roofs
- LAA 6931C: Special Topics
- LAA 6933: Topics in European Design: Paris, France
- LAA 6935: Gardens of the World
- LAA 6941: Supervised Internship
- LAA 6952C: European Landscape Architecture Studio
- LAA 6971: Research for Master's Thesis
- LAA 6979: Terminal Project

### **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings
- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management

- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## Urban and Regional Planning Department

*Director of School of Landscape Architecture and Planning:* Kristin Larsen

*Chair:* Joseli Macedo

*Graduate Coordinator:* Stanley Latimer

*Graduate Coordinator of Online Degree program:* Ferdinand Lewis

*Complete faculty listing by department:* Follow this link.

The mission of the Department of Urban and Regional Planning is to educate the next generation of planning professionals to be good stewards of our built and natural environments, to conduct innovative research that improves quality of life for all, and to provide planning services to communities.

**Doctor of Philosophy:** The College offers an interdisciplinary program leading to the Doctor of Philosophy degree in Design, Construction, and Planning. Areas of specialization within this program include architecture, building construction, interior design, landscape architecture, and urban and regional planning. For information, please see the Design, Construction, and Planning (Ph.D.) program page in this catalog, or the DCP Ph.D. website: <http://www.dcp.ufl.edu/doctoral-program/urpprogram>.

**Master of Urban and Regional Planning:** The Department of Urban and Regional Planning offers graduate work leading to the degree of Master of Urban and Regional Planning (M.U.R.P.). The 52-credit graduate program is usually completed in two academic years. Students with a master's degree in a related field may obtain approval from the Department to transfer up to 18 credit hours toward the 52-credit requirement. The Department encourages students with any undergraduate degree who are interested in the field of planning to apply for admission.

The Department of Urban and Regional Planning and the College of Law offer a joint degree program. Students may pursue Concurrent Degrees in Latin American Studies and in Transportation Engineering. Areas of concentration with other programs in the Graduate School may be developed to meet the individual needs of students. In addition to coursework, the student is required to complete an internship with a public or private planning office and to complete a thesis. The Department reserves the right to retain student work for purposes of record, exhibition, or instruction.

Complete descriptions of the requirements for the above-mentioned degrees are provided in the Graduate Degrees section of this catalog.

For more information, please see the program page below and our website: <http://www.dcp.ufl.edu/urp>.

## Urban and Regional Planning

## **College**

College of Design, Construction, and Planning

## **Department/School**

Urban and Regional Planning Department

## **Urban and Regional Planning Program Information**

*Please note that the Master of Arts in Urban and Regional Planning (M.A.U.R.P.) has been renamed to the Master of Urban and Regional Planning (M.U.R.P.) and is being phased out as of Fall 2014.)*

The Department of Urban and Regional Planning offers the degree of Master of Urban and Regional Planning (M.U.R.P.). The 52-credit graduate program is usually completed in two academic years. Students with a master's degree in a related field may obtain approval from the Department to transfer up to 18 credit hours toward the 52-credit requirement. The Department encourages students with any undergraduate degree who are interested in the field of planning to apply for admission.

The M.U.R.P. degree is accredited by the Planning Accreditation Board, a joint undertaking of the American Institute of Certified Planners and the Association of Collegiate Schools of Planning, for having achieved the highest applicable standards for graduate education in the field of planning. Graduates of the Department are prepared to practice urban and regional planning. Complete descriptions of the requirements for the M.U.R.P. and Ph.D. degrees are provided in the General Information section of this catalog.

The Urban and Regional Planning curriculum is designed to provide a set of core studies and contextual projects that prepare the graduate for the practice of planning in public or private agencies at both national and international levels. The core studies include history and theory of planning; planning methods; and related studies in community and regional social, natural, and economic systems. Contextual projects include, among many subject areas, urban design, transportation, regional planning, community redevelopment and preservation, housing, real estate, and economic development. Interstate field trips are required as a part of the normal program curriculum. Students should plan to have adequate funds for field trips and for studio materials.

The program emphasizes planning, policy, and design for the built and natural environments. Areas of specialized knowledge include land use and transportation, urban design, housing, community and economic development, information technologies for planning, and environmental planning. Students are also encouraged to take advantage of the interdisciplinary faculty, course offerings, and other resources available in the College of Design, Construction, and Planning and throughout the University. The Department has several research centers: The Geo-facilities Planning and Information Center (GeoPlan), the Center for International Design and Planning (CIDP), the Center for Building Better Communities (CBBC), and the Center for Health and the Built Environment (CHBE).

For more information, please see our website: <http://www.dcp.ufl.edu/urp/academics/degrees>.

## **Degrees Offered with a Major in Urban and Regional Planning**

Master of Arts in Urban and Regional Planning - RENAMED (see above)

without a concentration

concentration in Geographic Information Systems

concentration in Historic Preservation

concentration in Sustainable Design

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Master of Urban and Regional Planning

without a concentration

concentration in Geographic Information Systems

concentration in Historic Preservation

concentration in Sustainable Design

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Courses

- URP 6276: Internet Geographic Information Systems
- URP 6277: Land Use Visioning and Analysis
- URP 6610: International Development Planning
- URP 6711: Transportation and Land Use Coordination
- URP 6743: Affordable Housing Law
- URP 6855: Urban Form in Cities throughout the Americas
- URP 6887: Advanced Defensible Space in Urban Design

## Urban and Regional Planning Departmental Courses

- URP 6042: Urban Economy
- URP 6061: Planning Administration and Ethics
- URP 6100: Planning Theory and History
- URP 6122: Alternative Conflict Management
- URP 6131: Growth Management Powers I
- URP 6132: Growth Management Seminar
- URP 6203: Planning Research Design
- URP 6231: Quantitative Data Analysis for Planners
- URP 6270: Survey of Planning Information Systems

- URP 6271: Planning Information Systems
- URP 6272: Spatial Analysis for Urban Planners
- URP 6274: GPS for Planners: Introduction to Global Positioning System
- URP 6275: Spatial Database Design and Development
- URP 6312: Land Development Planning and Evaluation
- URP 6341: Urban Planning Project
- URP 6421: Environmental Impact Statements
- URP 6424: Sustainable Urbanism in the Americas
- URP 6428: Advanced Environmental Planning
- URP 6429: Natural Resources Planning and Management
- URP 6445: Planning for Climate Change
- URP 6526: Health and the Built Environment
- URP 6541: Economic Development Planning
- URP 6542: Urban Land Economics
- URP 6543: Seminar in Capital Improvement Finance
- URP 6547: Local Public Finance for Urban Planners
- URP 6601: State Planning
- URP 6603: Development Review
- URP 6610: International Development Planning
- URP 6716: Transportation Policy and Planning
- URP 6718: Bikeways Planning and Design
- URP 6745: Housing, Public Policy, and Planning
- URP 6746: Topical Debates in Housing
- URP 6821: Transportation and Land-Use Modeling
- URP 6871: Planning and Design I
- URP 6872: Planning and Design II
- URP 6880: Defensible Space and CPTED in Urban Design
- URP 6884: Community Conservation and Revitalization
- URP 6905: Exploration and Directed Study
- URP 6910: Supervised Research
- URP 6920: Colloquium
- URP 6931: Topical Seminar
- URP 6933: Planning Information Seminar
- URP 6940: Supervised Teaching
- URP 6941: Urban Planning Internship
- URP 6971: Research for Master's Thesis
- URP 6979: Terminal Project

## **College of Design, Construction, and Planning Courses**

- BCN 6558C: Building Integrated Renewable Energy Systems
- DCP 6205: Ecological Issues in Sustainability and the Built Environment
- DCP 6211: Preservation Topics, Issues, and Practice
- DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning
- DCP 6301: Sustainable Planning and Design Studio
- DCP 6710: History and Theory of Historic Preservation
- DCP 6711: History of the Built Environment for Preservation Practice
- DCP 6712: Preservation Technology: Conserving Modern Buildings



- DCP 6713: Historic Preservation: Principles, Practice, and Engineering
- DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation
- DCP 6715: Preservation Building Technology
- DCP 6716: Cultural Resource Management
- DCP 6730: Preservation Policy
- DCP 6905: Independent Study
- DCP 6931: Special Topics in Design, Construction, and Planning
- DCP 6943: Practicum in Historic Preservation
- DCP 6971: Research for Master's Thesis
- DCP 7790: Doctoral Core I
- DCP 7792: Doctoral Core II
- DCP 7794: Doctoral Seminar
- DCP 7911: Advanced Design, Construction, and Planning Research I
- DCP 7940: Supervised Teaching
- DCP 7949: Professional Internship
- DCP 7979: Advanced Research
- DCP 7980: Research for Doctoral Dissertation

## College of Education

Dean: G. Good.

Complete faculty listings: Follow this link.

Graduate study in education, allows individuals with bachelor's degrees in agriculture, business, education, engineering, mathematics, sciences, humanities, foreign languages, preprofessional studies and other fields to prepare for rewarding professional careers in education and related fields.

The College of Education offers 19 master's or specialist programs, 12 doctoral programs, and a J.D./Ph.D. program with the College of Law through its three schools: Human Development and Organizational Studies in Education; Special Education, School Psychology and Early Childhood Studies; and School of Teaching and Learning .

Follow these links for more information about UF's College of Education graduate programs:

<http://education.ufl.edu/graduate-studies>

<http://education.ufl.edu/programs>

Departments and Programs within the College of Education

College of Education Courses

## Human Development and Organizational Studies in Education Department

*Director:* Linda B. Eldridge

*Graduate Coordinator:* Patricia Ashton

Complete faculty listing by department: Follow this link.

Programs leading to the Master of Arts in Education (M.A.E.), Master of Education (M.Ed.), Education Specialist (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.) degrees are offered through this school with programs in Counseling and Counselor Education, Educational Leadership, Higher Education Administration,

Marriage and Family Counseling, Mental Health Counseling, Research and Evaluation Methodology, School Counseling and Guidance, and Student Personnel in Higher Education.

Requirements for these degrees are given in the Graduate Degrees section of this catalog.

More information can be found at our website: <http://education.ufl.edu/hdose>

## **Counseling and Counselor Education**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Counseling and Counselor Education Program**

The doctoral program in Counseling and Counselor Education prepares students for careers in academia and advanced clinical and administrative positions. Our program aligns with the University of Florida mission to prepare the next generation of scholars and professional leaders. Thus, our doctoral program is a good fit for individuals who want to fulfill the roles of counselor educators – research, writing, teaching, service, securing external funding to support scholarship, assuming professional leadership positions, etc. The doctoral program is ideally suited for individuals with previously earned masters and at least two years of clinical experience. Doctoral students complete coursework, a doctoral clinical internship, participate in teaching and supervision, and conduct research leading to the completion of a dissertation. Students average 3 to 5 years to complete the doctorate, many of whom balance work and school commitments.

### **Degrees Offered with a Major in Counseling and Counselor Education**

Doctor of Education

without a concentration

concentration in Marriage and Family Counseling

concentration in Mental Health Counseling

concentration in School Counseling and Guidance

Doctor of Philosophy

without a concentration

concentration in Marriage and Family Counseling

concentration in Mental Health Counseling

concentration in School Counseling and Guidance

## **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America

- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship

- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Educational Leadership**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Educational Leadership Program Information**

Programs in Educational Leadership provide opportunities for professional educators and those who would like to be professional educators to receive quality coursework, mentorship, and degrees in educational administration, policy, and leadership. The programs provided are ideal for vice principals, principals, district directors and supervisors, assistant superintendents, school business managers, teachers aspiring to acquire administrative roles within the K-12 system and educational leaders of other organizations.

### **Degrees Offered with a Major in Educational Leadership**

Doctor of Education

without a concentration

concentration in Educational Policy

Doctor of Philosophy

without a concentration

concentration in Educational Policy

Master of Arts in Education

Master of Education

Specialist in Education

### **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators

- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence

- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention



- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Higher Education Administration**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Higher Education Administration Program Information**

The Higher Education Administration program has been established for students aspiring to become community college and university administrators, deans, presidents, and professors. America's community colleges and universities will soon face a critical leadership gap. As the baby boom generation approaches retirement age, many provosts, deans and college presidents are getting ready to add "emeritus" to their titles. As a result, openings in top leadership positions are expected to exceed the number of appropriately-trained individuals for many years to come.

The University of Florida's College of Education is helping fill the gap. Our nationally recognized Higher Education Administration Program prepares future leaders for their roles in administrative positions in higher education. Our faculty and alumni shaped the community and state college system as we know it, and our graduates have gone on to crucial administrative positions at two- and four- year institutions. Join us in shaping the future of higher education.

### **Degrees Offered with a Major in Higher Education Administration**

Doctor of Education

without a concentration

concentration in Educational Policy

Doctor of Philosophy

without a concentration

concentration in Educational Policy

## **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education

- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories

- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Marriage and Family Counseling**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Marriage and Family Counseling Program Information**

The Marriage & Family Counseling/Therapy program specialization emphasizes an eco-systemic approach to understanding human problems and generating solution opportunities: Students learn to moderate solution-oriented conversations among interested parties (i.e., stakeholders) who are invited to seek "double descriptions" of mutual concerns and problems, to listen carefully to each other, to entertain and invent multiple solution possibilities, and to construct new narratives of cooperation and commitment.

## **Degrees Offered with a Major in Marriage and Family Counseling**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

## **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum

- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling

- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Mental Health Counseling**

### **College**

College of Education

## **Department/School**

Human Development and Organizational Studies in Education Department

## **Mental Health Counseling Program Information**

The M.Ed./Ed.S. and M.AE./Ed.S. program in Mental Health Counseling is designed to equip students with the pre-professional competencies required for Registered Intern status and, after a minimum number of years of post-degree supervised clinical experience, (a) licensure in the State of Florida as Mental Health Counselors and (b) clinical membership in NBCC's Academy of Certified Clinical Mental Health Counselors. Additionally, some students may choose to continue their studies in a doctoral program. These students often elect the thesis option (M.A.E.) to complete their studies.

## **Degrees Offered with a Major in Mental Health Counseling**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

## **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations



- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings

- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser

- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Research and Evaluation Methodology**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Research and Evaluation Methodology Program Information**

The mission of the Research and Evaluation Methodology program is to generate, evaluate, apply and disseminate knowledge about educational research methodology, to prepare exemplary educational research methodologists, and to collaborate with others to provide methodology for the advancement of educational research. This mission aligns with College of Education's and University of Florida's missions because it results in research strategies for knowledge discovery to solve critical educational and human problems in a diverse global community.

- Learn to evaluate educational programs, analyze educational data, develop assessment instruments, and conduct research about the e-fficacy of research methodologies.
- Work as an educational researcher, an educational data analyst, or a psychometrician (an expert in testing and assessment).
- Find jobs in testing companies; research and evaluation companies; research centers; and assessment centers at universities, school districts, and state and federal agencies.
- Complete a master's degree (M.A.E. or M.Ed.) in two years or a Ph.D. in four years with classes focusing on research methodology, statistics applied to education, program evaluation, and psychometrics.
- We admit students with some undergraduate research experience. Our students come from a variety of backgrounds, including psychology, sociology, statistics, mathematics, mathematics education, political science, marketing, economics, and engineering.

### **Degrees Offered with a Major in Research and Evaluation Methodology**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

## **Research and Evaluation Methodology**

- EDF 5441: Assessment in General and Exceptional Student Education
- EDF 6113: Educational Psychology: Human Development
- EDF 6211: Educational Psychology: General
- EDF 6215: Educational Psychology: Learning Theory
- EDF 6232: Principles of Learning and Instructional Practice
- EDF 6400: Quantitative Foundations of Education Research Overview
- EDF 6401: Educational Statistics
- EDF 6402: Quantitative Foundations in Educational Research: Inferential Statistics
- EDF 6403: Quantitative Foundations of Educational Research
- EDF 6434: Educational Measurement
- EDF 6436: Theory of Measurement
- EDF 6471: Survey Design and Analysis in Educational Research
- EDF 6475: Qualitative Foundations of Educational Research
- EDF 6481: Quantitative Research Methods in Education
- EDF 6905: Individual Study
- EDF 6910: Supervised Research
- EDF 6938: Special Topics
- EDF 6940: Supervised Teaching
- EDF 6941: Practicum in Educational Research
- EDF 6971: Research for Master's Thesis
- EDF 7117: Affective Development and Education
- EDF 7405: Advanced Quantitative Foundations of Educational Research
- EDF 7412: Structural Equation Models
- EDF 7435: Rating Scale Design and Analysis in Educational Research
- EDF 7439: Item Response Theory
- EDF 7474: Multilevel Models
- EDF 7479: Qualitative Data Analysis: Approaches and Techniques
- EDF 7483: Qualitative Data Collection: Approaches and Techniques
- EDF 7486: Methods of Educational Research
- EDF 7491: Evaluation of Educational Products and Systems
- EDF 7639: Research in Educational Sociology
- EDF 7931: Seminar in Educational Research
- EDF 7932: Multivariate Analysis in Educational Research
- EDF 7979: Advanced Research
- EDF 7980: Research for Doctoral Dissertation
- EDP 6052: Cognitive Psychology Applied to Education

## Human Development and Organizational Studies in Education Departmental Courses

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education

- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision

- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **School Counseling and Guidance**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **School Counseling and Guidance Program Information**

The M.Ed./Ed.S. and M.AE./Ed.S. program in School Counseling is designed to equip students with the pre-professional competencies required for Florida Department of Education Certification in School Counseling. The 72-credit hour program provides students with the specialized knowledge and skills required for placements as school counselors in public or private elementary, middle, or secondary schools.

Students enrolled in the School Counseling program, a state-approved and NCATE (National Council for the Accreditation of Teacher Education) and CACREP (Council for the Accreditation of Counseling and Related Educational Programs) accredited school counselor preparation program, must provide passing scores for all pertinent sections of the Florida Teacher Certification Examination (FTCE) including the General Knowledge test

(math, English language skills, reading comprehension, and essay), the Professional Education examination, and the Subject Area Examination in Guidance and Counseling K-12 prior to graduation from the program. Questions about this requirement or any other certification related questions may be addressed to the College of Education Office of Student Services.

## **Degrees Offered with a Major in School Counseling and Guidance**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

## **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators
- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation



- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
- EDH 6040: Theory of College Student Development
- EDH 6046: Diversity Issues in Higher Education
- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
- EDH 6360: Foundations and Functions of College Student Personnel
- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
- MHS 6000: Assessment and Treatment of Family Violence
- MHS 6020: Counseling in Community Settings
- MHS 6061: Spiritual Issues in Multicultural Counseling
- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
- MHS 6428: Multicultural Counseling
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling

- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
- MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations
- MHS 6468: Multicultural issues in disaster mental health counseling
- MHS 6469: Traumatic Stress and Disaster Mental Health Counseling
- MHS 6471: Sexuality and Mental Health
- MHS 6480: Developmental Counseling Over the Life Span
- MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients
- MHS 6500: Group Counseling: Theories and Procedures
- MHS 6602: Educational Mediation
- MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling
- MHS 6720: Professional Identity and Ethics in Counseling
- MHS 6831: Supervision for a Split Internship
- MHS 6905: Individual Work
- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
- MHS 7807: Group Supervision in Marriage and Family Counseling
- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention
- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Student Personnel in Higher Education**

### **College**

College of Education

### **Department/School**

Human Development and Organizational Studies in Education Department

### **Student Personnel in Higher Education Program Information**

The University of Florida Student Personnel in Higher Education program is a master's program designed to prepare students to enter Student Affairs leadership positions in two- and four-year institutions of higher education. The program integrates academic coursework with practitioner-based experience. The SPHE master's degree consists of 36 credit hours of core classes and 10 credit hours of supervised practicum and internship experiences (total = 46 credit hours). Students enter the graduate program in the fall semester as members of a cohort group. The group provides support and builds a sense of community for the students. All students are assigned a faculty advisor at the time of admission.

The student affairs profession is increasingly diverse and is engaged in a variety of activities and programs. The emphasis in UF's master's degree program in SPHE is upon the promotion, design, and assessment of student learning in a variety of campus and community settings.

### **Degrees Offered with a Major in Student Personnel in Higher Education**

Master of Arts in Education

Master of Education

### **Human Development and Organizational Studies in Education Departmental Courses**

- EDA 5938: Special Topics
- EDA 6061: Educational Organization and Administration
- EDA 6107: Leading Change in Educational Organizations
- EDA 6192: Educational Leadership: The Individual
- EDA 6193: Educational Leadership: Instruction
- EDA 6195: Educational Policy Development
- EDA 6215: Communications in Educational Leadership
- EDA 6222: Administration of School Personnel
- EDA 6225: Labor Relations in Public Education
- EDA 6232: Public School Law
- EDA 6242: Public School Finance
- EDA 6271: Technology Leadership for Educational Administrators

- EDA 6423: Data-Driven Decision Making in Educational Organizations
- EDA 6503: The Principalship
- EDA 6905: Individual Work
- EDA 6931: Special Topics
- EDA 6935: Problems in School Administration and Supervision
- EDA 6948: Supervised Practice in School Administration
- EDA 6971: Research for Master's Thesis
- EDA 7206: Organizational Leadership in Education
- EDA 7945: Practicum in Supervision and Administration
- EDA 7979: Advanced Research
- EDA 7980: Research for Doctoral Dissertation
- EDA 7985: Research Design in Educational Administration
- EDF 6464: Reading and Designing Qualitative Research
- EDF 7413: Advanced Topics in Structural Equation Modeling
- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EDG 6250: The School Curriculum
- EDG 6285: Evaluation in the School Program
- EDG 7222: Curriculum: Theory and Research
- EDG 7665: Bases of Curriculum and Instruction Theory
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- EDH 6049: Domestic and International College Student Services
- EDH 6051: Educational Outcomes of American Colleges and Universities
- EDH 6053: The Community Junior College in America
- EDH 6066: American Higher Education
- EDH 6067: Seminar: International Higher Education
- EDH 6305: College and University Teaching
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- EDH 6361: Theories and Assessment of Higher Educational Environments
- EDH 6503: Resource Development in Higher Education
- EDH 6632: Current Issues in Community College Leadership
- EDH 6637: Crisis Management in Higher Education
- EDH 6931: Special Topics in Higher Education
- EDH 6935: Seminar in College Student Personnel Administration
- EDH 6945: Practicum in College Teaching I
- EDH 6946: Practicum in College Teaching II
- EDH 6947: Practicum in Student Personnel
- EDH 7225: Seminar: Curriculum in Higher Education
- EDH 7405: The Law and Higher Education
- EDH 7505: The Financing of Higher Education
- EDH 7631: Administration of Instruction in Higher Education
- EDH 7634: Student Affairs Administration in Higher Education
- EDH 7635: Higher Education Administration
- EDH 7916: Contemporary Research on Higher Education
- EDH 7942: Group Supervision in Student Personnel
- EDH 7948: Internship in Student Personnel
- EDS 6140: Supervision of Instruction
- MHS 5005: Introduction to Counseling
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- MHS 6071: Diagnosis and Treatment of Mental Disorders
- MHS 6200: Assessment in Counseling
- MHS 6340: Career Development
- MHS 6401: Counseling Theories and Applications
- MHS 6421: Play Counseling and Play Process with Children
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- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 6450: Substance Abuse Counseling
- MHS 6464: Introduction to Disaster Mental Health Counseling
- MHS 6466: Trauma and Crisis Intervention: Theory and Practice
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- MHS 6910: Supervised Research
- MHS 6940: Supervised Teaching
- MHS 6971: Research for Master's Thesis
- MHS 7402: Brief Therapy
- MHS 7407: Advanced Counseling Theories
- MHS 7431: Advanced Family Counseling
- MHS 7600: Consultation Procedures
- MHS 7610: Practicum in Counseling Supervision
- MHS 7730: Seminar in Counseling Research
- MHS 7740: Research in Counseling
- MHS 7800: Practicum in Counseling
- MHS 7804: Group Supervision in Agency Counseling
- MHS 7805: Practicum in Agency Counseling
- MHS 7806: Practicum in Marriage and Family Counseling
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- MHS 7830: Internship in Counseling and Development-600 Hours
- MHS 7840: Internship in Counselor Education
- MHS 7946: Internship in Agency Program Management
- MHS 7979: Advanced Research
- MHS 7980: Research for Doctoral Dissertation
- SDS 6401: Counseling Skills for Non-Counselors
- SDS 6411: Counseling with Children
- SDS 6413: Counseling Adolescents
- SDS 6436: Family-School Intervention

- SDS 6520: Family, Student Development and Role of Teacher as Adviser
- SDS 6620: Organization and Administration of School Counseling Programs
- SDS 6831: Supervision for a Split Internship
- SDS 6905: Individual Work
- SDS 6936: Seminar in Counselor Education
- SDS 6938: Special Topics
- SDS 7800: Practicum in School Counseling
- SDS 7820: Group Supervision in School Counseling
- SDS 7830: Internship in Counseling and Development-600 Hours

## **Special Education, School Psychology and Early Childhood Studies Department**

Director: Jean Crockett

*Complete faculty listing by department:* Follow this link.

The School of Special Education, School Psychology, and Early Childhood Studies offers online and face-to-face programs leading to the Master of Education (M.Ed., non-thesis), Master of Arts in Education (M.A.E., thesis), Specialist in Education (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.) degrees. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The School offers graduate study and research experience in 3 areas of specialization: Special Education; School Psychology; and Early Childhood Studies. Programs are accredited by the Florida Department of Education and approved by the National Council for Accreditation of Teacher Education (NCATE). The School Psychology program is approved by the NCATE and the National Association of School Psychologists (NASP). The Ph.D. program in School Psychology is accredited by the American Psychological Association (APA).

## **Early Childhood Education**

### **College**

College of Education

### **Department/School**

Special Education, School Psychology and Early Childhood Studies Department

### **Degrees Offered with a Major in Early Childhood Education**

Master of Arts in Education

Master of Education

## **Early Childhood Education Courses**

- EEC 6205: Early Childhood Curriculum
- EEC 6304: Creativity in the Early Childhood Curriculum
- EEC 6525: Issues in Child Care Administration
- EEC 6615: Early Childhood Education: Background and Concepts
- EEC 6905: Individual Work
- EEC 6910: Supervised Research
- EEC 6933: Special Topics
- EEC 6940: Supervised Teaching
- EEC 7056: Early Childhood Policy and Advocacy
- EEC 7617: Early Childhood Assessment & Evaluation
- EEC 7666: Theory and Research in Early Childhood Studies
- EEC 7979: Advanced Research

## **Special Education, School Psychology and Early Childhood Studies Departmental Courses**

- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EEC 6205: Early Childhood Curriculum
- EEC 6304: Creativity in the Early Childhood Curriculum
- EEC 6525: Issues in Child Care Administration
- EEC 6615: Early Childhood Education: Background and Concepts
- EEC 6905: Individual Work
- EEC 6910: Supervised Research
- EEC 6933: Special Topics
- EEC 6946: Practicum in Early Childhood Education
- EEC 7617: Early Childhood Assessment & Evaluation
- EEC 7666: Theory and Research in Early Childhood Studies
- EEX 6053: Foundations of Special Education
- EEX 6098: Students with Disabilities in Higher Education
- EEX 6233: Designing Instruction for Inclusive Classrooms
- EEX 6269: Academic Strategies for Postsecondary Students with Disabilities
- EEX 6299: Understanding Assessment for Postsecondary Students with Disabilities
- EEX 6777: Organizational and Life Skills for Postsecondary Students with Disabilities
- EEX 6785: Introduction to Education-Healthcare Transition
- EEX 6786: Transdisciplinary and Transition Services in Special Education
- EEX 6788: Methods for Integrating Education-Health Care Transition
- EEX 6789: Legal Aspects and Policy in Education-Healthcare Transition
- EEX 6817: Seminar in Education-Healthcare Transition (E-HCT)
- EEX 6841: Practicum in Special Education: Mild Disabilities
- EEX 6863: Supervised Practice in Special Education
- EEX 7709: Social-Emotional Learning & Play in Early Childhood
- SPS 7980: Research for Doctoral Dissertation

## **School Psychology**

## **College**

College of Education

## **Department/School**

Special Education, School Psychology and Early Childhood Studies Department

## **Degrees Offered with a Major in School Psychology**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

## **School Psychology Courses**

- SPS 6052: Issues and Problems in School Psychology
- SPS 6191: Psychoeducational Assessment I
- SPS 6192: Psychoeducational Assessment II
- SPS 6193: Academic Assessment & Intervention
- SPS 6195: Developmental Psychopathology
- SPS 6197: Psychoeducational Assessment III
- SPS 6410: Direct Interventions I: Applied Behavior Analysis for School Psychologists
- SPS 6707: Interventions in School Psychology II: Cognitive Behavioral Interventions
- SPS 6708: Interventions in School Psychology III: System Level Interventions for Children and Youths
- SPS 6815: Law and Ethics in Psychology
- SPS 6937: Special Topics in School Psychology
- SPS 6941: Practicum in School Psychology
- SPS 6942: School Psychology Practicum II
- SPS 6945: Advanced Practicum in School Psychology
- SPS 7205: School Psychology Consultation
- SPS 7931: Seminar in School Psychology
- SPS 7949: Internship in School Psychology
- SPS 7979: Advanced Research
- SPS 7980: Research for Doctoral Dissertation

## **Special Education, School Psychology and Early Childhood Studies Departmental Courses**



- EDF 7482: Quasi-experimental Design and Analysis in Educational Research
- EEC 6205: Early Childhood Curriculum
- EEC 6304: Creativity in the Early Childhood Curriculum
- EEC 6525: Issues in Child Care Administration
- EEC 6615: Early Childhood Education: Background and Concepts
- EEC 6905: Individual Work
- EEC 6910: Supervised Research
- EEC 6933: Special Topics
- EEC 6946: Practicum in Early Childhood Education
- EEC 7617: Early Childhood Assessment & Evaluation
- EEC 7666: Theory and Research in Early Childhood Studies
- EEX 6053: Foundations of Special Education
- EEX 6098: Students with Disabilities in Higher Education
- EEX 6233: Designing Instruction for Inclusive Classrooms
- EEX 6269: Academic Strategies for Postsecondary Students with Disabilities
- EEX 6299: Understanding Assessment for Postsecondary Students with Disabilities
- EEX 6777: Organizational and Life Skills for Postsecondary Students with Disabilities
- EEX 6785: Introduction to Education-Healthcare Transition
- EEX 6786: Transdisciplinary and Transition Services in Special Education
- EEX 6788: Methods for Integrating Education-Health Care Transition
- EEX 6789: Legal Aspects and Policy in Education-Healthcare Transition
- EEX 6817: Seminar in Education-Healthcare Transition (E-HCT)
- EEX 6841: Practicum in Special Education: Mild Disabilities
- EEX 6863: Supervised Practice in Special Education
- EEX 7709: Social-Emotional Learning & Play in Early Childhood
- SPS 7980: Research for Doctoral Dissertation

## **Special Education**

### **College**

College of Education

### **Department/School**

Special Education, School Psychology and Early Childhood Studies Department

### **Degrees Offered with a Major in Special Education**

Doctor of Education

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

### **Special Education Courses**

- EEX 5940: Supervised Student Teaching in Special Education
- EEX 6053: Foundations of Special Education
- EEX 6072: Accessing Academic and Social Communities for Students with Disabilities
- EEX 6125: Interventions for Language and Learning Disabilities
- EEX 6219: Reading Assessment and Intervention for Students with Disabilities
- EEX 6222: Evaluation in Special Education
- EEX 6233: Designing Instruction for Inclusive Classrooms
- EEX 6234: Assessment, Curriculum, and Instruction for Students with Severe Disabilities
- EEX 6249: Advanced Strategies for Teaching Students with Disabilities
- EEX 6661: Teaching and Managing Behavior for Student Learning
- EEX 6750: Families and Transition for Students with Disabilities
- EEX 6786: Transdisciplinary and Transition Services in Special Education
- EEX 6835: Practicum in Special Education: Severe Disabilities
- EEX 6841: Practicum in Special Education: Mild Disabilities
- EEX 6863: Supervised Practice in Special Education
- EEX 6905: Individual Work
- EEX 6910: Supervised Research
- EEX 6936: Special Topics
- EEX 6940: Supervised Teaching
- EEX 6971: Research for Master's Thesis
- EEX 6973: Project in Lieu of Thesis
- EEX 6296: Differentiated Instruction
- EEX 7303: Inquiry in Special Education: Analysis of the Literature
- EEX 7304: Introduction to Field of Inquiry in Special Education
- EEX 7526: Grant Writing Seminar in Education
- EEX 7787: School Improvement for All Students
- EEX 7865: Internship: Special Education
- EEX 7428: Teacher Education in Special Education
- EEX 7934: Seminar: Trends in Special Education
- EEX 7979: Advanced Research
- EEX 7980: Research for Doctoral Dissertation
- EGI 6051: Education of the Gifted Child
- EGI 6245: Program Development for the Gifted

### **Special Education, School Psychology and Early Childhood Studies Departmental Courses**

- EDF 7482: Quasi-experimental Design and Analysis in Educational Research

- EEC 6205: Early Childhood Curriculum
- EEC 6304: Creativity in the Early Childhood Curriculum
- EEC 6525: Issues in Child Care Administration
- EEC 6615: Early Childhood Education: Background and Concepts
- EEC 6905: Individual Work
- EEC 6910: Supervised Research
- EEC 6933: Special Topics
- EEC 6946: Practicum in Early Childhood Education
- EEC 7617: Early Childhood Assessment & Evaluation
- EEC 7666: Theory and Research in Early Childhood Studies
- EEX 6053: Foundations of Special Education
- EEX 6098: Students with Disabilities in Higher Education
- EEX 6233: Designing Instruction for Inclusive Classrooms
- EEX 6269: Academic Strategies for Postsecondary Students with Disabilities
- EEX 6299: Understanding Assessment for Postsecondary Students with Disabilities
- EEX 6777: Organizational and Life Skills for Postsecondary Students with Disabilities
- EEX 6785: Introduction to Education-Healthcare Transition
- EEX 6786: Transdisciplinary and Transition Services in Special Education
- EEX 6788: Methods for Integrating Education-Health Care Transition
- EEX 6789: Legal Aspects and Policy in Education-Healthcare Transition
- EEX 6817: Seminar in Education-Healthcare Transition (E-HCT)
- EEX 6841: Practicum in Special Education: Mild Disabilities
- EEX 6863: Supervised Practice in Special Education
- EEX 7709: Social-Emotional Learning & Play in Early Childhood
- SPS 7980: Research for Doctoral Dissertation

## School of Teaching and Learning

*Director:* Ester de Jong

*Graduate Coordinator:* Sevan G. Terzian

*Complete faculty listing by department:* Follow this link.

The School of Teaching and Learning (<http://education.ufl.edu/school-teaching-learning>) offers face-to-face and online programs leading to the Master of Education (M.Ed., non-thesis), Master of Arts in Education (M.A.E., thesis or project in lieu of thesis), Specialist in Education (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.) degrees. Descriptions of the programs are linked below, and official requirements for these degrees are provided in the Graduate Degrees section of this catalog.

Students pursuing the Ph.D. degree in Curriculum & Instruction gain research and teaching experience in one of 10 areas of specialization: Curriculum, Teaching, & Teacher Education (CTTE); Educational Technology; English Education; ESOL/Bilingual Education; Language Arts, Reading, & Children's Literature (LARC); Mathematics Education; Science & Environmental Education; Social Foundations of Education; Social Studies Education; and Statistics Education. The Ed.D. degree is a professional practice doctorate with two specialization areas for students to pursue online: Curriculum, Teaching, & Teacher Education (CTTE) and Educational Technology. Various forms of financial support are available to Ph.D. students through fellowships, scholarships, research assistantships, and teaching assistantships.

Students aspiring to careers in teaching will be interested the following programs. The nationally recognized ProTeach graduate program leads to the M.Ed. degree and state certification as a classroom teacher. Unified

Elementary ProTeach admits undergraduates who complete the five-year program with a master's degree. Secondary Proteach (English, Science, Social Studies) prepares teachers who have completed a bachelor's degree in the discipline they will teach. Prospective elementary teachers who already hold a bachelor's degree in a non-education field may want to consider the School's SITE program (Site-based Implementation of Teacher Education).

The School of Teaching and Learning also offers graduate programs and specializations at the M.Ed., M.A.E, and Ed.S. degrees for students seeking to deepen their knowledge and to advance within their professions. These include Educational Technology, English Education, ESOL/bilingual Education, Language Arts, Reading & Children's Literature (LARC), Literacy & the Arts, Mathematics Education, Media Literacy Education, Reading Education, Science Education, Social Foundations of Education, Social Studies Education and Teacher Leadership for School Improvement (TLSI).

## **Curriculum and Instruction (CCD)**

### **College**

College of Education

### **Department/School**

School of Teaching and Learning

### **Curriculum and Instruction (CCD) Program Information**

The School of Teaching & Learning's doctoral program in Curriculum & Instruction cultivates proficient scholars, teachers, and other educational professionals through an academically rigorous curriculum that balances theoretical and applied knowledge.

The Ed.D. is viewed as a professional practice doctorate wherein graduate students acquire and produce expert knowledge of how theoretical and empirical academic research can be applied in ways that foster school improvement in various contexts. The Ed.D. degree prepares students to advance within their professions and is not designed to prepare for faculty careers in higher education. Ed.D. students pursue specializations in one of two areas: Curriculum, Teaching, & Teacher Education (CTTE) and Educational Technology. Both specializations are offered to students online.

All doctoral students are required to complete successfully a minimum of 90 credits. Coursework includes research methodology and methods, educational curriculum and foundations, independent research, specialization seminars, and at least 12 credit hours of dissertation work. To earn their doctoral degree, all students must complete their coursework satisfactorily, pass written and oral qualifying examinations, and successfully complete and defend a dissertation.

For more information, please see our website: <http://education.ufl.edu/school-teaching-learning>.

### **Degrees Offered with a Major in Curriculum and Instruction**

Doctor of Education

## School of Teaching and Learning Departmental Courses

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

## General Courses

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy

- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications

- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School



- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## Curriculum and Instruction (ISC)

### College

College of Education

## **Department/School**

School of Teaching and Learning

## **Curriculum and Instruction (ISC) Program Information**

The School of Teaching & Learning's graduate programs in Curriculum & Instruction cultivate proficient scholars, teachers, and other educational professionals through an academically rigorous curriculum that balances theoretical and applied knowledge.

The Ph.D. prepares graduate students to assume roles as faculty and other leaders in higher education. It is carefully designed to balance coursework, research projects, and teaching experiences for students to acquire the knowledge, dispositions, skills and abilities to become highly effective faculty and leaders in higher education. Program area faculty adhere to a comprehensive framework reflecting broad and multi-faceted conceptions of scholarship: Application, Discovery, Integration and Teaching. Students engage in research, teaching, professional service, and professional practice projects that further their familiarity with these domains. An array of subject area specializations for all Ph.D. students in Curriculum & Instruction fosters their intellectual and professional growth in greater depth. These include: Curriculum Teaching & Teacher Education (CTTE); Educational Technology; English Education; ESOL/Bilingual Education; Language Arts, Reading, & Children's Literature (LARC); Mathematics Education; Science Education; Social Foundations of Education; Social Studies Education; and Statistics Education. All doctoral students are required to complete successfully a minimum of 90 credits. Coursework includes research methodology and methods, educational curriculum and foundations, independent research, specialization seminars, and at least 12 credit hours of dissertation work. To earn their doctoral degree, all students must complete their coursework satisfactorily, pass written and oral qualifying examinations, and successfully complete and defend a dissertation.

The Master of Arts in Education (M.A.E.) in Curriculum & Instruction is designed to provide exposure to research and increase the practical knowledge of those interested in various aspects of Curriculum & Instruction. Specialization areas include: Educational Technology; ESOL/Bilingual Education; Language Arts, Reading, & Children's Literature (LARC); Literacy & the Arts; Media Literacy Education; and Social Foundations of Education. A thesis or final project in lieu of a thesis is required of all students. The LARC specialization is available both on-campus and online.

The Master of Education (M.Ed.) in Curriculum & Instruction is a professional degree designed to meet the needs of practicing and aspiring professionals to serve various functions in established and emerging educational activities. Specialization areas include: Educational Technology; ESOL/Bilingual Education; Social Foundations of Education; and Teacher Leadership for School Improvement (TLSI). The Educational Technology and TLSI specializations are both available online.

The Specialist in Education (Ed.S.) in Curriculum & Instruction is a degree designed to meet the needs of practicing and aspiring professionals, who already hold a master's degree in an appropriate field, to serve various functions in established and emerging educational activities. Specialization areas include: Educational Technology; ESOL/Bilingual Education; Language Arts, Reading, & Children's Literature (LARC); Literacy & the Arts; Media Literacy Education; Social Foundations of Education; and Teacher Leadership for School Improvement (TLSI). The Educational Technology and TLSI specializations are both available online.

For more information, please see our website: <http://education.ufl.edu/school-teaching-learning>.

## **Degrees Offered with a Major in Curriculum and Instruction**

Doctor of Philosophy

Master of Arts in Education

Master of Education

Specialist in Education

### **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

### **General Courses**

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis

- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II

- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling

- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School

- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## **Elementary Education**

### **College**

College of Education

### **Department/School**

School of Teaching and Learning

### **Elementary Education Program Information**

The School of Teaching & Learning offers the Master of Education (M.Ed.) and Master of Arts in Education (M.A.E.) degrees in Elementary Education. More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

#### **Master of Education (M.Ed.)**

The School of Teaching & Learning offers two distinct programs for preparing and certifying elementary school teachers: the Unified Elementary Professional Teacher (UEP) Graduate Program and the Alternative Certification in Elementary Education (SITE) Program.

#### The Unified Elementary Professional Teacher (UEP) Graduate Program:

UEP is a 5-year elementary teacher preparation program that culminates in a Master's Degree in Education (M.Ed.). Students enter the program in the junior year of their undergraduate education. After successful completion of two years of undergraduate work in the program, students apply to graduate school and if accepted, complete a three-semester graduate year comprised of rigorous academic coursework and a yearlong internship in an elementary classroom.

The master's year is designed to deepen students' content knowledge while enhancing their pedagogical knowledge and instructional skills. It is a year for serious teacher preparation yielding highly effective graduates able to positively impact K-6 student learning from their first year of teaching, particularly elementary students who have shown patterns of underachievement including students with disabilities, students whose first language is not English, and students living in poverty. Master's students who successfully complete the program are eligible for Professional Teacher Certification in Florida (K-6) as well as the English for Speakers Of Other Languages (ESOL) Endorsement (K-12) and the Florida Reading Endorsement (K-12.)

**Prerequisites:** Students who expect to do graduate work in the Unified Elementary ProTeach program must first have successfully completed the undergraduate portion of the 5-year program earning a Bachelor's of Arts Degree in Education (B.A.E). A GPA of 3.0 is required for entry into the graduate portion of the program as well as an acceptable Graduate Record Examination (GRE) score, and three letters of recommendation.

For more information, please see our website: <http://education.ufl.edu/elementary-education/proteach>.

#### Alternative Certification in Elementary Education (SITE) Program:

The SITE program at the University of Florida is a state-designated Educator Preparation Institute (EPI) created to attract talented college graduates and mid-career changers with non-education majors to the elementary classroom. The yearlong teacher-residency program provides an alternative, accelerated pathway to teaching experience and certification for prospective teachers who possess an undergraduate degree outside of education. The clinical



internship combines supervised classroom teaching and formal study, with successful completion leading to a master's (M.Ed.) degree in Elementary Education and national certification through the Council for the Accreditation of Educator Preparation (CAEP).

Many students come to the program with degrees or professional experience in fields such as accounting, business, English, family studies, history, journalism, nursing and psychology. Selection for entry into this full-time internship requires a 3.0 or higher undergraduate GPA; successful scores on the GRE; a stellar essay/statement of purpose; three professional letters of recommendation; and a Statement of Status of Eligibility from the Florida Department of Education.

Interns complete 39 credit hours of study and classroom teaching over three semesters, all under the supervision of a school-based mentor and a university coach. The mentor teacher and intern teach side-by-side throughout the entire school year, while the UF coach makes regular classroom visits to problem-solve, observe and reflect on teaching skills, and provide individualized support. Along with their planning, teaching and coursework responsibilities, the interns become familiar with the school improvement goals and new programs initiated at their host schools. SITE coursework is taught by UF education professors and teachers in Alachua County elementary schools who all have proven expertise in K-12 teaching.

Prospective teachers who complete the SITE Program are eligible to apply for a professional educator's certificate from the Florida Department of Education. Graduates wishing to teach in states other than Florida should contact the Department of Education in their state of choice for certification requirements there.

For additional information about the program please visit: <http://education.ufl.edu/site>.

## **Degrees Offered with a Major in Elementary Education**

Master of Arts in Education

Master of Education

## **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning

- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

## General Courses

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy

- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12

- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12

- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education

- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## English Education

### College

College of Education

### Department/School

School of Teaching and Learning

### English Education Program Information

The English Education program is focused on teaching the skills of literacy and the subject of English (literature, writing, and the study of texts). Two masters degrees are offered in English Education: a Masters of Education (M.Ed.) and a Masters of Art in Education (M.A.E.). More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

The Masters of Education is awarded to students who complete the state-approved teacher education track. Students in this program have an undergraduate degree or coursework in English. During the program they examine processes for teaching texts and composition in secondary schools. Program graduates are eligible for a Florida Professional Teaching Certificate and for ESOL Endorsement. They seek employment as English language arts teachers in grades 6-12 classrooms. Please visit this website for additional information about the M.Ed. degree program in English Education: <http://education.ufl.edu/english-education/degrees/proteach>

The Master of Arts in Education is awarded to students who complete 30 hours of graduate work and a six-hour culminating thesis project in the field of English Education. Students in this track seek to expand their understanding of teaching, learning, and literacy in a variety of contexts. Students may elect a minor area of study, such as media literacy or literacy and the arts. Upon admission, students will work with an advisor to design a program of study tailored to their professional goals.

For more information, please visit the English Education website: <http://education.ufl.edu/english-education>.

## **Degrees Offered with a Major in English Education**

Master of Arts in Education

Master of Education

## **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

## **General Courses**

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction

- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
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## Educational Technology

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- EME 5405: Internet in K-12 Instruction



- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature

- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## Mathematics Education

### College

College of Education

### Department/School

School of Teaching and Learning

### Mathematics Education Program Information

The School of Teaching & Learning offers the Master of Education (M.Ed.) and Master of Arts in Education (M.A.E.) degrees in Mathematics Education. More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

The **Master of Education (M.Ed.) for Mathematics Education program** is designed for individuals interested in teaching mathematics in a middle or high school. This program leads to eligibility for professional certification for teaching mathematics to students in grades 6-12. It typically attracts students who received a bachelor's degree in mathematics or another STEM-related discipline and are seeking to teach middle or high school mathematics. Our faculty will work with students to tailor their program to fit particular needs and specific career goals whether that involves becoming a professor at a research university, a faculty member that primarily teaches future teachers, a specialist for mathematics education at the district level, or last, but certainly not least, a classroom teacher.

#### Minimum admission requirements include:

- B.A. or B.S. degree in a STEM or related field
- 2.7 overall GPA and 3.0 upper-division undergraduate GPA
- Must have successfully completed Calculus 1 and 2 prior to admission.
- Acceptable GRE scores
- Completed all other admissions requirements

It is also recommended that applicants have passed the Florida Teacher Certification Exam (FTCE) Subject Area test (for Mathematics grades 6-12) and to have completed MAP 2302 (Elementary Differential Equations).

Please visit this website for additional information about the M.Ed. degree program in Mathematics Education:  
<http://education.ufl.edu/math-education/med>.

The **Master of Arts in Education (M.A.E.) in Mathematics Education program** is designed for persons interested in gaining expertise in mathematics education and strengthening their background in mathematics. Students in this program typically take a minimum of 9 credit hours in mathematics at the graduate level. This program of study requires a thesis or project-in-lieu of thesis and does not lead to initial teacher certification.

What kind of students typically are enrolled in the M.A.E. in mathematics education program?

- Practicing teachers who want to strengthen their abilities to teach mathematics in a variety of instructional settings.
- Individuals who plan to teach at the community college level. Requirements to teach at the community college level vary depending on the individual campus. Typically, individuals must have a minimum of 18 credits in graduate mathematics. Candidates are encouraged to consult the community college where they desire employment for the exact employment requirements.
- Experienced teachers who have the eventual goal of earning a doctorate in mathematics education enabling them to work in a teacher education/mathematics education program at an institution of higher education.

Admission Requirements:

B.A. or B.S. in mathematics, mathematics education, or related field; 2.7 overall GPA and 3.0 upper division GPA; GRE; and completing all other general admission requirements

Graduation Requirements:

3.0 GPA (overall and in major); completion of course requirements; thesis or project-in-lieu of thesis

What might a program of study look like in the M.A.E. in mathematics education?

The program of study form is customized to address the unique needs of each student and is developed in consultation with a mathematics education advisor. There are several categories of requirements for the completion of the M.A.E. in mathematics education including: a mathematics methods core, mathematics education seminar, curriculum & instruction, mathematics content knowledge, cognate/electives, and a thesis or project in lieu of thesis.

Please visit this website for additional information about the M.A.E. degree program in Mathematics Education:  
<http://education.ufl.edu/math-education/mae>.

## **Degrees Offered with a Major in Mathematics Education**

Master of Arts in Education

Master of Education

## **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis

- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

## General Courses

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction

- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes

- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education



- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology

- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## Reading Education

### College

College of Education

### Department/School

School of Teaching and Learning

### Reading Education Program Information

The School of Teaching & Learning offers the Master of Education (M.Ed.) and Master of Arts in Education (M.A.E.) degrees in Reading Education. More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

**The Master of Education (M.Ed.) in Reading Education** is for prospective teachers eligible for teacher certification and practicing teachers who desire to update themselves on the latest research and practice in reading/literacy instruction and to obtain K-12 reading certification. This is a non-thesis degree requiring completion of a minimum of 36 credit hours of coursework. Students learn evidence-based classroom practices and develop knowledge, skills, and strategies for supporting the literacy growth of PreK-12 students. The program is accredited by the Council for the Accreditation of Educator Preparation (CAEP). The curriculum is focused on the knowledge and methods teachers need to effectively promote literacy learning and academic achievement for all PreK-12 students. Teachers will not only gain expertise in addressing reading/writing difficulties but also learn how to support students' growth as

learners who can decode, use, and create many different kinds of texts, such as textbooks, primary source documents, literature and media.

Students can pursue the reading MEd degree **fully online**, **fully on campus**, or **partly online and partly on campus**.

Students interested in obtaining a Florida K-12 reading certification should:

- Submit transcripts to the Florida Department of Education for course count content analysis.
- Take and receive passing scores on the Florida Teacher Certification Exam (FTCE) for Reading K-12. You can find information about the exam from the Florida Department of Education at <http://www.fldoe.org>.

Graduates of the program may be eligible for reading certification in other states and are advised to investigate that possibility if they do not plan to teach in the state of Florida.

Please visit this program area website to learn more about the M.Ed. degree in Reading Education:  
<http://education.ufl.edu/larc/reading-education-med>.

## **Degrees Offered with a Major in Reading Education**

Master of Arts in Education

Master of Education

## **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding

- MAE 6916: Inquiry in Mathematics Teaching

## General Courses

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School

- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties

- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods

- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## Science Education

### College

College of Education

### Department/School

School of Teaching and Learning

### Science Education Program Information

The Science and Environmental Education master's degrees programs focus on theory and research-based best practices in formal and nonformal science/environmental teaching and learning at all age levels (preK-adult). Two types of master's degrees in Science Education are offered: a Master of Education (M.Ed.) degree and a Master of Arts in Education (M.A.E. degree). More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

#### Master of Education

The science education M.Ed. degree (known as "ProTeach") is a state-approved and nationally-accredited middle and high school initial teacher preparation program. Three tracks are offered (biology, chemistry, and physics), all of which fulfill the course and field experience requirements for professional teacher certification to teach grades 6-12 science in the State of Florida. No thesis or project is required for the M.Ed. degree.

The ProTeach M.Ed. program uses a professional cohort model in which students complete 39 credits of graduate level education coursework in a full-time Fall, Spring, Summer sequence. A bachelor's degree (or equivalent of a bachelor's degree) in one of the three areas of science certification is a pre-requisite/co-requisite for completion of the program. Additional information outlining the program of study for the science ProTeach block is available at this link: <http://education.ufl.edu/school-teaching-learning/secondary-science-proteach-program-information> and lists of content core pre-requisites for the biology, chemistry, and physics Proteach programs are available at this link: <http://education.ufl.edu/school-teaching-learning/secondary-science-education-proteach>.

#### Master of Arts in Education



The M.A.E. in science/environmental education offers two options: thesis or project-in-lieu of thesis. Upon admission, M.A.E. students work closely with a faculty advisor to design a program of study tailored to their professional needs and goals. Students can complete science education M.A.E. programs as either part-time or full-time students.

#### Thesis Option:

The thesis option is designed for experienced preK-adult formal or nonformal science/environmental educators interested in pursuing advanced degrees with a strong research focus. Most students completing the M.A.E. thesis option continue on to pursue doctoral degrees in science education. Thirty credits of graduate level coursework and six credits of supervised research culminating in a thesis are required.

#### Non-Thesis Option:

The non-thesis option is primarily designed for experienced preK-adult formal or nonformal science/environmental educators interested in improving their own professional practice while also earning a graduate degree. In addition, a modified version of the M.A.E. program is available for students interested in obtaining certification to teach earth/space science in grades 6-12. A minimum of 36 total graduate credits is required for the non-thesis M.A.E. degree along with an action research project that is usually job-embedded.

For more detailed information about the Science and Environmental Education programs and faculty, please visit our website: <http://education.ufl.edu/science-education>.

### **Degrees Offered with a Major in Science Education**

Master of Arts in Education

Master of Education

### **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education

- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

## General Courses

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
- EME 5207: Designing Technology-Rich Curricula
- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching
- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
- FLE 6167: Cross-Cultural Communication for Teachers
- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
- LAE 6319: Language Arts in the Elementary School
- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture
- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction

- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings
- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## Social Studies Education

### College

College of Education

### Department/School

School of Teaching and Learning

### Social Studies Education Program Information

The School of Teaching & Learning offers Master of Education (M.Ed.) and Master of Arts in Education (M.A.E.) degrees in Social Studies Education. More information about the requirements for these degrees can be found in the Graduate Degrees section of this catalog.

The Social Studies Education ProTeach program culminates in the M.Ed. degree. It is an initial certification program for students with no prior teaching experience, and it confers Professional Certification in Broad Fields Social Science, grades 6-12. This is a state-approved and nationally accredited program that enrolls students in a cohort structure that begins each fall. Students typically complete the program within 12 months and may only begin in the fall term. Please visit this website for more information about this M.Ed. program: <http://education.ufl.edu/social-studies-education/degrees/m-ed-in-social-studies-education>.

The M.A.E. degree in Social Studies Education does not confer certification and is geared for practicing teachers who want to advance their Social Studies expertise. In addition to their coursework, students are required to complete a thesis or culminating project in lieu of a thesis. Please visit this website for more information about this M.Ed. program: <http://education.ufl.edu/social-studies-education/degrees/mae-in-social-studies-education>.

For more information, please see our website: <http://education.ufl.edu/social-studies-education>.

### Degrees Offered with a Major in Social Studies Education

Master of Arts in Education

Master of Education

### **School of Teaching and Learning Departmental Courses**

- EDG 5666: Knowing and Learning in STEM
- EDG 6017: Writing for Academic Purposes
- EDG 6225: Global Studies Methods in K-12 Education
- EDG 6348: Instructional Coaching for Enhanced Student Learning
- EDG 6356: Teaching, Learning and Assessment
- EDG 6378: Learning Science with Technology
- EDG 6445: Meeting the Educational Needs of Students Living in Poverty
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6953: TLSI Online Portfolio Preparation
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7359: Professional Development and Teacher Learning
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EEC 6946: Practicum in Early Childhood Education
- EME 6059: Blended Learning Environments
- EME 6065: Human-Computer Interaction and the Learner
- MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding
- MAE 6916: Inquiry in Mathematics Teaching

### **General Courses**

- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6226: Foundations of Research in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 6905: Individual Work
- EDG 6910: Supervised Research
- EDG 6931: Special Topics
- EDG 6940: Supervised Teaching
- EDG 6971: Research for Master's Thesis
- EDG 6973: Project in Lieu of Thesis
- EDG 7224: Critical Pedagogy

- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7941: Field Experience in Curriculum and Instruction
- EDG 7979: Advanced Research
- EDG 7980: Research for Doctoral Dissertation
- EME 6076: Virtual School Philosophy and Pedagogy
- EME 6156: Games and Simulations for Teaching and Learning
- EME 6235: Managing Educational Projects
- EME 6236: Distance Education Leadership and Management

## Curriculum, Teaching, and Teacher Education

- EDE 5940: Integrated Teaching and Learning
- EDE 6225: Practices in Childhood Education
- EDE 6266: Teaching and Learning in Elementary Classrooms
- EDE 6325: Teacher Inquiry/Action Research
- EDE 6905: Individual Work
- EDE 6910: Supervised Research
- EDE 6932: Special Topics
- EDE 6948: Internship in Elementary Schools
- EDE 7047: Issues in Teacher Education
- EDE 7935: Seminar in Curriculum & Instruction
- EDG 6356: Teaching, Learning and Assessment
- EDG 7224: Critical Pedagogy
- EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education
- EDG 7303: Teacher Learning and Socialization in High Poverty Schools
- EDG 7326: Differentiated Supervision and Teacher Professional Development
- EDG 7982: Practitioner Research: Theory & Practice

## Educational Technology

- EME 5054: Foundations of Educational Technology
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- EME 5315: Communicating with Technology
- EME 5316: Educational Technology Management Issues
- EME 5403: Instructional Computing I
- EME 5404: Instructional Computing II
- EME 5405: Internet in K-12 Instruction
- EME 5431: Integrating Technology in the Mathematics Classroom
- EME 5432: Integrating Technology into Social Science Classroom
- EME 5433: Integrating Technology into Science Classroom
- EME 6066: Issues and Trends in Educational Technology Research
- EME 6205: Digital Photography and Visual Literacy
- EME 6208: Designing Integrated Media Environments I
- EME 6209: Designing Integrated Media Environments II
- EME 6405: Educational Technology and Teaching



- EME 6458: Distance Teaching and Learning
- EME 6505: Educational Television Design and Production
- EME 6602: Human-Computer Interactivity and the Learner
- EME 6606: Advanced Instructional Design
- EME 6609: Instructional Design
- EME 6716: Organization and Administration of Educational Media Centers
- EME 6935: Seminar: Distance Education Issues and Applications
- EME 6945: Practicum in Educational Media and Instructional Design
- EME 7938: Seminar in Educational Media and Instructional Design

## ESOL/Bilingual Education

- FLE 6165: Bilingual-Bicultural Education
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- FLE 6336: Teaching Foreign Languages in Elementary Schools
- FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School
- FLE 6385: Foreign Languages Teaching Methods
- FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level
- TSL 5142: ESOL Curriculum, Methods, and Assessment
- TSL 5325: Secondary ESOL Teaching Strategies
- TSL 6145: Curriculum and Materials Development for ESOL K-12
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes
- TSL 6245: Language Principles for ESOL Teachers
- TSL 6373: Methods of Teaching ESOL K-12
- TSL 6440: Testing and Evaluation of ESOL
- TSL 6700: Issues in ESOL for School Counselors and Psychologists

## Language and Literacy Education

- LAE 6298: Literacy & Language Instruction
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- LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts
- LAE 6348: Teaching Multiliteracies
- LAE 6365: Language Arts: Language and Composition
- LAE 6366: Language Arts: Literature
- LAE 6407: Early Childhood Children's Literature
- LAE 6446: Multicultural Literature for Children and Adolescents
- LAE 6447: Immigrant Experiences in Children's and Adolescent Literature
- LAE 6455: International Children's Literature
- LAE 6616: Seminar in Children's Literature
- LAE 6635: Teaching Adolescent Literature in the Secondary School
- LAE 6714: Children's Literature in the Childhood Curriculum
- LAE 6861: Technology and Media Literacy
- LAE 6865: Teaching Media Literacy with the Internet
- LAE 6869: Teaching Digital Storytelling
- LAE 6939: Literacy, Family, and Culture

- LAE 6945: Practicum and Assessment for Teachers of Secondary School English
- LAE 6946: Children's Literature in Educational Settings
- LAE 7006: Language Acquisition and Education
- LAE 7519: Language and Inquiry
- LAE 7715: Research in Children's Literature
- LAE 7934: Seminar in Composition Theory and Practice
- LAE 7936: Seminar in English Language Arts

## Mathematics Education

- MAE 5327: Middle School Mathematics Methods
- MAE 5332: Secondary School Mathematics Methods and Assessment
- MAE 5395: Multicultural Mathematics Methods
- MAE 5396: Using Formative Assessment to Improve Mathematical Learning
- MAE 5347: Teaching K-8 Mathematics for Understanding
- MAE 5945: Secondary School Mathematics Practicum
- MAE 6313: Problem Solving in School Mathematics
- MAE 6615: Individualizing Instruction in Mathematics
- MAE 6641: Readings and Research in Mathematics Education
- MAE 7899: Mathematics Education Seminar

## Reading Education

- RED 5046: Foundations of Reading in Grades PreK-12
- RED 5316: Reading in the Primary Grades
- RED 5337: Reading in the Secondary School
- RED 5355: Reading Instruction in the Intermediate Grades
- RED 5399: Practices in Beginning Reading Instruction
- RED 6346: Seminar in Reading
- RED 6520: Classroom Literacy Assessment and Instruction
- RED 6546C: Diagnosis of Reading Difficulties
- RED 6548C: Remediation of Reading Difficulties
- RED 6647: Trends in Reading
- RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties
- RED 7019: Foundations of Literacy
- RED 7817: Understanding Reading Difficulties

## Science Education

- SCE 5316: Inquiry-Based Science Teaching
- SCE 5355: Foundations of Science Teaching
- SCE 5695: Diversity and Equity in Science Teaching
- SCE 5765: Data-Driven Science Instruction
- SCE 6045: Environmental Education Methods and Materials
- SCE 6117: Science Education in the Elementary School
- SCE 6246: Science Instruction in Informal Settings

- SCE 6338: Secondary Science Methods and Assessment
- SCE 6647: Global Studies Methods in Science Education
- SCE 6947: Practicum in Secondary Science Teaching and Assessment

## Secondary Education

- EDM 6005: The Emergent Middle School
- EDM 6235: Interdisciplinary Planning, Teaching, and Assessment
- ESE 6215: The Secondary School Curriculum
- ESE 6344: Classroom Practices and Assessment in Secondary Education
- ESE 6345: Effective Teaching and Classroom Management
- ESE 6905: Individual Work
- ESE 6939: Special Topics
- ESE 6945: Student Teaching in Secondary School

## Social Foundations of Education

- EDF 5552: Role of School in Democratic Society
- EDF 6520: History of Education
- EDF 6544: Philosophical Foundations of Education
- EDF 6606: Socioeconomic Foundations of Education
- EDF 6616: Education and American Culture
- EDF 6630: Educational Sociology
- EDF 6812: Comparative Education
- EDF 6820: Education in Latin America
- EDF 7555: Values and Ethics in Education
- EDF 7934: Seminar in Educational Foundations

## Social Studies Education

- SSE 5320: Middle School Social Studies Methods
- SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment
- SSE 6046: Perspectives in Social Studies Education
- SSE 6117: Social Studies Education—Elementary School
- SSE 6133: Secondary School Social Studies Methods and Assessment
- SSE 6478: Global Studies Methods in Social Studies

## Teacher Leadership for School Improvement

- EDE 6325: Teacher Inquiry/Action Research
- EDG 6047: Teacher Leadership for Educational Change
- EDG 6207: Transforming the Curriculum
- EDG 6415: Culturally Responsive Classroom Management
- EDG 6953: TLSI Online Portfolio Preparation

## College of Engineering

Dean: C. Abernathy

Complete faculty listings: Follow this link.

The College of Engineering is organized into a number of departments focusing on today's most pressing engineering questions. There is an interdisciplinary culture at the core of Gator Engineering, though, and researchers regularly collaborate with colleagues in departments and colleges beyond their own.

For more information, please see our website: <http://www.eng.ufl.edu>

Departments and Programs within the College of Engineering

College of Engineering Courses

## Agricultural and Biological Engineering Department

College of Engineering

*Chair:* Dorota Z. Haman

*Graduate Coordinator:* Greg Kiker

*Complete faculty listing by department:* Follow this link.

The degrees of Master of Science, Master of Engineering and Doctor of Philosophy are offered with graduate programs in agricultural and biological engineering through the College of Engineering. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

A combined B.S./M.S. program allows up to 12 graduate credits to be double counted toward fulfillment of both degrees. Contact the graduate coordinator for qualifications and details.

The Master of Science, Master of Engineering, and Doctor of Philosophy degrees are offered in the following areas of research:

**Agricultural production** includes development and application of precision agriculture concepts and tools, climate risk in agriculture, pesticide application, post-harvest operations, robotics and other machine systems and environmental control systems. Applications to space agriculture are included in cooperation with NASA at Kennedy Space Center.

**Biological engineering** includes biocomplexity analysis, ecological modeling, risk and decision analysis, bioprocess design, plant biotechnology, process microbiology, food process engineering, environmental biotechnology, bioreactors, and packaging science.

**Information systems** includes development and application of GIS and remote sensing, communications, mathematical modeling, and expert systems techniques to biological and agricultural systems.

**Land and water resources** includes soil-water-plant relations, irrigation, water quality, watershed hydrology, BMP and TMDL studies, hydrologic modeling, ecological restoration, environmental fate and transport of nanoparticles, waste management, and water reuse.

Students also may choose to participate in interdisciplinary concentrations in hydrologic sciences, geographic information sciences, particle science and technology, and interdisciplinary ecology.

For more information about the program, please visit the program link below and the graduate studies pages on the departmental website at <http://www.abe.ufl.edu>.

## **Agricultural and Biological Engineering (Engineering)**

### **College**

- College of Engineering

### **Department/School**

Agricultural and Biological Engineering Department

### **Agricultural and Biological Engineering Program**

The degrees of Master of Science, Master of Engineering, and Doctor of Philosophy are offered with graduate programs in agricultural and biological engineering through the College of Engineering. The Master of Science and Doctor of Philosophy degrees in agricultural and biological engineering are offered in the areas of agricultural operations management and applied science through the College of Agricultural and Life Sciences. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

A combined B.S./M.S. program allows up to 12 graduate credits to be double counted toward fulfillment of both degrees. Contact the graduate coordinator for qualifications and details. A 30-credit, nonthesis master's degree program is also available to students interested in completing the requirements in 1 year.

The **Master of Science, Master of Engineering, and Doctor of Philosophy** (Engineering) degrees are offered in the following areas of research:

Agricultural production includes development and application of precision agriculture concepts and tools, climate risk in agriculture, pesticide application, post-harvest operations robotics and other machine systems and environmental control systems. Applications to space agriculture are included in cooperation with NASA at Kennedy Space Center.

Biological engineering includes biocomplexity analysis, ecological modeling, risk and decision analysis, bioprocess design, plant biotechnology, process microbiology, food process engineering, environmental biotechnology, bioreactors, and packaging science.

Information systems includes development and application of GIS and remote sensing, communications, mathematical modeling, and expert systems techniques to biological and agricultural systems.

Land and water resources includes soil-water-plant relations, irrigation, water quality, watershed hydrology, BMP and TMDL studies, hydrologic modeling, ecological restoration, environmental fate and transport of nanoparticles, waste management, and water reuse.

Students also may choose to participate in interdisciplinary concentrations in hydrologic sciences, geographic information sciences, particle science and technology, and interdisciplinary ecology.

The **Master of Science and Doctor of Philosophy** (CALS) in the agricultural operations management area of specialization provide for scientific training and research in technical agricultural management. Typical plans of study focus on advanced training in environmental systems management, production systems management, construction and process management and technical sales management.

For students with basic science degrees, the Doctor of Philosophy program with a specialization in applied sciences through the College of Agricultural and Life Sciences provides advanced training in problem-solving capabilities, interdisciplinary research, and methods for applying science to real-world problems and issues. Typical emphasis is on (1) the use of engineering methods and approaches, such as mathematical modeling, optimization, and information technologies, in application of science to problems of various spatial and temporal scales; and (2) an interdisciplinary experience in research at the doctoral level.

The requirements for a master's degree normally take 2 years to complete. The length of time required for the Doctor of Philosophy degree depends partly on the research topic, but normally takes 3 to 4 years.

Additional information can also be found on the graduate studies pages on the department website at [www.abe.ufl.edu](http://www.abe.ufl.edu).

## **Degrees Offered with a Major in Agricultural and Biological Engineering**

### **Doctor of Philosophy**

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

### **Master of Engineering**

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

### **Master of Science**

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

## **Agricultural and Biological Engineering Courses**

- ABE 5015: Empirical Models of Crop Growth and Yield Response
- ABE 5038: Recent Developments and Applications in Biosensors
- ABE 5152: Electro-Hydraulic Circuits and Controls
- ABE 5332: Advanced Agricultural Structures
- ABE 5442: Advanced Agricultural Process Engineering
- ABE 5643C: Biological Systems Modeling
- ABE 5646: Biological and Agricultural Systems Simulation
- ABE 5653: Rheology and Mechanics of Agricultural and Biological Materials
- ABE 5663: Advanced Applied Microbial Biotechnology
- ABE 5707C: Agricultural Waste Management
- ABE 5815C: Food and Bioprocess Engineering Design
- ABE 6005: Applied Control for Automation and Robots
- ABE 6031: Instrumentation in Agricultural Engineering Research
- ABE 6035: Advanced Remote Sensing: Science and Sensors
- ABE 6037C: Remote Sensing in Hydrology
- ABE 6252: Advanced Soil and Water Management Engineering
- ABE 6254: Simulation of Agricultural Watershed Systems
- ABE 6265: Vadose Zone Modeling
- ABE 6266: Nanotechnology in Water Research
- ABE 6615: Advanced Heat and Mass Transfer in Biological Systems
- ABE 6644: Agricultural Decision Systems
- ABE 6816: Food and Bioprocess Sterilization
- ABE 6905: Individual Work in Agricultural and Biological Engineering
- ABE 6910: Supervised Research
- ABE 6931: Seminar
- ABE 6933: Special Topics in Agricultural and Biological Engineering
- ABE 6940: Supervised Teaching
- ABE 6971: Research for Master's Thesis
- ABE 6972: Research for Engineer's Thesis
- ABE 6974: Nonthesis Project
- ABE 6986: Applied Mathematics in Agricultural and Biological Engineering
- ABE 7979: Advanced Research
- ABE 7980: Research for Doctoral Dissertation
- AOM 5334C: Agricultural Chemical Application Technology
- AOM 5431: GIS and Remote Sensing in Agriculture and Natural Resources
- AOM 5435: Advanced Precision Agriculture
- AOM 6905: Individual Work in Agricultural Operations Management
- AOM 6932: Special Topics in Agricultural Operations Management
- CWR 6536: Stochastic Subsurface Hydrology
- PKG 5003: Advanced Distribution and Transport Packaging
- PKG 5006: Advanced Packaging Principles
- PKG 5105: Advanced Consumer Products Packaging
- PKG 5206C: Advanced Package Decoration
- PKG 5256C: Advanced Analytical Packaging Methods
- PKG 6100: Advanced Computer Tools for Packaging
- PKG 6905: Individual Work in Packaging
- PKG 6932: Special Topics in Packaging Sciences

## College of Engineering Courses

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Biomedical Engineering Department

*Chair:* C. Schmidt

*Graduate Coordinator:* D. Hintenlang

*Complete faculty listing by department:* Follow this link.

The mission of the J. Crayton Pruitt Family Department of Biomedical Engineering (BME) is to educate students with strong engineering and science backgrounds for Master's and/or Ph.D. degrees in biomedical engineering. Graduates in BME typically apply their skills and training directly to engineering solutions to clinical problems in medicine. The BME mission is accomplished through a core program of study that has strong collaborations with faculty in the Colleges of Engineering and Medicine. The Biomedical Engineering Department faculty members work collaboratively with joint, affiliate, and adjunct faculty from many other departments in the College of Engineering, the College of Medicine, and local industry. This diversity ensures students the highest-quality education and varied opportunities for cutting-edge research. The BME Department currently focuses in: neural engineering, biomaterials, tissue engineering, biomechanics, nanomedicine, biomedical imaging and medical physics. A concentration in Medical Physics is available at both the M.S. and Ph.D. level and prepares students for clinical or research careers in medical imaging or radiation therapy. The Medical Physics concentration is fully accredited by CAMPEP. Additional information on admissions requirements, faculty, and research projects is available at: <http://www.bme.ufl.edu>.

BME graduate students are admitted directly through the BME Department. The BME Graduate Academic Committee reviews and makes all decisions regarding admission. Each student's research adviser must hold a Graduate Faculty appointment in the BME Department. Supervisory committees for BME students normally include at least one member from the College of Engineering and one from the College of Medicine to emphasize the need for a clinical focus in the research.

## Biomedical Engineering

### College

College of Engineering

### Department/School

Biomedical Engineering Department



## Biomedical Engineering Program Information

The master's degree (thesis or nonthesis) requires at least 30 semester hours. The Ph.D. degree requires at least 90 semester credit hours beyond the bachelor's degree. No more than 30 hours of a master's degree from another institution will be transferred to the Ph.D. degree. If a student holds a master's degree in a discipline different from the doctoral program, the master's work will not be counted toward the doctoral degree unless the BME Department successfully petitions the Dean of the Graduate School. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

Complete BME program details and courses available are listed in the Biomedical Engineering Graduate Guidelines, on the BME web site (which also offers information on available areas of study). Graduate-level courses in either the College of Engineering or the College of Medicine may be applied toward the BME degree programs with the approval of the supervisory committee chair and the graduate coordinator.

**Combined program:** Biomedical Engineering also offers a combined bachelor's/master's degree program in collaboration with the other departments in the College of Engineering. This program allows qualified students to earn both a bachelor's degree and a master's degree within 5 years for a net savings of 1 year. Contact the BME academic services office for more information or see <http://www.bme.ufl.edu/academics/combined>.

## Degrees Offered with a Major in Biomedical Engineering

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

concentration in Medical Physics

Master of Engineering

Master of Science

without a concentration

concentration in Medical Physics

## Courses

- BME 5052L: Biomedical Engineering Laboratory
- BME 5085: Patents, Product Development, and Technology Transfer
- BME 5401: Biomedical Engineering and Physiology I
- BME 5407: Molecular Biomedical Engineering
- BME 5500: Biomedical Instrumentation
- BME 5703: Statistical Methods for Biomedical Engineering
- BME 5704: Advanced Computational Methods for Biomedical Engineering
- BME 5937: Special Topics
- BME 6010: Clinical Preceptorship
- BME 6164: Magnetic Biomaterials

- BME 6324: Stem Cell Engineering
- BME 6330: Cell and Tissue Engineering
- BME 6360: Neural Engineering
- BME 6502: Introduction to Medical Imaging
- BME 6505: Advanced Diagnostic Radiological Physics
- BME 6522: Biomedical Multivariate Signal Processing
- BME 6533: Radiologic Anatomy
- BME 6534: Advanced Therapeutic Radiological Physics
- BME 6535: Radiological Physics, Measurements and Dosimetry
- BME 6590: Medical Physics
- BME 6591: Therapeutic Radiological Physics I
- BME 6592: Therapeutic Radiological Physics II
- BME 6593: Therapeutic Radiological Physics III
- BME 6705: Mathematical Modeling of Biological and Physiological Systems
- BME 6905: Individual Work in Biomedical Engineering
- BME 6907: BME Project
- BME 6910: Supervised Research
- BME 6936: Biomedical Engineering Seminar
- BME 6938: Special Topics in Biomedical Engineering
- BME 6940: Supervised Teaching
- BME 6971: Research for Master's Thesis
- BME 7979: Advanced Research
- BME 7980: Research for Doctoral Dissertation
- EEE 6504: Adaptive Signal Processing
- EEE 6512: Image Processing and Computer Vision
- ENU 5615C: Nuclear Radiation Detection and Instrumentation
- ENU 5615L: Nuclear Radiation Detection and Instrumentation Lab
- ENU 5626: Radiation Biology
- ENU 5658: Imaging System Analysis with Medical Physics Applications
- ENU 6051: Radiation Interaction Basics and Applications I
- ENU 6052: Radiation Transport Basics and Applications
- ENU 6627: Therapeutic Radiological Physics
- ENU 6636: Medical Radiation Shielding & Protection
- ENU 6657: Diagnostic Radiological Physics
- ENU 6659: Nuclear Medicine Instrumentation and Procedure

## **College of Engineering and College of Medicine Courses**

- [Click here for information about available College of Engineering courses.](#)

## **Chemical Engineering Department**

*Chair:* Richard B. Dickinson.

*Graduate Coordinator:* Anuj Chauhan.

*Complete faculty listing by department:* [Follow this link.](#)

The Chemical Engineering Department offers the degrees of Doctor of Philosophy, Master of Science (thesis and non-thesis options), and Master of Engineering in Chemical Engineering. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Ph.D., M.E., and M.S. degrees in chemical engineering require course work in three core areas:

- *The chemical engineering basis* area, consisting of three core courses in the mathematical, the molecular, and the continuum bases of chemical engineering
- *The chemical engineering science and systems* area, consisting of a selection of courses in such areas as transport phenomena, electrochemical engineering, thermodynamics, kinetics, reaction engineering, process control, separation processes, and heat and mass transfer
- *The research specialty* area, consisting of courses designed to build depth in a field of specialization. Courses may be from other academic units, or may be chemical engineering courses such as colloid science, corrosion, polymer science, advanced materials, and biochemical engineering.

For more information, please see the program page below and our website: <http://che.ufl.edu>.

## **Chemical Engineering**

### **College**

College of Engineering

### **Department/School**

Chemical Engineering Department

### **Chemical Engineering Program Information**

The Chemical Engineering Department offers the degrees of Doctor of Philosophy, Master of Science (thesis and non-thesis options), and Master of Engineering in Chemical Engineering. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

#### **Master of Science Degree – Thesis Option**

Completion of the program is possible in 16 months, and its usual duration ranges from 16 to 24 months. The principal requirements for the M.S. degree are 30 semester hours and a research thesis approved by the student's supervisory committee. These credits include:

- Twelve graduate semester hours in the basis of chemical engineering courses (Mathematical Basis, Continuum Basis, Molecular Basis, and Chemical and Bio Lab). Molecular Basis can be replaced with an Elective for students on Applied Track.
- Six credits of Chemical Engineering Science courses, including at least one course in reaction engineering, bioengineering, or kinetics.
- Up to six semester hours of supervised research.

Students must submit a final thesis and pass an oral thesis-defense examination.

#### **Master of Science Degree – Non-Thesis Option**

This program is designed for completion in 12 months, although some students prefer longer durations. The M.S.-Non-Thesis provides an opportunity to develop an in-depth knowledge of chemical engineering fundamentals, to

emphasize a specific specialization area, and to acquire basic experience in research or industrial practice through a short internship. The principal requirements are 30 credits of courses including an option for 7 credits of research work in a laboratory or of work in an industrial internship. The core course requirements for this program are identical to that for the M.S.-Thesis. A final thesis document is not required but a written report on a project, internship or a contemporary Chemical Engineering topic is required for graduation.

All new students for the M.S. program are admitted to the non-thesis option at the time of admission, and some are converted to the thesis option upon approval by the Research Advisor and the Director of Graduate Programs.

### **Master of Engineering Degree**

A student with a B.S. degree in biology, chemistry, physics, mathematics, or another branch of engineering may obtain a graduate degree in Chemical Engineering by meeting the necessary academic requirements and taking selected undergraduate courses. Students intending to obtain a professionally oriented M.E. degree would normally complete their undergraduate requirements in 1-2 semesters. The graduate course requirements of 30 credits of coursework require another 3-4 semesters. The M.E. students can apply for conversion to the M.S.-NT or M.S.-Thesis program after satisfactory completion of the undergraduate courses.

### **Ph.D. Degree**

The Ph.D. degree plan is primarily a research program. The granting of the degree is based essentially on general proficiency and distinctive attainments in Chemical Engineering and particularly on the demonstrated ability to conduct an independent investigation as exhibited in the doctoral dissertation. Briefly, the formal requirements for the Ph.D. degree are:

- Maintaining a GPA of 3.0 or higher with B- or higher in all Basis courses.
- Successful completion of written and oral examinations for advancement to candidacy. The written examination is comprised of the candidate's objectives and achievements towards his/her doctoral dissertation. The oral examination is based on the written part and related areas. The oral section also includes the Qualifying Examination to test the student's breadth of knowledge in Chemical Engineering fundamentals.
- Preparing a dissertation based on original research.
- Passing the final examination based on the dissertation.
- The graduation requirements include 90 credits including at least 30 credits in coursework. Details and minor changes in any of these requirements will be given upon the student's arrival.

For more information, please see our website: [http://che.ufl.edu/Pro\\_Grad\\_Std.htm](http://che.ufl.edu/Pro_Grad_Std.htm).

### **Degrees Offered with a Major in Chemical Engineering**

Doctor of Philosophy

Master of Engineering

Master of Science

### **Courses**

- BME 6221: Biomolecular Cell Mechanics
- BME 6322: Dynamics of Cellular Processes
- BME 6644: Pharmacokinetics
- ECH 5708: Disinfection, Sterilization, and Preservation
- ECH 5938: Topics in Colloid Science

- ECH 6126: Thermodynamics of Reaction and Phase Equilibria
- ECH 6270: Continuum Basis of Chemical Engineering
- ECH 6272: Molecular Basis of Chemical Engineering
- ECH 6285: Transport Phenomena
- ECH 6326: Computer Control of Processes
- ECH 6506: Chemical Engineering Kinetics
- ECH 6526: Reactor Design and Optimization
- ECH 6709: Electrochemical Engineering Fundamentals and Design
- ECH 6726: Interfacial Phenomena I
- ECH 6727: Interfacial Phenomena II
- ECH 6843: Experimental Basis of Chemical Engineering
- ECH 6847: Mathematical Basis of Chemical Engineering
- ECH 6851: Impedance Spectroscopy
- ECH 6905: Individual Work
- ECH 6910: Supervised Research
- ECH 6926: Graduate Seminar
- ECH 6937: Topics in Chemical Engineering I
- ECH 6939: Topics in Chemical Engineering III
- ECH 6940: Supervised Teaching
- ECH 6971: Research for Master's Thesis
- ECH 7938: Advanced Special Chemical Engineering Topics for Doctoral Candidates
- ECH 7979: Advanced Research
- ECH 7980: Research for Doctoral Dissertation

## College of Engineering Courses

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Civil and Coastal Engineering Department

*Chair:* K. Hatfield

*Graduate Coordinator:* A. Drescher

*Complete faculty listing by department:* [Follow this link.](#)

The Department of Civil and Coastal Engineering offers two distinct graduate programs: civil engineering and coastal and oceanographic engineering. All degrees except the Ph.D. are available in a thesis or nonthesis option. The nonthesis option has two formats: report and 30-hour non-report. Students who elect the nonthesis report must successfully complete a document of substantial engineering content for a minimum of two hours credit in CGN 6974 for civil engineering majors, or EOC 6905 for coastal and oceanographic engineering majors.

Civil and Coastal Engineering degree programs include areas of specialization in construction, civil engineering management, geotechnical engineering, water resources and hydrology, public works, structural engineering, civil engineering materials, geosensing systems engineering, coastal engineering, oceanographic engineering and offshore structures, and transportation engineering.

Minor or supporting work is encouraged from a variety of related or allied fields of study. Ph.D. students are required to take a preliminary examination. Requirements for the M.S., M.E., and Ph.D. degrees are given in the Graduate Degrees section of this catalog.

## **Civil Engineering**

### **College**

College of Engineering

### **Department/School**

Civil and Coastal Engineering Department

### **Civil Engineering Program**

The civil engineering program is offered through the Department of Civil and Coastal Engineering with the following degrees: Master of Engineering, Master of Science, and Doctor of Philosophy. The master's degree in civil engineering is also offered through the Electronic Delivery of Graduate Engineering (EDGE) program, which is a distance learning program delivered either via streaming video or DVD directly to the students. Subject to approval by the supervisory committee, graduate-level courses taken through the Departments of Environmental Engineering Sciences, Geological Sciences, and Mechanical and Aerospace Engineering are considered as major credit.

For courses taken through the Department of Civil and Coastal Engineering, credit hours graded S/U will not count toward graduation except for

- 6 hours of CGN 6971 or EOC 6971 for thesis students
- 3 hours of CGN 6974 for students working on the M.E. report
- CGN 7979 or EOC 7979
- CGN 7980 or EOC 7980

### **Degrees Offered with a Major in Civil Engineering**

Doctor of Philosophy

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

## Master of Engineering

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Structural Engineering

concentration in Wetland Sciences

## Master of Science

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

with a concentration in Structural Engineering

concentration in Wetland Sciences

## Courses

- CCE 5035: Construction Planning and Scheduling
- CCE 5405: Construction Equipment and Procedures
- CCE 6037: Civil Engineering Operations I
- CCE 6038: Innovative Construction Techniques
- CCE 6505: Computer Applications in Construction Engineering
- CCE 6507: Computer Applications in Construction Engineering II
- CCE 6516: Topics in Airborne Laser Mapping Technology
- CEG 5105: Geotechnical Engineering
- CEG 5114: Advanced Geotechnical Aspects of Landfill Design
- CEG 5115: Foundation Design
- CEG 5205C: Insitu Measurement of Soil Properties
- CEG 5206: Geosensing I
- CEG 5805: Ground Modification Design
- CEG 6015: Advanced Soil Mechanics
- CEG 6116: Advanced Shallow Foundation Design
- CEG 6117: Advanced Deep Foundation Design
- CEG 6201: Experimental Determination of Soil Properties
- CEG 6207: Geosensing II
- CEG 6405: Seepage in Soils
- CEG 6505: Numerical Methods of Geomechanics

- CEG 6515: Earth Retaining Systems and Slope Stability
- CES 5010: Probabilistic and Stochastic Methods in Civil Engineering
- CES 5116: Finite Elements in Civil Engineering
- CES 5325: Design of Highway Bridges
- CES 5606: Topics in Steel Design
- CES 5607: Behavior of Steel Structures
- CES 5715: Prestressed Concrete
- CES 5726: Design of Concrete Systems
- CES 5801: Design and Construction in Timber
- CES 5835: Design of Reinforced Masonry Structures
- CES 6106: Advanced Structural Analysis
- CES 6108: Structural Dynamics
- CES 6165: Computer Methods in Structural Engineering
- CES 6551: Design of Folded Plates and Shells
- CES 6588: Protective Structures
- CES 6590: Impact Engineering
- CES 6591: Applied Protective Structures
- CES 6592: Retrofit Protective Structures
- CES 6593: Advanced Protective Structures
- CES 6706: Advanced Reinforced Concrete
- CES 6855: Condition Assessment of Structures
- CGN 5606: Public Works Management
- CGN 5715: Experimentation and Instrumentation in Civil Engineering Materials Research
- CGN 6155: Civil Engineering Practice I
- CGN 6156: Construction Engineering II
- CGN 6505: Properties, Design and Control of Concrete
- CGN 6506: Bituminous Materials
- CGN 6525: Sustainable Materials
- CGN 6905: Special Problems in Civil Engineering
- CGN 6910: Supervised Research
- CGN 6936: Civil Engineering Graduate Seminar
- CGN 6940: Supervised Teaching
- CGN 6971: Research for Master's Thesis
- CGN 6972: Research for Engineer's Thesis
- CGN 6974: Master of Engineering or Engineer Degree Report
- CGN 7979: Advanced Research
- CGN 7980: Research for Doctoral Dissertation
- CWR 5125: Groundwater Flow I
- CWR 5127: Evaluation of Groundwater Quality
- CWR 5235: Open Channel Hydraulics
- CWR 6115: Surface Hydrology
- CWR 6236: Sediment Transport I
- CWR 6255: Diffusive and Dispersive Transport
- CWR 6525: Groundwater Flow II
- CWR 6537: Contaminant Subsurface Hydrology
- TTE 5305: Advanced Transportation Systems Analysis
- TTE 5006: Advanced Urban Transportation Planning
- TTE 5256: Traffic Engineering
- TTE 5805: Geometric Design of Transportation Facilities



- TTE 5835: Pavement Design
- TTE 5837: Pavement Management Systems
- TTE 6205: Freeway Operations and Simulation
- TTE 6259: Urban Streets Simulation and Control
- TTE 6267: Traffic Flow Theory
- TTE 6306: Computational Methods in Transportation Engineering
- TTE 6315: Highway Safety Analysis
- TTE 6505: Discrete Choice Analysis
- TTE 6606: Urban Transportation Models

### **Civil and Coastal Engineering Departmental Courses**

- CES 6571: Design of Temporary Structures
- CES 6585: Wind Engineering
- CGN 5125: Legal Aspects of Civil Engineering
- CGN 5315: Civil Engineering Systems
- CGN 5605: Public Works Planning
- CGN 6150: Engineering Project Management
- CWR 6126: Variable-Density Groundwater Flow
- CWR 6240: Mixing and Transport in Turbulent Flow
- TTE 6207: Advanced Highway Capacity Analysis

### **Hydrology / Water Resources Shared Courses**

- CGN 6905: Special Problems in Civil Engineering
- CWR 5125: Groundwater Flow I
- CWR 5127: Evaluation of Groundwater Quality
- CWR 5235: Open Channel Hydraulics
- CWR 6115: Surface Hydrology
- CWR 6126: Variable-Density Groundwater Flow
- CWR 6525: Groundwater Flow II
- CWR 6537: Contaminant Subsurface Hydrology
- EGM 5816: Intermediate Fluid Dynamics
- ENV 5518: Field Methods in Environmental Hydrology
- ENV 5565: Hydraulic Systems Design
- ENV 6050: Advanced Pollutant Transport
- ENV 6052: Immiscible Fluids in Porous Media
- ENV 6441: Water Resources Planning and Management
- ENV 6508: Wetland Hydrology
- ENV 6932: Special Problems in Environmental Engineering

### **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab

- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Coastal and Oceanographic Engineering**

### **College**

College of Engineering

### **Department/School**

Civil and Coastal Engineering Department

### **Coastal and Oceanographic Engineering Program**

The coastal and oceanographic engineering program is offered through the Department of Civil and Coastal Engineering with the following degrees: Master of Engineering, Master of Science, and Doctor of Philosophy degree. Subject to approval by the supervisory committee, graduate-level courses taken through the Departments of Environmental Engineering Sciences, Geological Sciences, and Mechanical and Aerospace Engineering are considered as major credit.

For courses taken through the Department of Civil and Coastal Engineering, credit hours graded S/U will not count toward graduation except for

- 6 hours of CGN 6971 or EOC 6971 for thesis students
- 3 hours of CGN 6974 for students working on the M.E. report
- CGN 7979 or EOC 7979
- CGN 7980 or EOC 7980

### **Degrees Offered with a Major in Coastal and Oceanographic Engineering**

Doctor of Philosophy

Master of Engineering

Master of Science

### **Coastal and Oceanographic Engineering Courses**

- EGM 5816: Intermediate Fluid Dynamics
- EOC 5860: Port and Harbor Engineering
- EOC 6196: Littoral Processes

- EOC 6430: Coastal Structures
- EOC 6850: Numerical Simulation Techniques in Coastal and Ocean Engineering
- EOC 6905: Individual Study in Coastal and Oceanographic Engineering
- EOC 6932: Selected Field and Laboratory Problems
- EOC 6934: Advanced Topics in Coastal and Oceanographic Engineering
- EOC 6939: Graduate Seminar
- EOC 6971: Research for Master's Thesis
- EOC 6972: Research for Engineer's Thesis
- EOC 7979: Advanced Research
- EOC 7980: Research for Doctoral Dissertation
- OCP 5293: Coastal Processes
- OCP 6050: Physical Oceanography
- OCP 6165: Ocean Waves I: Linear Theory
- OCP 6165L: Ocean Waves Laboratory
- OCP 6167: Ocean Waves II: Nonlinear Theory
- OCP 6168: Data Analysis Techniques for Coastal and Ocean Engineers
- OCP 6169: Random Sea Analysis
- OCP 6295: Estuarine and Shelf Hydrodynamics I
- OCP 6297: Coastal and Estuarine Sediment Transport
- OCP 6298: Coastal Sediment Transport Processes

### **Civil and Coastal Engineering Departmental Courses**

- CES 6571: Design of Temporary Structures
- CES 6585: Wind Engineering
- CGN 5125: Legal Aspects of Civil Engineering
- CGN 5315: Civil Engineering Systems
- CGN 5605: Public Works Planning
- CGN 6150: Engineering Project Management
- CWR 6126: Variable-Density Groundwater Flow
- CWR 6240: Mixing and Transport in Turbulent Flow
- TTE 6207: Advanced Highway Capacity Analysis

### **Hydrology / Water Resources Shared Courses**

- CGN 6905: Special Problems in Civil Engineering
- CWR 5125: Groundwater Flow I
- CWR 5127: Evaluation of Groundwater Quality
- CWR 5235: Open Channel Hydraulics
- CWR 6115: Surface Hydrology
- CWR 6126: Variable-Density Groundwater Flow
- CWR 6525: Groundwater Flow II
- CWR 6537: Contaminant Subsurface Hydrology
- EGM 5816: Intermediate Fluid Dynamics
- ENV 5518: Field Methods in Environmental Hydrology
- ENV 5565: Hydraulic Systems Design
- ENV 6050: Advanced Pollutant Transport

- ENV 6052: Immiscible Fluids in Porous Media
- ENV 6441: Water Resources Planning and Management
- ENV 6508: Wetland Hydrology
- ENV 6932: Special Problems in Environmental Engineering

## College of Engineering Courses

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Computer and Information Science and Engineering Department

College of Engineering

*Chair:* Paul Gader

*Graduate Coordinator:* Jih-kwon Peir

*Complete faculty listing by department:* Follow this link.

The Department of Computer and Information Science and Engineering is concerned with the theory, design, development, and application of computer systems and information processing techniques. The mission of the CISE Department is to educate undergraduate and graduate majors as well as the broader campus community in the fundamental concepts of the computing discipline, to create and disseminate computing knowledge and technology, and to use our expertise in computing to help society solve problems.

The Department of Computer and Information Science and Engineering (CISE) offers

- Ph.D., Master of Engineering, and Master of Science degrees in computer engineering through the College of Engineering.
- Master of Science degree in computer science through the College of Engineering.
- Master of Science degree in digital arts and sciences through the College of Engineering.
- Master of Science degree in computer science through the College of Liberal Arts and Sciences.

The CISE Department has six broad areas of specialization:

- **Computer systems:** computer architecture, distributed systems, networks and communication, operating systems, performance evaluation, security, mobile computing, software engineering, programming languages, multimedia systems, and web technologies
- **Database and information systems:** database management systems, database design, database theory and implementation, data mining, database machines, parallel and distributed databases, digital libraries, E-services and commerce, medical, and bio-informatics
- **High-performance computing/applied algorithms:** design and analysis of algorithms, data structures, parallel and distributed computing, medical algorithms, numerical methods, computational complexity, and applied computational geometry

- **Computer graphics, modeling, and art:** modeling methodology, simulation, virtual reality, aesthetic computing, computer arts, animation, real-time rendering, medical modeling, digital media, and musical acoustics
- **Intelligent systems and computer vision:** artificial intelligence, machine learning, visualization, image analysis and processing, pattern recognition, signal processing, biomedical imaging, and image databases
- **Computer networks and security:** wired and wireless networks, network routing and protocols, and QoS.

Applications for admission must be approved by both the Department and the college in which the student wishes to enroll. Applicants should have a strong computer science background.

All master's students must satisfy a core requirement by completing the appropriate number of core courses as specified by their degree program or their approved equivalents with no more than one of the core courses receiving a letter grade below "B." Students can select a thesis or nonthesis option for the master's degree. Digital Arts and Sciences students must choose either thesis or project in lieu of thesis. All options require a minimum of 30 credit hours. The thesis degree requires:

- A minimum of 6 credit hours must be taken in CIS 6971 Master's Research.
- Specific degree requirements can be found at: <https://www.cise.ufl.edu/academics/grad>

The non-thesis option requires:

- Each nonthesis master's student is required to pass a comprehensive examination.
- Specific degree requirements can be found at: <https://www.cise.ufl.edu/academics/grad>

The Digital Arts and Sciences project in lieu of thesis option requires 6 credit hours of project/performance credits.

To demonstrate breadth and proficiency, all Ph.D. students must take 4 required core courses obtaining a 3.4 GPA in 3 of the 4 required core courses, with no more than one of the core courses receiving a letter grade below B, to be eligible to take the Ph.D. qualifying examinations.

Ph.D. students are required to take a minimum of 90 credit hours. Of these, at least 36 hours must be graduate-level CISE course work excluding individual study and research credits. A minimum of 3 hours must be taken in CIS 7980. A maximum of 30 credits may be awarded toward the Ph.D. degree from an appropriate master's degree.

The Database Systems Research and Development Center, the Software Engineering Research Center, the Center for Computer Vision and Visualization Center, and a number of other campus research centers provide opportunities for students enrolled in the program.

The department offers a combined bachelor's/master's degree program. Contact the Department's Student Services Center for information.

For more information, please see the program pages below, or visit our website: <http://www.cise.ufl.edu>

## Computer Engineering

### College

College of Engineering

### Department/School

Computer and Information Science and Engineering Department

## Computer Engineering Program Information

The Department of Computer and Information Science and Engineering offers the Master of Science and the Doctor of Philosophy degrees in Computer Engineering through the College of Engineering. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The department offers graduate study and research in Algorithms, Computer Vision, Databases, Graphics and Modeling, Machine Learning, Networks, and Systems, with active labs in Bioinformatics; Computational Science and Intelligence; Vision, Graphics and Medical Imaging; Database Systems Research and Development; Data Science Research; Mobile and Pervasive Computing; Human-Centered Computing; and Cybersecurity.

Specific degree requirements and options may be found here: <http://cise.ufl.edu/academics/grad>.

Instructions for application for admission may be found here: <http://cise.ufl.edu/admissions/graduate>.

## Degrees Offered with a Major in Computer Engineering

Doctor of Philosophy

Master of Engineering

Master of Science

without a concentration

concentration in Digital Arts and Sciences

## Computer and Information Science and Engineering Departmental Courses

- CAP 5100: Human-Computer Interaction
- CAP 5416: Computer Vision
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5635: Artificial Intelligence Concepts
- CAP 5705: Computer Graphics
- CAP 5771: Introduction to Data Science
- CAP 5805: Computer Simulation Concepts
- CAP 6137: Malware Reverse Engineering
- CAP 6402: Aesthetic Computing
- CAP 6516: Medical Image Analysis
- CAP 6610: Machine Learning
- CAP 6615: Neural Networks for Computing
- CAP 6617: Advanced Machine Learning
- CAP 6685: Expert Systems
- CAP 6701: Advanced Computer Graphics
- CAP 6769: Advanced Topics in Data Science
- CAP 6779: Projects in Data Science
- CDA 5155: Computer Architecture Principles
- CDA 5636: Embedded Systems

- CDA 6156: High Performance Computer Architecture
- CEN 5035: Software Engineering
- CIS 5370: Computer and Information Security
- CIS 5371: Introduction to Cryptology
- CEN 5726: Natural User Interaction
- CEN 6070: Software Testing and Verification
- CEN 6075: Software Specification
- CIS 6905: Individual Study
- CIS 6910: Supervised Research
- CIS 6930: Special Topics in CIS
- CIS 6935: Graduate Seminar
- CIS 6940: Supervised Teaching
- CIS 6971: Research for Master's Thesis
- CIS 7979: Advanced Research
- CIS 7980: Research for Doctoral Dissertation
- CNT 5106C: Computer Networks
- CNT 5410: Computer and Network Security
- CNT 5412: Network and System Security
- CNT 5517: Mobile Computing
- CNT 6107: Advanced Computer Networks
- CNT 6885: Distributed Multimedia Systems
- COP 5536: Advanced Data Structures
- COP 5555: Programming Language Principles
- COP 5615: Distributed Operating System Principles
- COP 5618: Concurrent Programming
- COP 5625: Programming Language Translators
- COP 5725: Database Management Systems
- COP 6726: Database System Implementation
- COP 6755: Distributed Database Systems
- COT 5405: Analysis of Algorithms
- COT 5442: Approximation Algorithms
- COT 5519: Sparse Matrix Algorithms
- COT 5520: Computational Geometry
- COT 5615: Mathematics for Intelligent Systems
- COT 6315: Formal Languages and Computation Theory

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Computer Science (Engineering)**

### **College**

College of Engineering

### **Department/School**

Computer and Information Science and Engineering Department

### **Computer Science (Engineering) Program Information**

The Department of Computer and Information Science and Engineering offers the Master of Science degree in Computer Science through the College of Engineering. Minimum requirements for this degree are given in the Graduate Degrees section of this catalog.

### **Degrees Offered with a Major in Computer Science**

Master of Science

### **Computer and Information Science and Engineering Departmental Courses**

- CAP 5100: Human-Computer Interaction
- CAP 5416: Computer Vision
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5635: Artificial Intelligence Concepts
- CAP 5705: Computer Graphics
- CAP 5771: Introduction to Data Science
- CAP 5805: Computer Simulation Concepts
- CAP 6137: Malware Reverse Engineering
- CAP 6402: Aesthetic Computing
- CAP 6516: Medical Image Analysis
- CAP 6610: Machine Learning
- CAP 6615: Neural Networks for Computing
- CAP 6617: Advanced Machine Learning
- CAP 6685: Expert Systems
- CAP 6701: Advanced Computer Graphics
- CAP 6769: Advanced Topics in Data Science
- CAP 6779: Projects in Data Science
- CDA 5155: Computer Architecture Principles
- CDA 5636: Embedded Systems
- CDA 6156: High Performance Computer Architecture
- CEN 5035: Software Engineering



- CIS 5370: Computer and Information Security
- CIS 5371: Introduction to Cryptology
- CEN 5726: Natural User Interaction
- CEN 6070: Software Testing and Verification
- CEN 6075: Software Specification
- CIS 6905: Individual Study
- CIS 6910: Supervised Research
- CIS 6930: Special Topics in CIS
- CIS 6935: Graduate Seminar
- CIS 6940: Supervised Teaching
- CIS 6971: Research for Master's Thesis
- CIS 7979: Advanced Research
- CIS 7980: Research for Doctoral Dissertation
- CNT 5106C: Computer Networks
- CNT 5410: Computer and Network Security
- CNT 5412: Network and System Security
- CNT 5517: Mobile Computing
- CNT 6107: Advanced Computer Networks
- CNT 6885: Distributed Multimedia Systems
- COP 5536: Advanced Data Structures
- COP 5555: Programming Language Principles
- COP 5615: Distributed Operating System Principles
- COP 5618: Concurrent Programming
- COP 5625: Programming Language Translators
- COP 5725: Database Management Systems
- COP 6726: Database System Implementation
- COP 6755: Distributed Database Systems
- COT 5405: Analysis of Algorithms
- COT 5442: Approximation Algorithms
- COT 5519: Sparse Matrix Algorithms
- COT 5520: Computational Geometry
- COT 5615: Mathematics for Intelligent Systems
- COT 6315: Formal Languages and Computation Theory

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Digital Arts and Sciences (Engineering)**

## **College**

College of Engineering

## **Department/School**

Computer and Information Science and Engineering Department

## **Digital Arts and Sciences (Engineering) Program Information**

The Department of Computer and Information Science and Engineering offers the Master of Science degree in Digital Arts and Sciences through the College of Engineering. Minimum requirements for this degree are given in the Graduate Degrees section of this catalog.

This specialized program integrates engineering and design and was created for students with an interest in video games, human-computer interaction, 3D modeling and animation, virtual reality, and computer graphics. The curriculum includes core computer science with a special emphasis on human-centered computing and provides students the flexibility to focus on both computer science and design, and to create software that is computationally complex, user friendly and aesthetically pleasing.

Specific degree requirements and options may be found here: <http://cise.ufl.edu/academics/grad>

Instructions for application for admission may be found here:

<http://cise.ufl.edu/admissions/grad>

## **Degrees**

Master of Science

## **Computer and Information Science and Engineering Departmental Courses**

- CAP 5100: Human-Computer Interaction
- CAP 5416: Computer Vision
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5635: Artificial Intelligence Concepts
- CAP 5705: Computer Graphics
- CAP 5771: Introduction to Data Science
- CAP 5805: Computer Simulation Concepts
- CAP 6137: Malware Reverse Engineering
- CAP 6402: Aesthetic Computing
- CAP 6516: Medical Image Analysis
- CAP 6610: Machine Learning
- CAP 6615: Neural Networks for Computing
- CAP 6617: Advanced Machine Learning
- CAP 6685: Expert Systems
- CAP 6701: Advanced Computer Graphics
- CAP 6769: Advanced Topics in Data Science
- CAP 6779: Projects in Data Science

- CDA 5155: Computer Architecture Principles
- CDA 5636: Embedded Systems
- CDA 6156: High Performance Computer Architecture
- CEN 5035: Software Engineering
- CIS 5370: Computer and Information Security
- CIS 5371: Introduction to Cryptology
- CEN 5726: Natural User Interaction
- CEN 6070: Software Testing and Verification
- CEN 6075: Software Specification
- CIS 6905: Individual Study
- CIS 6910: Supervised Research
- CIS 6930: Special Topics in CIS
- CIS 6935: Graduate Seminar
- CIS 6940: Supervised Teaching
- CIS 6971: Research for Master's Thesis
- CIS 7979: Advanced Research
- CIS 7980: Research for Doctoral Dissertation
- CNT 5106C: Computer Networks
- CNT 5410: Computer and Network Security
- CNT 5412: Network and System Security
- CNT 5517: Mobile Computing
- CNT 6107: Advanced Computer Networks
- CNT 6885: Distributed Multimedia Systems
- COP 5536: Advanced Data Structures
- COP 5555: Programming Language Principles
- COP 5615: Distributed Operating System Principles
- COP 5618: Concurrent Programming
- COP 5625: Programming Language Translators
- COP 5725: Database Management Systems
- COP 6726: Database System Implementation
- COP 6755: Distributed Database Systems
- COT 5405: Analysis of Algorithms
- COT 5442: Approximation Algorithms
- COT 5519: Sparse Matrix Algorithms
- COT 5520: Computational Geometry
- COT 5615: Mathematics for Intelligent Systems
- COT 6315: Formal Languages and Computation Theory

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Electrical and Computer Engineering Department

Chair: J. Harris.

Graduate Coordinators: G. Bosman, J. McNair

Complete faculty listing: [Follow this link.](#)

The Department of Electrical and Computer Engineering offers the Master of Science and Doctor of Philosophy degrees. Minimum requirements for these degrees are given in the Graduate Degrees Section of this catalog. For more information about our program, please visit the link below.

## Electrical and Computer Engineering

### College

College of Engineering

### Department/School

Electrical and Computer Engineering Department

### Electrical and Computer Engineering Program Information

The Department of Electrical and Computer Engineering offers the Master of Science and Doctor of Philosophy degrees. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The department offers graduate study and research in computer engineering, devices, electromagnetics and energy systems, electronics, and signals and systems.

Graduate students in the Department of Electrical and Computer Engineering have bachelor's degrees from many areas: electrical engineering, other engineering disciplines, chemistry, mathematics, physics, and other technical fields. The Department of Electrical and Computer Engineering offers both thesis and nonthesis options for the master's degrees.

In the *thesis option* a student shall complete a minimum of 30 semester credit hours with a maximum of 6 semester credit hours of EEL 6971 (Research for Master's Thesis). While the Graduate School sets the minimum requirements, the supervisory committee determines the appropriate number of thesis hours a student shall be required to take for the thesis. Other course requirements include a minimum of 18 hours at the 5000 or 6000 level in electrical and computer engineering. Excluded from satisfying these course requirements are EEL 5905 and EEL 6905 (Individual Work), EEL 6910 (Supervised Research), 6932 (Graduate Seminar), EEL 6940 (Supervised Teaching), and EEL 6971 (Research for Master's Thesis). No more than 6 hours of Individual Work (EEL 5905 or EEL 6905 ) may be counted toward the degree.

In the nonthesis option a student shall complete a minimum of 30 semester credit hours with a maximum of 6 semester credit hours of Individual Work (EEL 5905 or EEL 6905 ). The course requirements include a minimum of 21 semester credit hours at the 5000 or 6000 level in electrical and computer engineering. Excluded from satisfying these course requirements are EEL 5905 and EEL 6905 (Individual Work), EEL 6910 (Supervised Research), 6932 (Graduate Seminar), EEL 6940 (Supervised Teaching), and EEL 6971 (Research for Master's Thesis).

The Department also offers a combined bachelor's/master's degree program. This program allows qualified students to earn both a bachelor's degree and master's degree with a saving of one semester. Qualified students may begin their master's programs while seniors, counting up to 12 hours of specified electrical and computer engineering graduate courses for both bachelor's and master's degree requirements. Bachelor's/master's program admission requirements are (1) satisfaction of Graduate School admission requirements for the master's degree, (2) an upper-division (undergraduate) GPA of at least 3.3, and (3) completion of at least 7 EEL core courses and 2 EEL laboratories. Students with a GPA between 3.3 and 3.59 can double count up to 6 hours, while students with a GPA of 3.6 or higher can double count up to 12 hours.

All prospective doctoral students must take the written part of the Ph.D. qualifying examination within the first year of enrollment. Other requirements for the doctoral degree, as well as requirements for master's and engineer degrees, are given in the Electrical and Computer Engineering Department's Graduate Guidelines (see <http://www.ece.ufl.edu/content/graduate-academics>) and in the front section of this catalog.

The following course listing indicates the major areas of faculty interest. Special topics courses EEL 5934 and EEL 6935 cover a wide variety of subjects for which there are no present courses.

### **Degrees Offered with a Major in Electrical and Computer Engineering**

Doctor of Philosophy

Master of Engineering

Master of Science

### **Courses**

- CNT 6805: Network Science and Applications
- EEE 5317C: Introduction to Power Electronics
- EEE 5320: Bipolar Analog IC Design
- EEE 5322: VLSI Circuits and Technology
- EEE 5364: Fundamentals of Data Converters
- EEE 5400: Future of Microelectronics Technology
- EEE 5405: Microelectronic Fabrication Technologies
- EEE 5426: Introduction to Nanodevices
- EEE 6287: Brain Machine Interface Engineering
- EEE 6321: MOS Analog IC Design
- EEE 6323: Advanced VLSI Design
- EEE 6325: Computer Simulation of Integrated Circuits and Devices
- EEE 6328C: Microwave IC Design
- EEE 6374: Radio Frequency (RF) Integrated Circuits and Technologies
- EEE 6382: Semiconductor Physical Electronics
- EEE 6390: VLSI Device Design
- EEE 6397: Semiconductor Device Theory I
- EEE 6402: Nonclassical Si-Based Nanoscale CMOS Devices
- EEE 6428: Computational Nanoelectronics
- EEE 6431: Carbon Nanotubes
- EEE 6460: Advanced Microsystem Technology
- EEE 6465: Design of MEMS Transducers
- EEE 6715: Computational Aspects of Cyber-Physical Systems

- EEL 5182: State Variable Methods in Linear Systems
- EEL 5225: Principles of Micro-Electro-Mechanical Transducers
- EEL 5400: Airborne Sensors and Instrumentation
- EEL 5401: Airborne Laser Scanning: Data Processing and Analysis
- EEL 5441: Fundamentals of Photonics
- EEL 5447: Laser Theory and Design
- EEL 5462: Advanced Antenna Systems
- EEL 5490: Lightning
- EEE 5502: Foundations of Digital Signal Processing
- EEE 5544: Noise in Linear Systems
- EEE 5556: Electronic Countermeasures
- EEL 5547: Introduction to Radar
- EEL 5666C: Intelligent Machines Design Laboratory
- EEL 5718: Computer Communications
- EEL 5721: Reconfigurable Computing
- EEL 5737: Principles of Computer System Design
- EEL 5764: Computer Architecture
- EEL 5840: Elements of Machine Intelligence
- EEL 5905: Individual Work
- EEL 5934: Special Topics in Electrical Engineering
- EEL 6065: Electrical & Computer Engineering Technical Writing
- EEL 6264: Advanced Electric Energy Systems I
- EEL 6265: Advanced Electric Energy Systems II
- EEL 6443: Integrated and Fiber Optics
- EEL 6486: Electromagnetic Field Theory and Applications I
- EEL 6487: Electromagnetic Field Theory and Applications II
- EEE 6504: Adaptive Signal Processing
- EEL 6507: Queuing Theory and Data Communications
- EEL 6509: Wireless Communication
- EEE 6503: Digital Filtering
- EEL 6532: Information Theory
- EEL 6533: Statistical Decision Theory
- EEL 6535: Digital Communications
- EEL 6537: Spectral Estimation
- EEL 6550: Error Correction Coding
- EEE 6512: Image Processing and Computer Vision
- EEL 6528: Digital Communications with Software-defined Radios
- EEL 6555: Signal Processing for Active Sensing
- EEE 6586: Automatic Speech Processing
- EEL 6588: Wireless Ad Hoc Networks
- EEL 6591: Wireless Networks
- EEL 6614: Modern Control Theory
- EEL 6617: Linear Multivariable Control
- EEL 6619: Robust Control Systems
- EEL 6686: Embedded Systems Seminar
- EEL 6706: Fault-Tolerant Computer Architecture
- EEL 6761: Cloud Computing and Storage
- EEL 6763: Parallel Computer Architecture
- EEL 6769: Hardware-Software Interactions: Nonnumeric Processing

- EEL 6814: Neural Networks for Signal Processing
- EEL 6825: Pattern Recognition and Intelligent Systems
- EEL 6841: Machine Intelligence and Synthesis
- EEL 6871: Software Defined Systems
- EEL 6892: Virtual Computers
- EEL 6905: Individual Work
- EEL 6910: Supervised Research
- EEL 6933: Electrical and Computer Engineering Graduate Seminar
- EEL 6935: Special Topics in Electrical Engineering
- EEL 6940: Supervised Teaching
- EEL 6971: Research for Master's Thesis
- EEL 6972: Research for Engineer's Thesis
- EEL 7979: Advanced Research
- EEL 7980: Research for Doctoral Dissertation

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Environmental Engineering Sciences Department**

Director: Kirk Hatfield

Graduate Coordinator: Chang-Yu Wu

Complete faculty listing: [Follow this link.](#)

The Department of Environmental Engineering Sciences offers graduate study in the following areas: Air Resources; Biogeochemical Systems; Environmental Nanotechnology; Solid and Hazardous Waste Management; Storm Water, Water Supply and Waste Water; Sustainability Science & Engineering; Systems Ecology and Ecological Engineering; and Water Resources. Students graduated from the program will demonstrate depth in individual focus areas as well as breadth of core knowledge concepts in all areas.

Please visit the program page below and our website: <http://www.essie.ufl.edu> for more information about our program in Environmental Engineering Sciences.

## **Environmental Engineering Sciences**

### **College**

College of Engineering

## **Department/School**

Environmental Engineering Sciences Department

## **Environmental Engineering Sciences Program Information**

Graduate study is offered leading to the degrees Master of Engineering, Master of Science, and Doctor of Philosophy in the field of environmental engineering sciences. Our graduate research and education areas are

### **Air Resources**

- Monitoring of air pollutants: indoor, ambient, industrial, and occupational
- Monitoring methodology and instrumentation development
- Formation and fate of air pollutants
- Air quality modeling
- Air pollution control: system, process and materials
- Sustainability of air quality
- Health effects and environmental impact of air pollutant

### **Biogeochemical Systems**

- Green Engineering
- Microbiology of Natural and Engineered Systems
- Environmental Fate and Transport of Pollutants in Soils and Aquatic Systems
- Biological and Chemical Remediation of Contaminated Systems
- Environmental Toxicology and Nanotoxicology
- Effects of Climate and Land Use Changes on Biogeochemical Cycles
- Aqueous Geochemistry and Water Treatment

### **Environmental Nanotechnology**

- Manufacturing and tailoring of nanomaterials and nanodevices for application in environmental and human health research
- Environmental fate and transport of nanomaterials
- Environmental implications of nanomaterials

### **Solid and Hazardous Waste Management**

- Bioreactor Landfills
- Combustion and Thermal Treatment Residuals
- Contaminated Soil Characterization and Treatment
- Construction and Demolition Debris
- Electronic Waste
- Hazardous Waste
- Landfill Design and Operations
- Landfill Gas and Leachate
- Recycling and Beneficial Use of Wastes
- Treated Wood
- Waste Characterization and Leaching
- Solid Waste Management in Developing Countries

### **Stormwater, Water Supply and Wastewater**

- Fundamental characterization of aqueous and particulate-phase contaminants including emerging contaminants: representative ambient monitoring, methodology and load quantification.
- Sourcing and generation of aqueous and particulate phase contaminants, physics and chemistry of contaminant



transport and fate.

- Water contaminant control: systems, unit operation and processes, and materials development, in particular innovative mass transfer materials and low impact development materials.
- Water reuse as part of the urban water cycle: volumetric and contaminant load impacts
- Unit operation and process modeling: scalable physical models and computational fluid dynamics (CFD).
- Integrated physical, chemical, biological and thermal treatment phenomena for water cycle components.
- Coupling fundamental monitoring and material balance testing with urban water modeling.
- Fundamental and applied studies of physical-chemical water treatment processes, such as adsorption, coagulation, ion exchange, and oxidation, for a wide range of water qualities including surface water, groundwater, membrane concentrate, landfill leachate, and human urine.
- Innovative applications of ion exchange for water treatment.
- Fundamental studies in aquatic chemistry with a focus on the role of natural organic matter.
- Fundamental and applied studies of adsorption and photocatalysis, including surface optimization
- Bottom up integrated urban water system simulation and optimization

### **Sustainability Science & Engineering**

- Rational design of nanomaterial through acute and full-life-cycle toxicity assessment
- Life cycle assessment calculations and comparisons of alternative energy and materials options
- Industrial ecology
- Corporate water resources sustainability
- Campus green building codes
- Green laboratory techniques
- Operation of buildings to meet green energy requirements

### **Systems Ecology and Ecological Engineering**

- Ecological Engineering
- Emergy Analysis
- Wetlands ecosystem research
- Ecological Modeling
- Estuarine Systems

### **Water Resources**

- Contaminant transport and fate
- Decision support systems
- Ecohydrology and hydrologic restoration
- Hydrology
- Stormwater control
- Water resources planning and management
- Water conservation
- Urban water infrastructure

Graduate students can also combine one or more of the above areas with specialties in other departments at the University of Florida.

The department participates in the hydrologic sciences interdisciplinary concentration that is offered through 9 departments in 3 colleges. This concentration is described under Interdisciplinary Graduate Studies.

Direct admission into the Master of Science and Doctor of Philosophy programs requires a bachelor's degree in engineering or in a basic science such as chemistry, geology, physics, biology, or mathematics. Persons with a degree in a nontechnical field may also be admitted into this program after completing appropriate technical courses. Direct admission into the Master of Engineering program requires a bachelor's degree in engineering.

Requirements for a master's degree normally take 12 to 24 months to complete. The length of time required for the Doctor of Philosophy degree depends partly on the research topic, and may be completed in 3 years, but often takes

longer, depending on prior academic experience.

**Combined degree program:** The department offers a combined bachelor's/master's degree program. This program allows qualified students to earn both a bachelor's degree and a master's degree, with a savings of 12 credits.

**Joint program:** The Environmental Engineering Sciences Department, in partnership with the Levin College of Law, offers a joint program leading to the M.S. or M.E. degree in environmental engineering sciences and the Juris Doctor degree. Twelve credits of appropriate course work are counted toward both degrees.

For more information, please see our website: <http://www.essie.ufl.edu>.

## **Degrees Offered with a Major in Environmental Engineering Sciences**

### Doctor of Philosophy

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

### Master of Engineering

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

### Master of Science

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Wetland Sciences

## **Courses**

- CEG 5206: Geosensing I

- CWR 6115: Surface Hydrology
- CWR 6116: Advanced Surface Hydrology
- CWR 6252: Environmental Biochemistry of Trace Metals
- CWR 6536: Stochastic Subsurface Hydrology
- CWR 6537: Contaminant Subsurface Hydrology
- EES 5105: Advanced Wastewater Microbiology
- EES 5107: Ecological and Biological Systems
- EES 5207: Environmental Chemistry
- EES 5245: Water Quality Analysis
- EES 5305C: Ecological and General Systems
- EES 5306: Energy Analysis
- EES 5307: Ecological Engineering
- EES 5315: Ecology and the Environment
- EES 5415: Environmental Health
- EES 6007: Advanced Energy and Environment
- EES 6009: Ecological Economics
- EES 6026C: Environmental Systems Dynamics
- EES 6028: Spatial Modeling Using Geographic Information Systems
- EES 6051: Advanced Environmental Planning and Design
- EES 6135: Aquatic Microbiology
- EES 6136: Aquatic Autotrophs
- EES 6137: Aquatic Heterotrophs
- EES 6140: Biology of Exotic Species
- EES 6371: Environmental Meteorology and Oceanography
- EES 6208: Principles of Water Chemistry I
- EES 6209: Principles of Water Chemistry II
- EES 6225: Atmospheric Chemistry
- EES 6246: Advanced Water Analysis
- EES 6301: Comparative Approaches in Systems Ecology
- EES 6308C: Wetland Ecology
- EES 6309: Wetland Treatment Systems
- EES 6318: Principles of Industrial Ecology
- EES 6335: Springs Ecosystems
- EES 6356: Estuarine Systems
- EES 6405: Environmental Toxicology
- ENV 6439: Activated Carbon: Environmental Design and Application
- ENV 5072: Pollution Control and Prevention
- ENV 5075: Environmental Policy
- ENV 5105: Foundations of Air Pollution
- ENV 5305: Advanced Solid Waste Treatment Design
- ENV 5306: Municipal Refuse Disposal
- ENV 5518: Field Methods in Environmental Hydrology
- ENV 5520: Fluid Flow in Environmental Systems
- ENV 5555: Wastewater Treatment
- ENV 5565: Hydraulic Systems Design
- ENV 6050: Advanced Pollutant Transport
- ENV 6052: Immiscible Fluids in Porous Media
- ENV 6116: Air Pollution Sampling and Analysis
- ENV 6126: Air Pollution Control Design

- ENV 6130: Aerosol Mechanics
- ENV 6146: Atmospheric Dispersion Modeling
- ENV 6215: Health Physics
- ENV 6216: Radioactive Wastes
- ENV 6301: Advanced Solid Waste Containment Design
- ENV 6435: Advanced Water Treatment Process Design
- ENV 6435C: Advanced Water Treatment Process Design
- ENV 6435L: Water Treatment Process Design Laboratory
- ENV 6437: Advanced Wastewater System Design
- ENV 6438: Advanced Potable Water Systems Design
- ENV 6441: Water Resources Planning and Management
- ENV 6416: Advanced Stormwater Control Systems
- ENV 6508: Wetland Hydrology
- ENV 6510: Groundwater Restoration
- ENV 6511: Biological Wastewater Treatment
- ENV 6556: Advanced Waste Treatment Operations
- ENV 6617: Principles of Green Engineering Design and Sustainability
- ENV 6905: Individual Work
- ENV 6910: Supervised Research
- ENV 6916: Nonthesis Project
- ENV 6932: Special Problems in Environmental Engineering
- ENV 6935: Graduate Environmental Engineering Seminar
- ENV 6971: Research for Master's Thesis
- ENV 7979: Advanced Research
- ENV 7980: Research for Doctoral Dissertation

### **Hydrology / Water Resources Shared Courses**

- CGN 6905: Special Problems in Civil Engineering
- CWR 5125: Groundwater Flow I
- CWR 5127: Evaluation of Groundwater Quality
- CWR 5235: Open Channel Hydraulics
- CWR 6115: Surface Hydrology
- CWR 6126: Variable-Density Groundwater Flow
- CWR 6525: Groundwater Flow II
- CWR 6537: Contaminant Subsurface Hydrology
- EGM 5816: Intermediate Fluid Dynamics
- ENV 5518: Field Methods in Environmental Hydrology
- ENV 5565: Hydraulic Systems Design
- ENV 6050: Advanced Pollutant Transport
- ENV 6052: Immiscible Fluids in Porous Media
- ENV 6441: Water Resources Planning and Management
- ENV 6508: Wetland Hydrology
- ENV 6932: Special Problems in Environmental Engineering

### **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Industrial and Systems Engineering Department**

*Chair:* J. Geunes.

*Graduate Coordinators:* P. Momcilovic and J.P. Richard.

*Complete faculty listing by department:* Follow this link.

The Department of Industrial and Systems Engineering offers the Master of Engineering and the Master of Science degrees, each with a thesis or nonthesis option, with specialization in engineering management, manufacturing and logistics systems engineering, operations research, quality engineering, and special interest options such as health systems. In addition, the Department offers the Engineer degree and the Doctor of Philosophy degree with specialization in linear, combinatorial, nonlinear, and global optimization; supply chain management and e-commerce; financial engineering; manufacturing management; facilities location and layout; quality engineering; and stochastic processes.

Complete descriptions of the requirements for the M.E., M.S., Engineer, and Ph.D. degrees are provided in the *General Information* section of this catalog.

A degree in one of the engineering disciplines or in mathematics, statistics, physics, computer sciences, quantitative management, or similar fields is prerequisite. Where the student's background is deficient, an articulation program of foundation courses will be required.

The Department offers a combined bachelor's/master's degree program of B.S.I.S.E./Master of Science (Management), B.S.I.S.E./Master of Engineering or Master of Science, and a B.S. from disciplines within the College of Engineering/Master of Science or Master of Engineering. Contact the graduate coordinator for information.

## **Industrial and Systems Engineering**

### **College**

College of Engineering

### **Department/School**

Industrial and Systems Engineering Department

### **Industrial and Systems Engineering Program Information**

The Department of Industrial and Systems Engineering offers the Master of Engineering degree, the Master of Science degree, the Engineer degree, and the Doctor of Philosophy degree. Complete descriptions of the minimum requirements for the M.E., M.S., Engineer, and Ph.D. degrees are provided in the Graduate Degrees section of this catalog.

### **Master of Science (M.S.) Program**

Admission to the Master of Science program is open to students with an undergraduate degree in engineering, mathematics, statistics, computer science, physics, quantitative management, or similar field. The M.S. degree does not require a thesis, although a student interested in pursuing research or possibly continuing their education beyond a master's degree is encouraged to write one.

### **Master of Engineering (M.E.) Program**

Students seeking admission to the Master of Engineering program must have a bachelor's degree from an ABET-accredited curriculum or have taken sufficient articulation course work to meet the minimum requirements specified by ABET. The M.E. degree does not require a thesis and is generally considered a terminal degree.

### **Ph.D. Program**

The doctoral program in Industrial and Systems Engineering focuses on operations research (linear, integer, nonlinear, and stochastic programming, combinatorial and global optimization, and stochastic processes) with applications in areas such as health care, supply chain management, data mining, transportation, financial engineering, security, and manufacturing management.

For more information, please see our website: <http://www.ise.ufl.edu>.

## **Degrees Offered with a Major in Industrial and Systems Engineering**

Doctor of Philosophy

without a concentration

concentration in Quantitative Finance

Engineer

Master of Engineering

Master of Science

## **Industrial and Systems Engineering Courses**

- EIN 6227: Advanced Quality Management and Engineering for Business Processes
- EIN 6336: Advanced Production and Inventory Control
- EIN 6357: Advanced Engineering Economy
- EIN 6367: Facilities Layout and Location
- EIN 6392: Manufacturing Management
- EIN 6905: Special Problems
- EIN 6910: Supervised Research
- EIN 6918: Graduate Seminar

- EIN 6940: Supervised Teaching
- EIN 6971: Research for Master's Thesis
- EIN 6972: Research for Engineer's Thesis
- EIN 7933: Special Problems
- EIN 7979: Advanced Research
- EIN 7980: Research for Doctoral Dissertation
- ESI 5236: Reliability Engineering
- ESI 6162C: Advanced Industrial Applications of Microprocessors
- ESI 6314: Deterministic Methods in Operations Research
- ESI 6321: Applied Probability Methods in Engineering
- ESI 6323: Models for Supply Chain Management
- ESI 6341: Intro to Stochastic Optimization
- ESI 6355: Decision Support Systems for Industrial and Systems Engineers
- ESI 6417: Linear Programming and Network Optimization
- ESI 6418: Linear Programming Extensions and Applications
- ESI 6420: Fundamentals of Mathematical Programming
- ESI 6429: Introduction to Nonlinear Optimization
- ESI 6448: Discrete Optimization Theory
- ESI 6449: Integer Programming
- ESI 6470: Principles of Manufacturing Systems Engineering
- ESI 6492: Global Optimization
- ESI 6529: Digital Simulation Techniques
- ESI 6533: Advanced Simulation Design and Analysis
- ESI 6546: Stochastic Modeling and Analysis
- ESI 6552: Systems Architecture
- ESI 6553: Systems Design
- ESI 6555: Systems Management
- ESI 6912: Advanced Topics in ISE

## College of Engineering Courses

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Materials Science and Engineering Department

*Chair:* S. Phillpot

*MSE Graduate Coordinator:* J. J. Mecholsky, Jr.

*NE Graduate Coordinator:* E. Dugan

*Complete faculty listing by department:* Follow this link.

The Department of Materials Science and Engineering offers the Master of Science and Doctor of Philosophy degrees in Materials Science & Engineering (MSE) and Nuclear Engineering (NE). Requirements for these degrees are described in the General Information section of this catalog.

Degrees in MSE include specific areas of research and study in biomaterials, ceramics, composites, computational materials science, electronic materials, metals, polymers, nanomaterials, and nuclear materials. Degrees in NE include specific areas of research and study in advanced nuclear power concepts and systems, digital control of nuclear reactor power plant technology and operations, reactor dynamics and control, and advanced radiation detectors and analysis in support of nuclear forensics and homeland security.

**Nontraditional Degree Programs:** The Department offers combined bachelor/master's degree programs: MSE BS/MS, NE BS/MS, and students may also combine the MSE BS with the MS awarded through the Dept. of Biomedical Engineering (BME). The combined bachelor/master's program allows qualified students to earn both degrees in materials science and engineering with savings of a tangible number of credit hours. Qualified students are allowed to begin master's course work in their junior years and double count specific graduate courses for both degrees. The master's degree may be completed within 2 to 3 semesters after completing the bachelor's degree. Program admission requirements are (1) satisfaction of Graduate School admission requirements prior to the beginning of the senior year, (2) an upper division GPA of at least 3.5 in MSE and 3.4 in NE, (3) for MSE, completion of a minimum of 18 credit hours of courses, (4) admission by the Department's Graduate Admission Committee and approval by the College of Engineering and the Graduate School. For more information, contact the Department.

The J.D./M.S. in MSE (thesis/nonthesis) is a joint degree program culminating in both the Juris Doctor degree, awarded by the College of Law, and the Master of Science (thesis/nonthesis), awarded by the College of Engineering. Under this program, a student can earn both degrees in approximately 1 year less than it would take to attain both degrees if pursued consecutively.

Concurrent M.D./Ph.D. degrees are offered through a collaborative program between the College of Medicine and Materials Science and Engineering. For more information, please contact the Department.

To be eligible for regular admission to the graduate program within the Department, the student must hold a B.S. in an appropriate major. Because of the breadth of MSE graduate programs, students with degrees in materials, ceramics, metallurgy, other engineering, mathematics, or science areas (such as biology, chemistry, or physics) have found ample opportunities to pursue their research and training areas of interest.

The faculties of the Department of Materials Science and Engineering (MSE) of the University of Florida (UF) and the University of Roma Tor Vergata (URTV) have approved a cooperative degree program in Materials Science and Engineering culminating in a Doctor of Philosophy degree, awarded by both universities. Contact the Department for details.

## **Materials Science and Engineering**

### **College**

College of Engineering

### **Department/School**

Materials Science and Engineering Department



## **Degrees Offered with a Major in Materials Science and Engineering**

Doctor of Philosophy

without a concentration

in concentration in Clinical and Translational Science

Master of Engineering

Master of Science

## **Courses**

- EMA 5008: Particle Science and Technology: Theory and Practice
- EMA 5095: Critical Analysis of Research in Materials Science & Engineering
- EMA 5108: Vacuum Science and Technology
- EMA 5365: Biomimetic Synthesis
- EMA 6001: Properties of Materials - A Survey
- EMA 6005: Thin and Thick Films
- EMA 6105: Fundamentals and Applications of Surface Science
- EMA 6106: Advanced Phase Diagrams
- EMA 6107: High Temperature Materials
- EMA 6109: Physical Chemistry of High Temperature Materials
- EMA 6110: Electron Theory of Solids for Materials Scientists I
- EMA 6111: Electron Theory of Solids for Materials Scientists II
- EMA 6114: Advanced Materials Principles 2
- EMA 6128: Materials Microstructures
- EMA 6136: Diffusion, Kinetics, and Transport Phenomena
- EMA 6165: Polymer Physical Science
- EMA 6166: Polymer Composites
- EMA 6226: Synthesis and Properties of Metallic Nanostructures
- EMA 6227: Advanced Mechanical Metallurgy II
- EMA 6265: Mechanical Properties of Polymers
- EMA 6313: Advanced Materials Principles I
- EMA 6315: Colloidal Hydrodynamics
- EMA 6316: Materials Thermodynamics
- EMA 6319: Applied Colloid and Interfacial Chemistry for Engineers
- EMA 6412: Synthesis and Characterization of Electronic Materials
- EMA 6416: Organic Electronics
- EMA 6445: Electroceramics
- EMA 6446: Solid State Ionics
- EMA 6448: Ceramic Processing
- EMA 6461: Polymer Characterization
- EMA 6507: Scanning Electron Microscopy and Microanalysis
- EMA 6507C

- EMA 6507L: Scanning Electron Microscopy and Microanalysis Lab
- EMA 6510: Survey of Materials Analysis Techniques
- EMA 6512C: X-ray Scattering for Thin Film Analysis
- EMA 6518: Transmission Electron Microscopy
- EMA 6518L: Transmission Electron Microscopy Laboratory
- EMA 6519L: Specialized Research Techniques in Materials Science
- EMA 6540: Fundamentals of Crystallography
- EMA 6541: Applied Crystallography and Powder Diffraction
- EMA 6580: Science of Biomaterials I
- EMA 6581: Polymeric Biomaterials
- EMA 6589: Mechanical Behavior of Biomaterials
- EMA 6590: Advances in Biomaterials and Tissue Engineering for Healthcare
- EMA 6591: Clinical Applications of Biomaterials and Tissue Engineering
- EMA 6616: Advanced Electronic Materials Processing
- EMA 6625: Advanced Metals Processing
- EMA 6667: Polymer Processing
- EMA 6715: Fracture of Brittle Materials
- EMA 6803: Classical Methods in Computational Materials Science
- EMA 6804: Quantum Methods in Computational Materials Science
- EMA 6805: Mathematical Methods in Materials Science I
- EMA 6806: Mathematical Methods in Materials Science II
- EMA 6808: Error Analysis and Optimization Methodologies in Materials Research
- EMA 6905: Individual Work in Materials Science and Engineering
- EMA 6910: Supervised Research
- EMA 6936: Seminar in Materials Science and Engineering
- EMA 6938: Special Topics in Materials Science and Engineering
- EMA 6971: Research for Master's Thesis
- EMA 6xxxA
- EMA 6xxxB
- EMA 6XXXL
- EMA 7979: Advanced Research
- EMA 7980: Research for Doctoral Dissertation
- ENU 6805: Introduction to Nuclear Reactor Materials

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Mechanical and Aerospace Engineering Department**

*Chair:* David W. Hahn

*Graduate Coordinator:* David W. Mikolaitis

*Complete faculty listing by department:* Follow this link.

The Department of Mechanical and Aerospace Engineering offers the degrees of Master of Science (thesis or nonthesis), Master of Engineering (thesis or nonthesis), and Doctor of Philosophy in Aerospace Engineering and Mechanical Engineering. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

Prospective students are expected to have strong backgrounds in engineering. For the first year of study, each student is generally required to take a minimum of three regular courses each semester. There are three areas of specialization available for graduate studies: dynamics, systems, and control; solid mechanics, design, and manufacturing; thermal science and fluid dynamics. Within a specialization there are unique opportunities to conduct analytical, experimental, and/or numerical study in a wide variety of challenging problems.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

For more information, please see the program pages below and our website:  
<http://www.mae.ufl.edu/current/graduate>.

## **Aerospace Engineering**

### **College**

College of Engineering

### **Department/School**

Mechanical and Aerospace Engineering Department

### **Aerospace Engineering Program Information**

The Department of Mechanical and Aerospace Engineering offers the degrees of Master of Science (thesis or non-thesis), Master of Engineering (thesis or non thesis), and Doctor of Philosophy in Aerospace Engineering. Official minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

#### **Master of Science & Master of Engineering**

Any master's degree candidate may elect to pursue the Master of Science degree (M.S.), however only those holding ABET-accredited baccalaureate degrees in engineering may choose the Master of Engineering degree (M.E.). All other degree requirements remain the same.

A total of 30 credit hours is required for the Master's degree. The Master's degree, with thesis option, includes a minimum of 24 graded credit hours of coursework (excluding S/U courses) and up to 6 credits of thesis research. For students pursuing the non-thesis degree option, a total of 30 graded credit hours (excluding S/U courses) is required. For both the thesis and non-thesis degree, up to 6 credits of out of department coursework at the 3000 or 4000 level (excluding EGN courses and S/U courses) may be completed to satisfy degree requirements, as long as the coursework completed is included in an approved Plan of Study.

A comprehensive final examination is required by the Graduate School for the M.E. or M.S. non-thesis degree option. Passing the written qualifying Ph.D. exam may substitute for the M.S. non-thesis examination for those continuing towards for Ph.D. NOTE: The exam must be completed in either the semester of graduation or the proceeding semester in which the degree is to be conferred.

### **Doctor of Philosophy**

The Doctor of Philosophy (Ph.D.) is a research intensive degree requiring independent mastery of a field of knowledge. As such, considerable flexibility is allowed by the Graduate School and by MAE in the tailoring of individual programs.

All Ph.D. students must take a minimum of 39 graded credit hours (excludes S/U graded courses) beyond the B.S. degree. Students are expected to complete a Plan of Study by the second term of enrollment, which should include a tentative title for the student's dissertation. As the student progresses toward the degree, any significant deviations in their program from the approved Plan of Study should be discussed and approved by the student's advisor, and recorded in the submission of a revised Plan of Study.

### **Guidelines for Plan of Study**

During the first year of graduate study, each student should complete a minimum of three didactic courses in the Fall and Spring semesters. Generally, core courses are selected, as well as an appropriate mix of elective courses for the chosen specialization. (Ph.D. Students should include coursework to prepare for the qualifying exam.) Except for a minority of students doing interdisciplinary specializations whose Plans of Study will be reviewed by the Graduate Committee, a student will follow the requirements of one of the three MAE graduate study groups:

- Dynamics, Systems, and Control (DSC)
- Solid Mechanics, Design, and Manufacturing (SMDM)
- Thermal Science and Fluid Dynamics (TSFD)

The Plan of Study (and qualifying exam if a Ph.D. student) will be based upon the chosen group. Please see the MAE graduate policy handbook (<http://www.mae.ufl.edu/current/graduate/mae-graduate-policies>) for complete details.

Additional information about the department and graduate programs can be found at <http://www.mae.ufl.edu>.

### **Degrees Offered with a Major in Aerospace Engineering**

Doctor of Philosophy

Master of Engineering

Master of Science

### **Mechanical and Aerospace Engineering Departmental Courses**

- BME 5580: Introduction to Microfluidics and BioMEMS
- EAS 5938: Special Topics in Aerospace Engineering
- EAS 6135: Molecular Theory of Fluid Flows
- EAS 6138: Gasdynamics
- EAS 6242: Advanced Structural Composites
- EAS 6415: Guidance and Control of Aerospace Vehicles
- EAS 6905: Aerospace Research

- EAS 6910: Supervised Research
- EAS 6935: Graduate Seminar
- EAS 6939: Special Topics in Aerospace Engineering
- EAS 6971: Research for Master's Thesis
- EAS 7979: Advanced Research
- EAS 7980: Research for Doctoral Dissertation
- EGM 5423: High Strain Rate Behavior of Materials
- EGM 5005: Laser Principles and Applications
- EGM 5111L: Experimental Stress Analysis
- EGM 5121C: Data Measurement and Analysis
- EGM 5533: Applied Elasticity and Advanced Mechanics of Solids
- EGM 5584: Biomechanics of Soft Tissue
- EGM 5816: Intermediate Fluid Dynamics
- EGM 5933: Special Topics in Engineering Science and Mechanics
- EGM 6006: Laser-Based Diagnostics
- EGM 6321: Principles of Engineering Analysis I
- EGM 6322: Principles of Engineering Analysis II
- EGM 6323: Principles of Engineering Analysis III
- EGM 6341: Numerical Methods of Engineering Analysis I
- EGM 6342: Fundamentals of Computational Fluid Dynamics
- EGM 6352: Advanced Finite Element Methods
- EGM 6365: Structural Optimization
- EGM 6570: Principles of Fracture Mechanics
- EGM 6611: Continuum Mechanics
- EGM 6671: Inelastic Materials
- EGM 6812: Fluid Mechanics I
- EGM 6813: Fluid Mechanics II
- EGM 6855: Bio-Fluid Mechanics and Bio-Heat Transfer
- EGM 6905: Individual Study
- EGM 6910: Supervised Research
- EGM 6934: Special Topics in Engineering Mechanics
- EGM 6936: Graduate Seminar
- EGM 6971: Research for Master's Thesis
- EGM 7819: Computational Fluid Dynamics
- EGM 7845: Turbulent Fluid Flow
- EGM 7979: Advanced Research
- EGM 7980: Research for Doctoral Dissertation
- EML 5045: Computational Methods for Design and Manufacturing
- EML 5104: Classical and Statistical Thermodynamics
- EML 5124: Two-Phase Flow and Boiling Heat Transfer
- EML 5131: Combustion
- EML 5215: Analytical Dynamics I
- EML 5223: Structural Dynamics
- EML 5224: Acoustics
- EML 5233: Failure of Materials in Mechanical Design
- EML 5311: Control System Theory
- EML 5318: Computer Control of Machines and Processes
- EML 5455: Clean Combustion Technology
- EML 5465: Energy Management for Mechanical Engineers

- EML 5515: Gas Turbines and Jet Engines
- EML 5516: Design of Thermal Systems
- EML 5526: Finite Element Analysis and Application
- EML 5595: Mechanics of the Human Locomotor System
- EML 5598: Orthopedic Biomechanics
- EML 5605: Advanced Refrigeration
- EML 5714: Introduction to Compressible Flow
- EML 6146: Microscale Heat Transfer
- EML 6154: Conduction Heat Transfer
- EML 6155: Convective Heat Transfer I
- EML 6156: Multiphase Convection Heat Transfer
- EML 6157: Radiation Heat Transfer
- EML 6216: Analytical Dynamics II
- EML 6229: Introduction to Random Dynamical Systems
- EML 6267: Structural Dynamics of Production Machinery
- EML 6278: Advanced Rotor Dynamics
- EML 6281: Geometry of Mechanisms and Robots I
- EML 6282: Geometry of Mechanisms and Robots II
- EML 6323: Nontraditional Manufacturing
- EML 6324: Fundamentals of Production Engineering
- EML 6350: Introduction to Nonlinear Control
- EML 6351: Nonlinear Control II: Adaptive Control
- EML 6352: Optimal Estimation and Kalman Filtering
- EML 6365: Robust Control Synthesis
- EML 6417: Solar Energy Utilization
- EML 6451: Energy Conversion
- EML 6606: Advanced Air Conditioning
- EML 6905: Individual Projects in Mechanical Engineering
- EML 6934: Special Topics in Mechanical Engineering
- EML 6936: Nonthesis Project
- EML 6971: Research for Master's Thesis
- EML 7979: Advanced Research
- EML 7980: Research for Doctoral Dissertation

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Mechanical Engineering**

## **College**

College of Engineering

## **Department/School**

Mechanical and Aerospace Engineering Department

## **Mechanical Engineering Program Information**

The Department of Mechanical and Aerospace Engineering offers the degrees of Master of Science (thesis or non-thesis), Master of Engineering (thesis or non thesis), and Doctor of Philosophy in Mechanical Engineering. Official minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

### **Master of Science & Master of Engineering**

Any master's degree candidate may elect to pursue the Master of Science degree (M.S.), however only those holding ABET-accredited baccalaureate degrees in engineering may choose the Master of Engineering degree (M.E.). All other degree requirements remain the same.

A total of 30 credit hours is required for the Master's degree. The Master's degree, with thesis option, includes a minimum of 24 graded credit hours of coursework (excluding S/U courses) and up to 6 credits of thesis research. For students pursuing the non-thesis degree option, a total of 30 graded credit hours (excluding S/U courses) is required. For both the thesis and non-thesis degree, up to 6 credits of out of department coursework at the 3000 or 4000 level (excluding EGN courses and S/U courses) may be completed to satisfy degree requirements, as long as the coursework completed is included in an approved Plan of Study.

A comprehensive final examination is required by the Graduate School for the M.E. or M.S. non-thesis degree option. Passing the written qualifying Ph.D. exam may substitute for the M.S. non-thesis examination for those continuing towards for Ph.D. NOTE: The exam must be completed in either the semester of graduation or the proceeding semester in which the degree is to be conferred.

### **Doctor of Philosophy**

The Doctor of Philosophy (Ph.D.) is a research intensive degree requiring independent mastery of a field of knowledge. As such, considerable flexibility is allowed by the Graduate School and by MAE in the tailoring of individual programs.

All Ph.D. students must take a minimum of 39 graded credit hours (excludes S/U graded courses) beyond the B.S. degree. Students are expected to complete a Plan of Study by the second term of enrollment, which should include a tentative title for the student's dissertation. As the student progresses toward the degree, any significant deviations in their program from the approved Plan of Study should be discussed and approved by the student's advisor, and recorded in the submission of a revised Plan of Study.

### **Guidelines for Plan of Study**

During the first year of graduate study, each student should complete a minimum of three didactic courses in the Fall and Spring semesters. Generally, core courses are selected, as well as an appropriate mix of elective courses for the chosen specialization. (Ph.D. Students should include coursework to prepare for the qualifying exam.) Except for a minority of students doing interdisciplinary specializations whose Plans of Study will be reviewed by the Graduate Committee, a student will follow the requirements of one of the three MAE graduate study groups:

- Dynamics, Systems, and Control (DSC)

- Solid Mechanics, Design, and Manufacturing (SMDM)
- Thermal Science and Fluid Dynamics (TSFD)

The Plan of Study (and qualifying exam if a Ph.D. student) will be based upon the chosen group. Please see the MAE graduate policy handbook (<http://www.mae.ufl.edu/current/graduate/mae-graduate-policies>) for complete details.

Additional information about the department can be found at <http://www.mae.ufl.edu>.

## **Degrees Offered with a Major in Mechanical Engineering**

Doctor of Philosophy

Master of Engineering

Master of Science

## **Mechanical and Aerospace Engineering Departmental Courses**

- BME 5580: Introduction to Microfluidics and BioMEMS
- EAS 5938: Special Topics in Aerospace Engineering
- EAS 6135: Molecular Theory of Fluid Flows
- EAS 6138: Gasdynamics
- EAS 6242: Advanced Structural Composites
- EAS 6415: Guidance and Control of Aerospace Vehicles
- EAS 6905: Aerospace Research
- EAS 6910: Supervised Research
- EAS 6935: Graduate Seminar
- EAS 6939: Special Topics in Aerospace Engineering
- EAS 6971: Research for Master's Thesis
- EAS 7979: Advanced Research
- EAS 7980: Research for Doctoral Dissertation
- EGM 5423: High Strain Rate Behavior of Materials
- EGM 5005: Laser Principles and Applications
- EGM 5111L: Experimental Stress Analysis
- EGM 5121C: Data Measurement and Analysis
- EGM 5533: Applied Elasticity and Advanced Mechanics of Solids
- EGM 5584: Biomechanics of Soft Tissue
- EGM 5816: Intermediate Fluid Dynamics
- EGM 5933: Special Topics in Engineering Science and Mechanics
- EGM 6006: Laser-Based Diagnostics
- EGM 6321: Principles of Engineering Analysis I
- EGM 6322: Principles of Engineering Analysis II
- EGM 6323: Principles of Engineering Analysis III
- EGM 6341: Numerical Methods of Engineering Analysis I
- EGM 6342: Fundamentals of Computational Fluid Dynamics
- EGM 6352: Advanced Finite Element Methods
- EGM 6365: Structural Optimization
- EGM 6570: Principles of Fracture Mechanics
- EGM 6611: Continuum Mechanics



- EGM 6671: Inelastic Materials
- EGM 6812: Fluid Mechanics I
- EGM 6813: Fluid Mechanics II
- EGM 6855: Bio-Fluid Mechanics and Bio-Heat Transfer
- EGM 6905: Individual Study
- EGM 6910: Supervised Research
- EGM 6934: Special Topics in Engineering Mechanics
- EGM 6936: Graduate Seminar
- EGM 6971: Research for Master's Thesis
- EGM 7819: Computational Fluid Dynamics
- EGM 7845: Turbulent Fluid Flow
- EGM 7979: Advanced Research
- EGM 7980: Research for Doctoral Dissertation
- EML 5045: Computational Methods for Design and Manufacturing
- EML 5104: Classical and Statistical Thermodynamics
- EML 5124: Two-Phase Flow and Boiling Heat Transfer
- EML 5131: Combustion
- EML 5215: Analytical Dynamics I
- EML 5223: Structural Dynamics
- EML 5224: Acoustics
- EML 5233: Failure of Materials in Mechanical Design
- EML 5311: Control System Theory
- EML 5318: Computer Control of Machines and Processes
- EML 5455: Clean Combustion Technology
- EML 5465: Energy Management for Mechanical Engineers
- EML 5515: Gas Turbines and Jet Engines
- EML 5516: Design of Thermal Systems
- EML 5526: Finite Element Analysis and Application
- EML 5595: Mechanics of the Human Locomotor System
- EML 5598: Orthopedic Biomechanics
- EML 5605: Advanced Refrigeration
- EML 5714: Introduction to Compressible Flow
- EML 6146: Microscale Heat Transfer
- EML 6154: Conduction Heat Transfer
- EML 6155: Convective Heat Transfer I
- EML 6156: Multiphase Convection Heat Transfer
- EML 6157: Radiation Heat Transfer
- EML 6216: Analytical Dynamics II
- EML 6229: Introduction to Random Dynamical Systems
- EML 6267: Structural Dynamics of Production Machinery
- EML 6278: Advanced Rotor Dynamics
- EML 6281: Geometry of Mechanisms and Robots I
- EML 6282: Geometry of Mechanisms and Robots II
- EML 6323: Nontraditional Manufacturing
- EML 6324: Fundamentals of Production Engineering
- EML 6350: Introduction to Nonlinear Control
- EML 6351: Nonlinear Control II: Adaptive Control
- EML 6352: Optimal Estimation and Kalman Filtering
- EML 6365: Robust Control Synthesis

- EML 6417: Solar Energy Utilization
- EML 6451: Energy Conversion
- EML 6606: Advanced Air Conditioning
- EML 6905: Individual Projects in Mechanical Engineering
- EML 6934: Special Topics in Mechanical Engineering
- EML 6936: Nonthesis Project
- EML 6971: Research for Master's Thesis
- EML 7979: Advanced Research
- EML 7980: Research for Doctoral Dissertation

## College of Engineering Courses

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## Nuclear and Radiological Engineering Department

Chair: D. Hintenlang

Graduate Coordinator: W. Bolch

Complete faculty listing: [Follow this link.](#)

The Department offers the degrees of Master of Science, Master of Engineering, and Doctor of Philosophy in nuclear engineering sciences with emphases in nuclear power engineering, medical physics, and health physics. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The medical physics and health physics options are offered through interdepartmental programs in cooperation with the College of Medicine (see the *Health Physics and Medical Physics* description under *Interdisciplinary Graduate Studies*).

**Combined Program** — The Department also offers a B.S.N.E./M.S. degree program. This program allows qualified students to earn both a bachelor's degree and a master's degree with a savings of one semester. Qualified students may begin their master's program while seniors counting 12 hours of specified nuclear engineering sciences graduate courses for both the bachelor's and master's degree requirements. Seniors admitted to the combined program are eligible for teaching and research assistantships. Program admission requirements are (1) satisfaction of Graduate School admission requirements for a master's degree, (2) an upper-division (undergraduate) GPA of at least 3.6, and (3) completion of specified bachelor's degree requirements.

The graduate program has two major programs, Nuclear Engineering and Medical Physics. Specific areas of research and study in Nuclear Engineering include advanced nuclear power concepts and systems, digital control of nuclear reactor power plant technology and operations, reactor dynamics and control, and advanced radiation detectors and analysis in support of nuclear forensics and homeland security. The Medical Physics program is a CAMPEP accredited program designed to meet the professional requirements for a career in clinical service or

research and development. Areas of Medical Physics study and research include diagnostic medical imaging, radiation therapy, nuclear medicine imaging, and radiation dosimetry.

The requirement for admission to the graduate program in nuclear engineering sciences is a bachelor's degree in an approved program in engineering or in the sciences. Students applying to the Medical Physics program should have completed the equivalent of at least a minor in physics. If the student's background is considered deficient for the planned course of study, an articulation program of background courses will be required.

Depending on professional objectives, the student may select a non-thesis option for the MS degree and substitute 8 credits of graduate-level course work, of which at least 6 credits are in nuclear engineering sciences, including a 4-credit (minimum) special project, ENU 6936. Completion of 32 credits will meet the minimum requirements for the non-thesis MS degree.

Normally, the requirements for a master's degree can be completed in 12 months. Students in the medical physics option usually take 21 to 24 months to complete the master's degree, which requires 40-42 credit hours. For a master's degree in health physics, a student must complete 42 hours of credit. If articulation work is required, it may take longer, depending upon the extent of the student's deficiency.

## **Nuclear Engineering Sciences**

### **College**

College of Engineering

### **Department/School**

Nuclear and Radiological Engineering Department

### **Degrees Offered with a Major in Nuclear Engineering Sciences**

Doctor of Philosophy

without a concentration

concentration in Imaging Science and Technology

Master of Engineering

Master of Science

### **Courses**

- ENU 5142: Reliability and Risk Analysis for Nuclear Facilities
- ENU 5176L: Principles of Nuclear Reactor Operations Laboratory
- ENU 5186: Nuclear Fuel Cycles
- ENU 5196: Nuclear Reactor Power Plant System Dynamics and Control
- ENU 5516L: Nuclear Engineering Laboratory II

- ENU 5615C: Nuclear Radiation Detection and Instrumentation
- ENU 5615L: Nuclear Radiation Detection and Instrumentation Lab
- ENU 5626: Radiation Biology
- ENU 5658: Imaging System Analysis with Medical Physics Applications
- ENU 5705: Advanced Concepts for Nuclear Energy
- ENU 6051: Radiation Interaction Basics and Applications I
- ENU 6052: Radiation Transport Basics and Applications
- ENU 6053: Radiation Interaction Basics and Applications II
- ENU 6061: Survey of Medical Radiological Physics
- ENU 6106: Nuclear Reactor Analysis I
- ENU 6107: Nuclear Reactor Analysis II
- ENU 6126: Fundamentals of Reactor Kinetics
- ENU 6135: Nuclear Thermal Hydraulics
- ENU 6136: Advanced Nuclear Thermal Hydraulics
- ENU 6623: Radiation Dosimetry
- ENU 6627: Therapeutic Radiological Physics
- ENU 6636: Medical Radiation Shielding & Protection
- ENU 6651: Clinical Rotation in Radiation Therapy
- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6655: Advanced Diagnostic Radiological Physics
- ENU 6657: Diagnostic Radiological Physics
- ENU 6659: Nuclear Medicine Instrumentation and Procedure
- ENU 6835: Nuclear Fuels
- ENU 6905: Individual Work
- ENU 6910: Supervised Research
- ENU 6935: Nuclear and Radiological Engineering Seminar
- ENU 6936: Special Projects in Nuclear and Radiological Engineering Sciences
- ENU 6937: Special Topics in Nuclear and Radiological Engineering Sciences
- ENU 6971: Research for Master's Thesis
- ENU 6972: Research for Engineer's Thesis
- ENU 7979: Advanced Research
- ENU 7980: Research for Doctoral Dissertation

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **College of Health and Human Performance**

Dean: M. Reid

Complete faculty listings: Follow this link.

Research and teaching in HHP has an impact on almost every aspect of the human condition. The college's four centers – the Florida Center for Health Promotion, Center for Exercise Science, and the Eric Friedheim Tourism Institute – as well as its three primary departments – Applied Physiology and Kinesiology, Health Education and Behavior, and Tourism, Recreation, and Sport Management Department – place the college firmly in a position to influence and improve an array of societal problems and challenges.

For more information about the College of Health and Human Performance, please see our website: <http://hhp.ufl.edu>

Departments and Programs within the College of Health and Human Performance

College of Health and Human Performance Courses

## Health and Human Performance

### College

College of Health and Human Performance

### Health and Human Performance Program Information

The Ph.D. in Health and Human Performance is a single college-wide Ph.D. program with 6 concentrations that are housed and administered by the three departments, according to the following organizational structure:

- **Applied Physiology and Kinesiology (APK):** Ph.D. students in APK study the immediate and lasting effects of exercise and its use in disease prevention and rehabilitation. APK Ph.D. concentrations include Exercise Physiology and Biobehavioral Science, with further specializations in biomechanics, motor control and learning, exercise and performance psychology, and sports medicine / athletic training.
- **Health Education & Behavior (HEB):** Ph.D. students in HEB systematically investigate health promotion strategies aimed at modifying behaviors which will improve individual, family, workplace, and community health and well-being. The HEB Ph.D. concentration is in Health Behavior.
- **Tourism, Recreation, and Sport Management (TRSM):** TRSM Ph.D. students study the impact of tourism, recreation activities, professional and amateur sports, ecotourism, parks and beaches on the personal, social, economic, environmental and resource infrastructures of society. Ph.D. concentrations in TRSM include Natural Resource Recreation, Sport Management, and Tourism.

Students are expected to be involved in research throughout their Ph.D. program, which requires approximately three to five years of full-time study for completion. Graduates of the program are trained to assume positions as post-doctoral research scientists, or entry level professorships at colleges and universities throughout the country. The program of study is developed by the student and the supervisory committee based on the student's background, interests, and career goals, as well as faculty expertise. By design, the program is multidisciplinary and flexible, permitting students to tailor their scholarly experience to the development of research skills in their areas of concentration.

For more information, please see our website: <http://gradprograms.hhp.ufl.edu/index.php/doctoral-program>.

### Degrees Offered with a Major in Health and Human Performance

Doctor of Philosophy

without a concentration

concentration in Applied Physiology and Kinesiology

*optional second concentration in Clinical and Translational Science*

concentration in Biobehavioral Science

concentration in Clinical and Translational Science

concentration in Exercise Physiology

concentration in Health Behavior

*optional second concentration in Clinical and Translational Science*

concentration in Historic Preservation

concentration in Recreation, Parks, and Tourism

concentration in Sport Management

## **Applied Physiology and Kinesiology Departmental Courses**

- APK 5127: Assessment in Exercise Science
- APK 5404: Sport Psychology
- APK 6111L: Practicum in Exercise Physiology
- APK 6116C: Physiological Bases of Exercise and Sport Sciences
- APK 6118: Neuromuscular Adaptation to Exercise
- APK 6126: Cardiopulmonary Pathologies
- APK 6128: EKG Interpretation
- APK 6205C: Nature and Bases of Motor Performance
- APK 6206: Planning Motor Actions
- APK 6210: Controlling Motor Actions
- APK 6225: Biomechanical Instrumentation
- APK 6226C: Biomechanics of Human Motion
- APK 6406: Exercise Psychology
- APK 6408: Performance Enhancement
- APK 6410: Seminar in Exercise Psychology
- APK 6415: Seminar in Sport Psychology: Current Topics
- APK 6900: Directed Independent Study
- APK 6940: Advanced Practicum in Exercise and Sport Science
- APK 7107: Cardiovascular Exercise Physiology
- APK 7108: Environmental Stress Exercise Physiology
- APK 7117: Exercise Metabolism
- APK 7124: Free Radicals in Aging, Exercise and Disease
- APK 7129: Pulmonary Function during Exercise
- ATR 6124: Clinical Anatomy for the Exercise Sciences

- ATR 6145: Human Pathophysiology for the Exercise Sciences
- ATR 6215: Evidence-Based Orthopedic Exam I: Upper-Extremity
- ATR 6216: Evidence-Based Orthopedic Exam II: Lower-Extremity
- ATR 6304: Rehabilitation and Modalities of Athletic Injuries
- ATR 6624: Athletic Training Research and Technology I
- ATR 6625: Athletic Training Research and Technology II
- ATR 6934: Seminar in Athletic Training
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 6935: Variable International Topics
- HLP 7939: HHP PhD Professional Development Seminar
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- PET 5936: Special Topics/Seminars
- PET 6910: Supervised Research
- PET 6940: Supervised Teaching
- PET 6947: Graduate Internship in Exercise and Sport Sciences
- PET 6971: Research for Master's Thesis

## **Health Education and Behavior Departmental Courses**

- APK 6900: Directed Independent Study
- APK 6940: Advanced Practicum in Exercise and Sport Science
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 6935: Variable International Topics
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- HSC 5135: Emotional Health Education
- HSC 5138: Human Sexuality
- HSC 5142: Drug Education
- HSC 5315C: Teaching Health in Elementary Schools
- HSC 5536C: Medical Terminology for the Health Professions
- HSC 5576: Nutrition Education for Special Populations
- HSC 5606: Spirituality and Health
- HSC 5618: Advanced Exercise Therapy, Adapted Physical Activity, & Health
- HSC 5626: Minority Health Issues
- HSC 5657: Health and End-of-Life Issues
- HSC 5925: Seminar in Health Education
- HSC 5956: Writing for Professional Publications
- HSC 6037: Philosophy and Principles of Health Education
- HSC 6216: Environmental Health
- HSC 6235: Patient Health Education
- HSC 6318: Planning Health Education Programs
- HSC 6506: Epidemiology
- HSC 6567: Health Promotion and Programming in Gerontology

- HSC 6571: Contemporary Issues in Health Promotion
- HSC 6575: Women's Health Issues
- HSC 6595: HIV/AIDS Education
- HSC 6603: Theories of Health Behavior and Practice in Health Education
- HSC 6605: Scientific Foundations of Holistic Health
- HSC 6625: Trends in International Health
- HSC 6629: Health Promotion for Priority Populations
- HSC 6637: Social Marketing and Health
- HSC 6646: Community Health Methods in Injury Prevention & Control
- HSC 6665: Health Communication
- HSC 6667: Health Communication Programs
- HSC 6668: Interpersonal Communication and Health
- HSC 6695: Worksite Health Promotion
- HSC 6712: Evaluating Health Education Programs
- HSC 6735: Research Methods in Health Education
- HSC 6850: Internship in Health Education
- HSC 6904: Readings in Health Education
- HSC 6905: Independent Study
- HSC 6910: Supervised Research
- HSC 6935: Current Topics in Health Education
- HSC 6940: Supervised Teaching
- HSC 6971: Research for Master's Thesis
- HSC 6973: Project in Lieu of Thesis
- HSC 7904: Advanced Readings in Health Education
- HSC 7905: Advanced Independent Study in Health Education
- HSC 7937: Advanced Seminar in Health Education
- PEQ 5127: Advanced Instructors of Adapted Aquatics
- PET 5936: Special Topics/Seminars
- PET 6910: Supervised Research
- PET 6940: Supervised Teaching
- PET 6947: Graduate Internship in Exercise and Sport Sciences
- PET 6971: Research for Master's Thesis
- PHC 6105: Health Promotion Policy and Practice

## **Tourism, Recreation, and Sport Management Departmental Courses**

- APK 6900: Directed Independent Study
- HMG 6076: Introduction to Hospitality and Tourism
- HMG 6608: Hospitality Law and Risk Management
- HMG 6747: Marketing in Hospitality/Tourism
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- LEI 5188: Trends in Leisure Studies
- LEI 5121: Outdoor Recreation and Park Management
- LEI 6108: Contemporary Theories of Recreation and Leisure



- LEI 6325: Ecotourism
- LEI 6326: Sport Tourism
- LEI 6336: Tourism Planning and Development
- LEI 6351: Heritage Tourism
- LEI 6439: Campus Recreation Administration and Programming
- LEI 6513: Administrative Procedures in Leisure Services
- LEI 6514: Administrative Issues in Recreation, Parks, and Tourism
- LEI 6557: Recreation Management/Development in the Coastal Zone
- LEI 6562: Advanced Marketing for Recreation, Parks, and Tourism
- LEI 6895: Tourism Theory and Concepts
- LEI 6903: Readings in Recreation, Parks, and Tourism
- LEI 6905: Directed Independent Study
- LEI 6910: Supervised Research
- LEI 6931: Special Topics in Recreation, Parks, and Tourism
- LEI 6935: Seminar in Recreation, Parks, and Tourism
- LEI 6940: Supervised Teaching
- LEI 6944: Practicum in Leisure Studies
- LEI 6971: Research for Master's Thesis
- LEI 7170: Foundations of Leisure Behavior
- LEI 7901: Recreation, Parks, and Tourism in Higher Education
- LEI 7904: Advanced Readings in Recreation, Parks, and Tourism
- LEI 7905: Advanced Independent Study in Recreation, Parks and Tourism
- LEI 7910: Advanced Supervised Research
- LEI 7933: Advanced Special Topics in Recreation, Parks, and Tourism
- LEI 7936: Advanced Seminar in Recreation, Parks, and Tourism
- PET 6910: Supervised Research
- SPM 5016: Sport Sociology
- SPM 5206: Sport Ethics
- SPM 5309: Sport Marketing
- SPM 5506: Sport Finance
- SPM 5936: Current Topics in Sport Management
- SPM 6006: Contemporary Sport Industry
- SPM 6036: Research Seminar in Sport Management
- SPM 6106: Management and Planning of Sport and Physical Activity Facilities
- SPM 6158: Management and Leadership in Sport
- SPM 6308: Study of Sport Consumer Behaviors
- SPM 6726: Issues in Sport Law
- SPM 6905: Directed Independent Study
- SPM 6910: Supervised Research
- SPM 6947: Graduate Internship in Sport Management
- SPM 6948: Advanced Practicum in Sport Management
- SPM 6971: Research for Master's Thesis

## **Applied Physiology and Kinesiology Department**

*Chair:* T. Clanton

*Graduate Coordinator:* E. Christou

*Complete faculty listing by department:* Follow this link.

The **Ph.D. program** is offered with concentrations in biobehavioral science and exercise physiology. Students in the biobehavioral science concentration specialize in one of four areas: biomechanics, exercise / performance psychology, motor control / learning, or sports medicine. These interdisciplinary concentrations focus on preparing students as researchers with a blend of course work and research training.

A program leading to the **Master of Science** degree in applied physiology and kinesiology (thesis and non-thesis options) is also offered. Areas of concentration for the master's program include athletic training/sports medicine, biobehavioral science, clinical exercise physiology, exercise physiology, and human performance. The thesis option gives the student an opportunity to study, conduct research, and prepare a thesis in an area of special interest. The non-thesis option offers the student a specialization in a selected area of study, with additional work in other areas. A comprehensive written examination is required for this option, as is a capstone internship experience. Requirements for these degrees are given in the *General Information* section of this catalog.

**Athletic training/sports medicine:** This concentration provides comprehensive academic preparation, research, and clinical experience in the areas of injury prevention, assessment, treatment, rehabilitation, and therapeutic modalities.

**Biobehavioral Science:** This thesis mandatory concentration is multidisciplinary and flexible, permitting students to tailor their scholarly experience to the development of research skills in one of several related disciplines: biomechanics, motor control and learning, and exercise and performance psychology. Each area of specialization is briefly described below.

- *Biomechanics:* The specialization in biomechanics draws from the fields of neuroscience, engineering, and medicine. The course work and training include kinematics and kinetics of movement. Course work also includes anatomy/kinesiology, biomechanics, engineering, neuroscience, medicine, psychology, physical therapy, and statistics.
- *Motor learning / control:* This interdisciplinary specialization draws on experiences and a knowledge base in the movement and sport sciences, cognitive sciences, and physical therapy. Students are prepared to conduct research and provide expertise in traditional motor performance and learning settings.
- *Exercise / performance psychology:* This area of specialization provides the basis for understanding and influencing the underlying thought processes and attitudes that will ultimately determine the performance of individuals involved in sport, exercise, and other achievement oriented activities. The primary emphasis is to develop the scientific background and skills necessary for doctoral training and research.

**Clinical exercise physiology:** The purpose of this non-thesis program is to give students the opportunity to develop advanced knowledge and competencies in Exercise Physiology. Clinical Exercise Physiologists typically practice in hospitals, clinics and wellness centers as part of a health care team that administers tests and develops programs of exercise, counseling, and education for patients with cardiopulmonary, metabolic, and musculoskeletal diseases.

**Exercise physiology:** This thesis mandatory area of concentration is concerned with the scientific study of how the various physiological systems of the human body respond to physical activity. It is a multidisciplinary field with strong ties to the basic life sciences and medicine, and application to clinical, normal, and athletic populations.

**Human performance:** This non-thesis master's concentration merges a range of specializations within the Department into a curriculum that provides educational experiences to graduate students interested in studying the factors that determine human performance in both athletic and nonathletic domains. This flexible approach allows students to focus on specific applications that best meet their individual interests. Human performance incorporates components such as nutrition, psychology, motor behavior, and physiology that are applicable to athletic and clinical populations.

## **Applied Physiology and Kinesiology**

## **College**

College of Health and Human Performance

## **Department/School**

Applied Physiology and Kinesiology Department

## **Applied Physiology and Kinesiology Program Information**

Graduate study in Applied Physiology and Kinesiology (APK) is focused on research in concentration areas including: athletic training; biomechanics; motor control and learning; exercise physiology; and exercise and performance psychology. Graduate students are exposed to and directly involved in research covering the full multidisciplinary spectrum of human potential from young to old, fit to unfit, healthy to diseased, able-bodied to disabled, and from the casual recreational participant to the high-level athlete. In addition to human performance issues, APK faculty and students study the immediate and lasting effects of exercise and its use in disease prevention and rehabilitation.

For more information, please see our website: <http://apk.hhp.ufl.edu/index.php/current-students/prospective-students>.

## **Degrees Offered with a Major in Applied Physiology and Kinesiology**

Master of Science

without a concentration

concentration in Athletic Training/Sports Medicine

concentration in Biobehavioral Science

concentration in Clinical Exercise Physiology

concentration in Exercise Physiology

concentration in Human Performance

## **Applied Physiology and Kinesiology Departmental Courses**

- APK 5127: Assessment in Exercise Science
- APK 5404: Sport Psychology
- APK 6111L: Practicum in Exercise Physiology
- APK 6116C: Physiological Bases of Exercise and Sport Sciences
- APK 6118: Neuromuscular Adaptation to Exercise
- APK 6126: Cardiopulmonary Pathologies
- APK 6128: EKG Interpretation
- APK 6205C: Nature and Bases of Motor Performance
- APK 6206: Planning Motor Actions
- APK 6210: Controlling Motor Actions
- APK 6225: Biomechanical Instrumentation

- APK 6226C: Biomechanics of Human Motion
- APK 6406: Exercise Psychology
- APK 6408: Performance Enhancement
- APK 6410: Seminar in Exercise Psychology
- APK 6415: Seminar in Sport Psychology: Current Topics
- APK 6900: Directed Independent Study
- APK 6940: Advanced Practicum in Exercise and Sport Science
- APK 7107: Cardiovascular Exercise Physiology
- APK 7108: Environmental Stress Exercise Physiology
- APK 7117: Exercise Metabolism
- APK 7124: Free Radicals in Aging, Exercise and Disease
- APK 7129: Pulmonary Function during Exercise
- ATR 6124: Clinical Anatomy for the Exercise Sciences
- ATR 6145: Human Pathophysiology for the Exercise Sciences
- ATR 6215: Evidence-Based Orthopedic Exam I: Upper-Extremity
- ATR 6216: Evidence-Based Orthopedic Exam II: Lower-Extremity
- ATR 6304: Rehabilitation and Modalities of Athletic Injuries
- ATR 6624: Athletic Training Research and Technology I
- ATR 6625: Athletic Training Research and Technology II
- ATR 6934: Seminar in Athletic Training
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 6935: Variable International Topics
- HLP 7939: HHP PhD Professional Development Seminar
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- PET 5936: Special Topics/Seminars
- PET 6910: Supervised Research
- PET 6940: Supervised Teaching
- PET 6947: Graduate Internship in Exercise and Sport Sciences
- PET 6971: Research for Master's Thesis

## Department of Health Education & Behavior

*Chair:* Jalie A. Tucker

*Graduate Coordinator:* Christine B. Stopka

*Complete faculty listing by department:* [Follow this link.](#)

The Department of Health Education & Behavior offers a Doctor of Philosophy (Ph.D.) in Health and Human Performance with a concentration in Health Behavior, a non-thesis 30-credit hour Master of Science and a 36-credit Master of Science (M.S.) in Health Education and Behavior. Requirements for the Ph.D. and M.S. degrees are given in the *General Information* section of this catalog.

The Ph.D. degree program trains health behavior researchers for academic positions in federal health agencies such as the Centers for Disease Control and Prevention and the National Institutes of Health for postdoctoral research fellowships and for the private sector.

The 30-credit hour, non-thesis M.S. degree program is designed for students seeking an advanced practitioner's degree. A distinctive feature of this option allows students to choose a minimum of 15 credit hours of major elective coursework that matches their interests with faculty expertise to plan a program that achieves their professional goals. The degree prepares health promotion specialists to work in local, state, and federal health agencies, nongovernmental health organizations, patient care settings, and the private sector. Full-time students can complete this M.S. option in one year. This degree may also give students unique and distinguishing training experiences when applying to professional schools such as law, medicine, physician assistant, dentistry, chiropractic, osteopathy, nursing, occupational therapy, and physical therapy.

The 36-credit hour project in lieu of thesis, and the 36-credit hour thesis options are designed for students interested in developing research skills through conducting evaluation projects and empirical studies, as well as pursuing advanced graduate study, particularly the doctoral degree. Students typically can complete these options in about 4 semesters.

The Department also offers an accelerated B.S./M.S. program in health education and behavior to enable students to receive both B.S. and M.S. degrees with a reduction of 12 credits (about one semester of course work).

Students who complete a graduate degree program in the Department of Health Education & Behavior acquire a range of skills required to research, plan, implement, and evaluate health promotion policies and programs aimed at improving the health and well-being of individuals, families, and communities. Specific skills include:

- Conducting needs and capacity assessments to identify health priorities
- Planning, implementing, and evaluating health promotion policies and programs
- Conducting research on questions associated with health problems and their determinants and health promotion policies and programs
- Administering and managing health promotion programs
- Advocating for health promotion policies and programs in schools, communities, health care facilities, and worksites
- Developing social marketing and health communication messages and campaigns
- Researching and developing social media and new media-based health promotion applications
- Serving as a resource person for health information and referrals
- Using a variety of teaching-learning strategies appropriate to the target audience and setting
- Writing scholarly and professional articles
- Working collaboratively with public and private agencies, nongovernmental organizations (NGOs) and the private sector to achieve the goal of a healthier population.

This degree prepares the health promotion specialists and health behavior scientists to work in:

- Local, state, and federal health, education and social agencies
- Nongovernmental health organizations
- Schools and universities
- Healthcare settings
- Private sector

Sample position titles for individuals with this degree include:

- Health education specialist
- Health promotion specialist
- Public health adviser or public health analyst
- Health promotion coordinator or health promotion consultant
- Campus health educator or patient health educator,
- Health communication specialist
- Wellness specialist

- Wellness promotion coordinator
- Prevention specialist

For additional information, visit <http://www.hhp.ufl.edu/heb>.

## **Health Education and Behavior**

### **College**

College of Health and Human Performance

### **Department/School**

Department of Health Education & Behavior

### **Health Education and Behavior Program Information**

The 30-credit hour, non-thesis in the Master of Science in Health Education and Behavior degree program is designed for students seeking an advanced practitioner's degree. A distinctive feature of this option allows students to choose a minimum of 15 credit hours of major elective coursework that matches their interests with faculty expertise to plan a program that achieves their professional goals. The degree prepares health promotion specialists to work in local, state, and federal health agencies, nongovernmental health organizations, patient care settings, and the private sector.

The 30-credit, non-thesis Pre-Professional Health Science Track is designed for students seeking a career in health care. This option allows you to choose a minimum of 12 credits of basic science elective coursework which are prerequisites for dental, medical, nursing, occupational therapy, physician assistant, physical therapy, and other health professional programs including 6 credits of undergraduate science courses (3000-4999). This degree track prepares students who are interested in graduate studies in the health sciences and or pursuing health professional training. Full-time students can complete the 30-credit hour M.S. options in one year.

The 36-credit Thesis Option, and the 36-credit Project In Lieu Of Thesis Option, in the Master of Science in Health Education and Behavior degree programs are designed for students interested in improving their research skills through conducting evaluation projects and empirical studies, as well as pursuing advanced graduate study, particularly the doctoral degree. Students typically complete these options in about 4 semesters.

For more information, please see our website: <http://heb.hhp.ufl.edu/index.php/academia/graduate-programs/masters-programs>.

### **Degrees Offered with a Major in Health Education and Behavior**

Master of Science

### **Health Education and Behavior Departmental Courses**

- APK 6900: Directed Independent Study
- APK 6940: Advanced Practicum in Exercise and Sport Science
- HLP 6515: Evaluation Procedures in Health and Human Performance

- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 6935: Variable International Topics
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- HSC 5135: Emotional Health Education
- HSC 5138: Human Sexuality
- HSC 5142: Drug Education
- HSC 5315C: Teaching Health in Elementary Schools
- HSC 5536C: Medical Terminology for the Health Professions
- HSC 5576: Nutrition Education for Special Populations
- HSC 5606: Spirituality and Health
- HSC 5618: Advanced Exercise Therapy, Adapted Physical Activity, & Health
- HSC 5626: Minority Health Issues
- HSC 5657: Health and End-of-Life Issues
- HSC 5925: Seminar in Health Education
- HSC 5956: Writing for Professional Publications
- HSC 6037: Philosophy and Principles of Health Education
- HSC 6216: Environmental Health
- HSC 6235: Patient Health Education
- HSC 6318: Planning Health Education Programs
- HSC 6506: Epidemiology
- HSC 6567: Health Promotion and Programming in Gerontology
- HSC 6571: Contemporary Issues in Health Promotion
- HSC 6575: Women's Health Issues
- HSC 6595: HIV/AIDS Education
- HSC 6603: Theories of Health Behavior and Practice in Health Education
- HSC 6605: Scientific Foundations of Holistic Health
- HSC 6625: Trends in International Health
- HSC 6629: Health Promotion for Priority Populations
- HSC 6637: Social Marketing and Health
- HSC 6646: Community Health Methods in Injury Prevention & Control
- HSC 6665: Health Communication
- HSC 6667: Health Communication Programs
- HSC 6668: Interpersonal Communication and Health
- HSC 6695: Worksite Health Promotion
- HSC 6712: Evaluating Health Education Programs
- HSC 6735: Research Methods in Health Education
- HSC 6850: Internship in Health Education
- HSC 6904: Readings in Health Education
- HSC 6905: Independent Study
- HSC 6910: Supervised Research
- HSC 6935: Current Topics in Health Education
- HSC 6940: Supervised Teaching
- HSC 6971: Research for Master's Thesis
- HSC 6973: Project in Lieu of Thesis
- HSC 7904: Advanced Readings in Health Education
- HSC 7905: Advanced Independent Study in Health Education
- HSC 7937: Advanced Seminar in Health Education

- PEQ 5127: Advanced Instructors of Adapted Aquatics
- PET 5936: Special Topics/Seminars
- PET 6910: Supervised Research
- PET 6940: Supervised Teaching
- PET 6947: Graduate Internship in Exercise and Sport Sciences
- PET 6971: Research for Master's Thesis
- PHC 6105: Health Promotion Policy and Practice

## Tourism, Recreation, and Sport Management Department

College of Health and Human Performance

*Chair:* Michael Sagas.

*Graduate Coordinator:* Stephen Holland.

*Complete faculty listing:* Follow this link.

The degree Master of Science is offered by the Department of Tourism, Recreation, and Sport Management with programs in sport management and in recreation, parks, and tourism. Both programs offer thesis and non-thesis formats. The Department participates in the Ph.D. program in Health and Human Performance. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Master's program provides advanced preparation of tourism, recreation, and parks and sport management professionals for positions of leadership in planning, developing, administering, and marketing of programs in a variety of employment settings; public and private. Concentrations of study may be developed in a number of areas, such as:

- Natural resource recreation management
- Tourism and commercial recreation
- Campus recreation
- Recreation administration and supervision
- Sport management

The Doctoral program is offered through the College of Health and Human Performance with concentrations in tourism; natural resource recreation and sport management. These interdisciplinary specializations blend course work and research. The curriculum is individualized, and applicants with degrees from unrelated fields can be accepted into the program. However, their previous work will be evaluated and their programs planned according to their individual needs, interests, and career objectives.

**Combined program:** The Department offers a combined bachelor's/master's degree program. This program allows qualified students to earn both a bachelor's degree and a master's degree with a savings of approximately one semester. Up to 12 approved graduate credit hours can be utilized toward both degrees.

**MS/MSM Concurrent Degree Program:** This joint degree program is offered through the College of Business Administration (Master of Science in Business Management [MSM]) and the College of Health and Human Performance's, Department of Tourism, Recreation and Sport Management (Master of Science in Sport Management [MS]). Applicants must apply to both programs and be admitted to both to participate. The MS/MSM is a non-thesis degree. The MS/MSM is designed for students who seek a graduate business degree and who lack the work experience necessary for admission to the MBA program. The MS/MSM curriculum is similar to the first year of the MBA program, giving students a good foundation in business principles. Concurrent degree students can share up to 9 credit hours of the same coursework towards both degree programs. They do not have to graduate during the same semester. Students admitted into the concurrent program must work closely with both departments to verify all requirements are being met during their course of study.



**M.S./J.D. joint program:** This 98-credit-hour joint degree program culminates in the Master of Science and the Juris Doctor degrees. Applicants must meet the entrance requirements for the Department of Tourism, Recreation, and Sport Management and the College of Law. Admission to the second degree program is required no later than the end of the fourth consecutive semester after beginning one of the degree programs. The student's supervisory committee comprises faculty members from both the Department of Tourism, Recreation, and Sport Management and the College of Law. Students admitted into the joint program are permitted to share up to 12 credit hours of the same coursework towards both degree programs. Students must graduate during the same semester from both programs.

## **Recreation, Parks, and Tourism**

### **College**

College of Health and Human Performance

### **Department/School**

Tourism, Recreation, and Sport Management Department

### **Recreation, Parks, and Tourism Program Information**

The Master of Science in Recreation, Parks and Tourism offers the following four areas of concentration:

#### **1. Tourism and Commercial Recreation**

- Travel activities to and staying outside one's usual environment; hospitality, transportation
- Recreation activities covered by fees, charges or other non-tax revenues; theme/amusement/water parks, movie theaters, sport/fitness/health clubs, resorts
- Examples of employers include: travel agencies, cruise lines, dance studios, special event companies, resorts, multipurpose sports clubs and health & fitness clubs

#### **2. Natural Resource Recreation**

- Park(s) management, protected areas, wilderness conservation
- State parks, river floating, horseback riding, hiking trails
- Beach management, rivers and lakes, sustainability
- Outdoor recreation leadership
- Conservation management, planning, and policy
- Federal agencies (National Parks, U.S. Army Corp of Engineers)

#### **3. Recreation Administration and Supervision**

- City/state public parks
- City pools
- City skate parks, family parks
- Public tennis courts
- City sports teams/leagues, youth sports
- Organized group and youth camps
- Military recreation departments (Morale, Welfare & Recreation [MWR] programs)

#### **4. Campus Recreation Programming & Administration**

- college campus intramural recreation programs
- campus fitness / exercise centers

Graduates of the Master of Science in Recreation, Parks & Tourism will be trained for middle and/or upper level management positions, in their respective fields mentioned above.

Students can choose between three options: 1.) Thesis, or 2.) Non-Thesis Internship, or 3.) Non-Thesis with Paper.

For more information, please see our website: <http://trsm.hhp.ufl.edu/index.php/graduate/masters-programs/recreation-parks-and-tourism>.

## **Degrees Offered with a Major in Recreation, Parks, and Tourism**

Master of Science

without a concentration

concentration in Historic Preservation

concentration in Natural Resource Recreation

concentration in Therapeutic Recreation

concentration in Tourism

concentration in Tropical Conservation and Development

## **Tourism, Recreation, and Sport Management Departmental Courses**

- APK 6900: Directed Independent Study
- HMG 6076: Introduction to Hospitality and Tourism
- HMG 6608: Hospitality Law and Risk Management
- HMG 6747: Marketing in Hospitality/Tourism
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- LEI 5188: Trends in Leisure Studies
- LEI 5121: Outdoor Recreation and Park Management
- LEI 6108: Contemporary Theories of Recreation and Leisure
- LEI 6325: Ecotourism
- LEI 6326: Sport Tourism
- LEI 6336: Tourism Planning and Development
- LEI 6351: Heritage Tourism
- LEI 6439: Campus Recreation Administration and Programming
- LEI 6513: Administrative Procedures in Leisure Services
- LEI 6514: Administrative Issues in Recreation, Parks, and Tourism
- LEI 6557: Recreation Management/Development in the Coastal Zone
- LEI 6562: Advanced Marketing for Recreation, Parks, and Tourism

- LEI 6895: Tourism Theory and Concepts
- LEI 6903: Readings in Recreation, Parks, and Tourism
- LEI 6905: Directed Independent Study
- LEI 6910: Supervised Research
- LEI 6931: Special Topics in Recreation, Parks, and Tourism
- LEI 6935: Seminar in Recreation, Parks, and Tourism
- LEI 6940: Supervised Teaching
- LEI 6944: Practicum in Leisure Studies
- LEI 6971: Research for Master's Thesis
- LEI 7170: Foundations of Leisure Behavior
- LEI 7901: Recreation, Parks, and Tourism in Higher Education
- LEI 7904: Advanced Readings in Recreation, Parks, and Tourism
- LEI 7905: Advanced Independent Study in Recreation, Parks and Tourism
- LEI 7910: Advanced Supervised Research
- LEI 7933: Advanced Special Topics in Recreation, Parks, and Tourism
- LEI 7936: Advanced Seminar in Recreation, Parks, and Tourism
- PET 6910: Supervised Research
- SPM 5016: Sport Sociology
- SPM 5206: Sport Ethics
- SPM 5309: Sport Marketing
- SPM 5506: Sport Finance
- SPM 5936: Current Topics in Sport Management
- SPM 6006: Contemporary Sport Industry
- SPM 6036: Research Seminar in Sport Management
- SPM 6106: Management and Planning of Sport and Physical Activity Facilities
- SPM 6158: Management and Leadership in Sport
- SPM 6308: Study of Sport Consumer Behaviors
- SPM 6726: Issues in Sport Law
- SPM 6905: Directed Independent Study
- SPM 6910: Supervised Research
- SPM 6947: Graduate Internship in Sport Management
- SPM 6948: Advanced Practicum in Sport Management
- SPM 6971: Research for Master's Thesis

## **Sport Management**

### **College**

College of Health and Human Performance

### **Department/School**

Tourism, Recreation, and Sport Management Department

### **Sport Management Program Information**

Sport Management integrates concepts of management, marketing, finance and law to apply to sport organizations at various levels and prepares students for a variety of volunteer and employment opportunities at the professional, collegiate, community and amateur level sport entities. Its focus is on the business and organization aspects of sport, not coaching or athletic performance.

For more information, please see our website: <http://trsm.hhp.ufl.edu/index.php/graduate/masters-programs/sport-management>.

## **Degrees Offered with a Major in Sport Management**

Master of Science

without a concentration

concentration in Historic Preservation

concentration in Tropical Conservation and Development

## **Tourism, Recreation, and Sport Management Departmental Courses**

- APK 6900: Directed Independent Study
- HMG 6076: Introduction to Hospitality and Tourism
- HMG 6608: Hospitality Law and Risk Management
- HMG 6747: Marketing in Hospitality/Tourism
- HLP 6515: Evaluation Procedures in Health and Human Performance
- HLP 6535: Research Methods in Health and Human Performance
- HLP 6911: Research Seminar
- HLP 7979: Advanced Research in Health and Human Performance
- HLP 7980: Research for Doctoral Dissertation
- LEI 5188: Trends in Leisure Studies
- LEI 5121: Outdoor Recreation and Park Management
- LEI 6108: Contemporary Theories of Recreation and Leisure
- LEI 6325: Ecotourism
- LEI 6326: Sport Tourism
- LEI 6336: Tourism Planning and Development
- LEI 6351: Heritage Tourism
- LEI 6439: Campus Recreation Administration and Programming
- LEI 6513: Administrative Procedures in Leisure Services
- LEI 6514: Administrative Issues in Recreation, Parks, and Tourism
- LEI 6557: Recreation Management/Development in the Coastal Zone
- LEI 6562: Advanced Marketing for Recreation, Parks, and Tourism
- LEI 6895: Tourism Theory and Concepts
- LEI 6903: Readings in Recreation, Parks, and Tourism
- LEI 6905: Directed Independent Study
- LEI 6910: Supervised Research
- LEI 6931: Special Topics in Recreation, Parks, and Tourism
- LEI 6935: Seminar in Recreation, Parks, and Tourism
- LEI 6940: Supervised Teaching

- LEI 6944: Practicum in Leisure Studies
- LEI 6971: Research for Master's Thesis
- LEI 7170: Foundations of Leisure Behavior
- LEI 7901: Recreation, Parks, and Tourism in Higher Education
- LEI 7904: Advanced Readings in Recreation, Parks, and Tourism
- LEI 7905: Advanced Independent Study in Recreation, Parks and Tourism
- LEI 7910: Advanced Supervised Research
- LEI 7933: Advanced Special Topics in Recreation, Parks, and Tourism
- LEI 7936: Advanced Seminar in Recreation, Parks, and Tourism
- PET 6910: Supervised Research
- SPM 5016: Sport Sociology
- SPM 5206: Sport Ethics
- SPM 5309: Sport Marketing
- SPM 5506: Sport Finance
- SPM 5936: Current Topics in Sport Management
- SPM 6006: Contemporary Sport Industry
- SPM 6036: Research Seminar in Sport Management
- SPM 6106: Management and Planning of Sport and Physical Activity Facilities
- SPM 6158: Management and Leadership in Sport
- SPM 6308: Study of Sport Consumer Behaviors
- SPM 6726: Issues in Sport Law
- SPM 6905: Directed Independent Study
- SPM 6910: Supervised Research
- SPM 6947: Graduate Internship in Sport Management
- SPM 6948: Advanced Practicum in Sport Management
- SPM 6971: Research for Master's Thesis

## College of Journalism and Communications

*Dean:* D. McFarlin

*Senior Associate Dean for Graduate Studies and Research:* D. Treise

*Graduate Coordinators:*

(Advertising) J. R. Goodman

(International Communication) M. Leslie

(Journalism) *TBA*

(Public Relations) M.A. Ferguson

(Science/Health Communication) D. Treise

(Telecommunication) *TBA*

Complete faculty listings: [Follow this link.](#)

Through the Division of Graduate Studies and Research, the College of Journalism and Communications offers the Doctor of Philosophy degree, the Master of Arts in Mass Communication (thesis or project option) degree, and the Master of Advertising (thesis) degree. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

Doctoral students work closely with faculty members in research leading to a dissertation embodying a humanities, law/policy, or social sciences approach. Emphases within these approaches for which faculty members have expertise include advertising, journalism, public relations, telecommunication, international communication, and

political communication. Details of doctoral faculty research interests and other aspects of the program are given in the College's Ph.D. Handbook.

Master's students may complete a thesis in advertising, journalism, public relations, telecommunication, international communication, or science/health communication. With the approval of the Sr. Associate Dean of Graduate Studies and Research and other faculty members, master's students may develop an individualized program of study, with thesis, to meet their specific needs and interests. A project in lieu of thesis option is available for some specializations.

**Mass Communication/Law joint degree programs:** Programs leading to the Master of Arts in Mass Communication or the Doctor of Philosophy and the Juris Doctor are offered under the joint auspices of the College of Journalism and Communications and the College of Law. For students interested in scholarship or practice of communication law or in reporting on the law, the programs offer the opportunity to blend relevant work from the two colleges. Students must meet the entrance requirements of both colleges. A thesis or dissertation is required. Interested students should apply for admission to both the Graduate School and the College of Law, noting on the applications the joint nature of the admission requests. Further information on the programs and on application procedures is available from the Holland Law Center and from the Division of Graduate Studies and Research of the College of Journalism and Communications.

**General admission:** Admission is granted to applicants with and without background in mass communication. Students without academic preparation in mass communication or appropriate experience may be required to take articulation work. These courses are taken concurrently with general graduate courses, starting in the first term of registration. Some degree plans require a background course in statistics. Students who have satisfied that requirement must provide written verification. Including articulation courses, the master's degree normally can be earned in one and one-half or two years of full-time study. Doctoral studies require three or more years of full-time study and research. Students who may require articulation courses should contact the Sr. Associate Dean of Graduate Studies and Research.

**Grading policy:** Any student whose cumulative GPA falls below 3.0 will be placed on probation. Any doctoral student who receives one grade below B- or a Master's student who receives one grade below C+ will be placed on probation, with the exception of courses taken from the Levin College of Law. For these courses, any student receiving one grade below C in any course from the Levin College of Law will be placed on probation. A requirement of the probation is that the student must achieve or maintain a cumulative grade point average of 3.0 or higher at the end of the next academic term in residence. A student who fails to satisfy the requirement will be suspended. A Doctoral student who accumulates two grades below "B"-- or a Master's student who accumulates two grades below C+ during graduate studies will be suspended, as will a student who receives one grade of "D+" or lower at any time. Students will be allowed only one suspension.

**Combined degree program:** The College offers a combined bachelor's/master's program. For information, contact the Associate Dean for Undergraduate Affairs.

For additional information, please see our website: <http://www.jou.ufl.edu/grad>.

College of Journalism and Mass Communication Courses

## Advertising

### College

College of Journalism and Communications

### Advertising Program Information

The Master of Advertising (M.Adv.) program is designed to develop leaders in the profession by providing students with

1. the theoretical, research and decision-making skills essential for strategic advertising and integrated communications planning, as well as
2. the opportunity to develop expertise in a specialized area such as account management, research, creative strategy, media planning, new technology and advertising sales management.

Students without basic course background or substantial professional experience in marketing or advertising are required to complete articulation courses before entering the program. These prerequisite courses include Introduction to Advertising and Introduction to Marketing.

A minimum of 33 graduate level credit hours, including a thesis, is required. In some areas of specialization, with permission from the departmental graduate faculty, a terminal project may be elected in lieu of a thesis.

Students select a supervisory committee to guide their course selection as well as thesis topic or project in lieu of thesis and completion of the thesis or project. Students will complete and orally defend their theses or projects. The student's supervisory committee is responsible for the evaluation of the document and the final defense.

The deadline for Fall applications is January 30 for international applicants and April 1 for domestic students. Applications may be considered after the April 1 deadline, if space is available. The Master of Advertising program does not accept any applications for Spring.

For admissions information and application materials, contact Sarah G. Lee.

For information about the advertising curriculum and program requirements, contact Dr. Robyn Goodman.

For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/master-of-advertising>

## **Degrees Offered with a Major in Advertising**

Master of Advertising

## **College of Journalism and Communications Courses**

- ADV 5005: Advertising Planning
- ADV 6006: Theories of Advertising
- ADV 6305: Advanced Media Planning
- ADV 6325: Advertising and Social Media
- ADV 6405: International Advertising
- ADV 6503: Advertising Creative Strategy and Research
- ADV 6505: Advertising Research Methods
- ADV 6602: Advertising Management
- COM 6315: Advanced Research Methods
- COM 6338: Advanced Web Topics I: Advanced Design
- COM 6940: Supervised Teaching
- FIL 6061: History of Documentary Film I
- FIL 6062: History of Documentary Film II
- FIL 6101: Advanced Radio, Television, and Film Writing
- FIL 6315: Writing for Documentary I
- FIL 6317: Producing and Writing the Documentary
- FIL 6335: Business of Documentary

- FIL 6340: Issues and Problems in Documentary
- FIL 6365: Documentary Pre-Production Planning
- FIL 6366: Documentary Procedures II
- FIL 6377: Documentary Field Production
- FIL 6378: Documentary Research Methods
- FIL 6380: Advanced Post-Production Techniques
- JOU 5007: History of Journalism
- JOU 5705: Issues and the Press
- JOU 6102: Reporting Workshop
- JOU 6114: Journalist Bootcamp
- JOU 6309: Seminar in Journalism as Literature
- JOU 6344: Journalist Toolkit 1
- JOU 6349: Journalist Toolkit 2
- JOU 6502: Newsroom Management
- MMC 5005: Mass Communication History
- MMC 5006: Introduction to Multimedia Communication
- MMC 5015: Electronic Publishing
- MMC 5206: Advanced Law of Mass Communication
- MMC 5277: Web Design Principles
- MMC 5306: International Communication
- MMC 5315: Survey of Foreign Correspondence
- MMC 5427: Research Methods in Digital Communication
- MMC 5636: Introduction to Social Media
- MMC 5708: Foundations of Intercultural Communication
- MMC 6145: Web Interactivity and Engagement
- MMC 6202: Legal Problems of Mass Communication
- MMC 6205: Social Media Ethics
- MMC 6213: Strategic Communication Ethics and Concepts
- MMC 6278: Advanced Web Topics II
- MMC 6307: Seminar in International Communication
- MMC 6400: Mass Communication Theory
- MMC 6402: Seminar in Mass Communication Theory
- MMC 6405: Seminar in Mass Communication and Public Opinion
- MMC 6409: Science/Health Communication
- MMC 6417: Seminar in Mass Media and Health
- MMC 6421: Research Methods in Mass Communication
- MMC 6423: Content-Analysis Methods
- MMC 6426: Seminar in Qualitative Research
- MMC 6428: Collaborative Communication Research
- MMC 6429: News and Numbers
- MMC 6560: Seminar in History of Mass Communication
- MMC 6612: New Media and a Democratic Society
- MMC 6615: Race, Class, Gender, and Media
- MMC 6618: Survey of Political Communication
- MMC 6619: Seminar in Political Advertising
- MMC 6638: Global Activism and Social Change Communication
- MMC 6647: Financial Business Essentials for Communication Professionals
- MMC 6660: Mass Communication and Society
- MMC 6665: Seminar in First Amendment Theory



- MMC 6666: Seminar in Research in Mass Communication Law
- MMC 6667: Seminar in Advanced Topics in Mass Communication Law
- MMC 6668: Seminar in Public Policy Toward Mass Media
- MMC 6706: Covering the Arts
- MMC 6725: Social Media and News
- MMC 6726: Social Media and Virtual Worlds
- MMC 6727: Social Media Metrics
- MMC 6728: Branding Using Social and Mobile Media
- MMC 6730: Social Media Management
- MMC 6905: Individual Work
- MMC 6910: Supervised Research
- MMC 6920: Communication Proseminar
- MMC 6929: Communication Colloquium
- MMC 6930: Seminar in Mass Communication Teaching
- MMC 6936: Special Topics in Mass Communication
- MMC 6949: Professional Internship
- MMC 6951: Masters Project Seminar
- MMC 6971: Research for Master's Thesis
- MMC 6973: Project in Lieu of Thesis
- MMC 7979: Advanced Research
- MMC 7980: Research for Doctoral Dissertation
- PUR 5507: Persuasion Theory and Research
- PUR 6005: Theories of Public Relations
- PUR 6006: Public Relations Foundations
- PUR 6206: Public Relations Ethics and Professional Responsibility
- PUR 6403: Crisis and Risk Management
- PUR 6409: International Issues and Crisis Communication
- PUR 6416: Public Relations and Fund Raising
- PUR 6446: Public Relations and Philanthropy
- PUR 6506: Public Relations Research
- PUR 6607: Public Relations Management
- PUR 6608: International Public Relations
- PUR 6616: Corporate Reputation and Communication
- PUR 6934: Problems in Public Relations
- RTV 5702: Telecommunication Regulation
- RTV 6105: Writing for Electronic Media
- RTV 6309: Advanced TV Reporting
- RTV 6508: Audience Analysis
- RTV 6801: Telecommunication Management
- RTV 6807: Telecommunication Outlet Systems and Practices
- RTV 6973: Project in Lieu of Thesis
- VIC 5315: Corporate and Brand Identity on the Web
- VIC 5325: Digital Imagery in Web Design
- VIC 5326: Digital Media Layout and Design
- VIC 6316: Brand Management

## **Mass Communication**

## College

College of Journalism and Communications

### Mass Communication Program Information

#### Ph.D. in Mass Communication

The Ph.D. degree is a research degree. The Ph.D. program is designed to help develop knowledge, attitudes, and skills so graduates can make important contributions to understanding mass communication. Faculty members help students lay the foundation for a lifetime of significant, creative work.

The doctoral program prepares students for a variety of opportunities in mass communication. Graduates are expected to teach at colleges and universities; conduct research for organizations in advertising, journalism, public relations, telecommunication, and other mass communication fields; do consulting; and conduct research and contribute to policy in government and private organizations. Doctoral students in the College of Journalism and Communications gain valuable experience in both teaching and research. Assistantships help prepare students for academic and other research positions. Students in the program have consistently been among the nation's leaders in winning top-paper awards at national and regional scholarly meetings.

#### Master of Arts in Mass Communication (M.A.M.C.)

There are several specializations available for the Master of Arts in Mass Communication:

The **Journalism specialization** program in the UF College of Journalism and Communications combines study of the academic literature on the societal role and effects of mass communication in general and journalism in particular with courses designed to improve students' practice of the journalism craft. The Journalism specialization at the master's level is designed for students interested in all areas of non-broadcast journalism (i.e. newspapers, magazines and online publishing). Those who have an educational and /or professional background in journalism can enhance their understanding of the role of journalism in society, as well as improving reporting and writing skills. However, the program is also well-suited for students with a long-term interest in college-level journalism education, who can pursue the master's degree as preparation for entry into a doctoral program. For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/mamc-journalism>.

The **Public Relations specialization** at the master's level is a research-based program designed to prepare students for careers and advancement in the industry or for entering doctoral studies. Students learn the conceptual foundations of public relations and develop professional and research competency within the duration of the program. Courses in the public relations specialization focus on conceptual foundations of public relations, including mass communication and society; professional and managerial skills mastery; and research expertise. For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/master-of-public-relations>.

The **Telecommunication specialization** program in the UF College of Journalism and Communications combines courses in Mass Communication, Telecommunication, and other areas relevant to the student's goals. There is a thesis track, appropriate for students who will later seek the Ph.D. or who wish to learn the skills and knowledge associated with thesis research or project in lieu of thesis. The Telecommunication track is designed for students with the following interests:

- Operation or management of telecommunication outlets (broadcast stations, cable systems, program distributors, etc.) and emerging media
- Telecommunication regulation and policy
- Audience research
- Preparation for an advanced degree

For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/mamc-telecommunication>.

The **International/Intercultural Communication specialization**: The field of international communication encompasses the study of international journalism (both print and broadcast) and international business and marketing communication. The field of intercultural communication focuses on the interactions between people of different cultures, values and histories. Through their study, students learn to appreciate and engage diverse cultures and media, gaining the knowledge and skills you need to thrive in today's challenging global community. The international/intercultural track in mass communication culminates with the student writing a thesis on an international/intercultural topic in communication, applying one or more of the methods used in communication research. For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/mamc-internationalintercultural-communication-specialization>.

The **Science and Health Communications specialization** program is designed to teach scientists and health specialists to communicate effectively via media, and to teach mass media specialists the background science to translate the language of science and health into meaningful and understandable stories for their audiences. These goals are achieved through theoretical writing and applied courses. At least two aspects of the program make it unique among science communication programs nationwide. First, other existing science communication programs in the U.S. focus on training journalists. UF's program is open to journalists who want to specialize in covering science and health, offers training for people planning to work as public affairs or public information officers for science and health organizations, for other communication specialists, and for scientists who need to be able to communicate with the public about their work. Second, the program focuses on training students to understand and communicate effectively about science and health policy. For more information, please see our website: <http://www.jou.ufl.edu/academics/masters/mamc-sciencehealth-communication>.

For more help with any of our graduate degree programs, please refer to our website: <http://www.jou.ufl.edu/academics>.

## **Degrees Offered with a Major in Mass Communication**

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

Master of Arts in Mass Communication

## **College of Journalism and Communications Courses**

- ADV 5005: Advertising Planning
- ADV 6006: Theories of Advertising
- ADV 6305: Advanced Media Planning
- ADV 6325: Advertising and Social Media
- ADV 6405: International Advertising
- ADV 6503: Advertising Creative Strategy and Research
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- FIL 6061: History of Documentary Film I

- FIL 6062: History of Documentary Film II
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- FIL 6335: Business of Documentary
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- FIL 6365: Documentary Pre-Production Planning
- FIL 6366: Documentary Procedures II
- FIL 6377: Documentary Field Production
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- JOU 5007: History of Journalism
- JOU 5705: Issues and the Press
- JOU 6102: Reporting Workshop
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- JOU 6344: Journalist Toolkit 1
- JOU 6349: Journalist Toolkit 2
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- MMC 6307: Seminar in International Communication
- MMC 6400: Mass Communication Theory
- MMC 6402: Seminar in Mass Communication Theory
- MMC 6405: Seminar in Mass Communication and Public Opinion
- MMC 6409: Science/Health Communication
- MMC 6417: Seminar in Mass Media and Health
- MMC 6421: Research Methods in Mass Communication
- MMC 6423: Content-Analysis Methods
- MMC 6426: Seminar in Qualitative Research
- MMC 6428: Collaborative Communication Research
- MMC 6429: News and Numbers
- MMC 6560: Seminar in History of Mass Communication
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- MMC 6665: Seminar in First Amendment Theory
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- MMC 6668: Seminar in Public Policy Toward Mass Media
- MMC 6706: Covering the Arts
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- MMC 6936: Special Topics in Mass Communication
- MMC 6949: Professional Internship
- MMC 6951: Masters Project Seminar
- MMC 6971: Research for Master's Thesis
- MMC 6973: Project in Lieu of Thesis
- MMC 7979: Advanced Research
- MMC 7980: Research for Doctoral Dissertation
- PUR 5507: Persuasion Theory and Research
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- PUR 6006: Public Relations Foundations
- PUR 6206: Public Relations Ethics and Professional Responsibility
- PUR 6403: Crisis and Risk Management
- PUR 6409: International Issues and Crisis Communication
- PUR 6416: Public Relations and Fund Raising
- PUR 6446: Public Relations and Philanthropy
- PUR 6506: Public Relations Research
- PUR 6607: Public Relations Management
- PUR 6608: International Public Relations
- PUR 6616: Corporate Reputation and Communication
- PUR 6934: Problems in Public Relations
- RTV 5702: Telecommunication Regulation
- RTV 6105: Writing for Electronic Media
- RTV 6309: Advanced TV Reporting
- RTV 6508: Audience Analysis
- RTV 6801: Telecommunication Management
- RTV 6807: Telecommunication Outlet Systems and Practices
- RTV 6973: Project in Lieu of Thesis
- VIC 5315: Corporate and Brand Identity on the Web
- VIC 5325: Digital Imagery in Web Design
- VIC 5326: Digital Media Layout and Design

- VIC 6316: Brand Management

## **Fredric G. Levin College of Law**

Dean: R. Jerry II

Complete faculty listings: Follow this link.

The University of Florida Levin College of Law has a longstanding tradition of producing national leaders, including current American Bar Association President Stephen Zack, and is one of the nation's best values in legal education.

For more information, please see our website: <http://www.law.ufl.edu>

Departments and Programs within Levin College of Law

Levin College of Law Courses

## **Comparative Law Department**

Director and Graduate Coordinator: P.A. Malavet.

*Complete faculty listing by department:* Follow this link.

The LL.M. in Comparative Law degree is designed for graduates of foreign law schools who want to enhance their understanding of the American legal system and the English common law system from which it evolved.

Requirements for this degree are given in the Graduate Degrees section of this catalog.

The program begins with Introduction to American Law, a 4-credit summer course that gives students a foundation in the American legal process. It also helps students acclimate to the College of Law and the University community before to the start of the academic year. During the fall and spring terms, and with the director's approval, students choose their remaining 22 credits from more than 100 Juris Doctor and LL.M. in Taxation courses and seminars.

For admission information please see our website: <http://www.law.ufl.edu/academics/degree-programs/ll-m-in-comparative-law-program/admission> or write to the Comparative Law Office P.O. Box 117643, University of Florida, Gainesville, FL 32611-7643 USA.

## **Comparative Law**

### **College**

Fredric G. Levin College of Law

### **Department/School**

Comparative Law Department

### **Comparative Law Program Information**

The Comparative Law Department offers the LL.M. in Comparative Law. Requirements for this degree are given in the Graduate Degrees section of this catalog.

The LL.M. in Comparative Law Program is for students who have completed law degrees at schools outside of the U.S. and want to enhance their understanding of the United States' legal system and the English common law system from which it evolved. UF Law has maintained a strong international presence including establishing programs and relationships in five continents. Since 1994, the LL.M. in Comparative Law Program at UF Law has enrolled more than 200 students from 43 countries ranging from China to Zimbabwe.

For more information, please see our website: <http://www.law.ufl.edu/academics/degree-programs/ll-m-in-comparative-law-program>.

## **Degrees Offered with a Major in Comparative Law**

Master of Laws in Comparative Law

without a concentration

concentration in Tropical Conservation and Development

## **Courses**

- LAW 7200: Introduction to the Legal System of the United States for LL.M. in Comparative Law, Part II
- LAW 7805: Legal Writing and Research for LL.M. in Comparative Law
- LAW 7906: Directed Research for LL.M. in Comparative Law
- LAW 7932: Introduction to the Legal System of the United States for LLM in Comparative Law, Part I

## **Taxation Departmental Courses**

- LAW 7602: Taxation of Property Transactions
- LAW 7604: Timing Issues in Taxation
- LAW 7611: Corporate Taxation I
- LAW 7613: Corporate Taxation II
- LAW 7614: U.S. International Tax I
- LAW 7615: U.S. International Tax II
- LAW 7617: Partnership Taxation
- LAW 7623: Taxation of Gratuitous Transfers
- LAW 7625: Income Taxation of Trusts and Estates
- LAW 7626: Estate Planning
- LAW 7632: Deferred Compensation
- LAW 7633: Tax Exempt Organizations
- LAW 7640: Civil Tax Procedure
- LAW 7641: Procedures in Tax Fraud Cases
- LAW 7650: State and Local Taxation
- LAW 7660: Tax Policy
- LAW 7680: Comparative Taxation
- LAW 7682: Income Tax Treaties
- LAW 7683: Transfer Pricing
- LAW 7905: Independent Study

- LAW 7910: Supervised Research
- LAW 7911: Federal Tax Research
- LAW 7931: Current Federal Tax Problems

## **Environmental and Land Use Law Department**

*Director and Graduate Coordinator:* Christine A. Klein

*Complete faculty listing by department:* Follow this link.

Florida's sensitive, varied and beautiful natural environment makes the University of Florida a natural choice for students who want to focus on the national and global issues of land use and environmental law. Florida provides a perfect setting to study first-hand the efforts to reconcile growth and conservation.

The University of Florida Levin College of Law offers a Masters (LL.M.) in Environmental and Land Use Law. This one-year post-J.D. degree provides an opportunity for experienced attorneys as well as recent law school graduates to spend an academic year full-time on the UF campus developing in-depth expertise in environmental and land use law.

For more information, please see the program page below and our website:  
<http://www.law.ufl.edu/academics/degree-programs/ll-m-environmental-land-use-law>.

## **Environmental and Land Use Law**

### **College**

Fredric G. Levin College of Law

### **Department/School**

Environmental and Land Use Law Department

## **Environmental and Land Use Law Program Information**

The University of Florida Levin College of Law offers a Masters (LL.M.) in Environmental and Land Use Law. This one-year post-J.D. degree provides an opportunity for experienced attorneys as well as recent law school graduates to spend an academic year full-time on the UF campus developing in-depth expertise in environmental and land use law.

Students admitted to the program work with the LL.M. Program Director to design an individual course of study tailored to their particular interests. In addition to a broad range of academic courses, UF Law offers a wealth of environmental skills and field courses such as the Conservation Clinic, Environmental Dispute Resolution and Wetlands & Watersheds. LL.M. students may also apply for a seat in the spring break field course (previous offerings have included Sustainable Development in Belize, Central America, and Ocean and Coastal Law in Marineland, Florida); the South Florida Everglades field course offered in May (course availability varies) and the Summer Environmental Law Study Abroad Program in Costa Rica.

The program also capitalizes on the many outstanding programs at the University of Florida in disciplines related to environmental and land use law practice, including wildlife ecology, environmental engineering, urban and regional



planning, and interdisciplinary ecology. The UF LL.M. program is unique in requiring that 6 of the 26 required credit hours must be from relevant graduate level courses that have substantial non-law content and are offered outside the law school or jointly by the law school and another department. In addition to completing required coursework, LL.M. candidates must complete a written project in connection with a seminar or the Conservation Clinic.

Six credit hours of coursework in graduate-level courses listed outside the law school or jointly listed by the law school and another graduate department and approved by the LL.M. Program Director are required. For elective courses, please visit <http://www.law.ufl.edu/academics/degree-programs/ll-m-environmental-land-use-law/degree-requirements>.

For more information about the Environmental and Land Use Law Program, please see our website: <http://www.law.ufl.edu/academics/degree-programs/ll-m-environmental-land-use-law>, or contact:

University of Florida  
Levin College of Law  
P.O. Box 117625  
Gainesville, FL 32611-7625  
Phone: 352-273-0777  
Email: [elulp@law.ufl.edu](mailto:elulp@law.ufl.edu)

## **Degrees Offered with a Major in Environmental and Land Use Law**

Master of Laws in Environmental and Land Use Law

### **Courses**

- LAW 7493: LL.M. Research: Selected Topics in Environmental & Land Use Law
- LAW 7916: Research Methods and Environmental Land Use Law

## **Taxation Department**

*Chair and Graduate Coordinator:* M. K. Friel.

*Complete faculty listing by department:* Follow this link.

Graduate study in the field of taxation leading to the Master of Laws in Taxation degree or to the Master of Laws in International Tax degree is available in the College of Law.

Applicants for admission to the Graduate School for these degrees must hold a law degree from an accredited law school or in the case of international students, from a recognized foreign university but need not submit scores on the Graduate Record Examination. For further information concerning admission consult the *Graduate Tax Program Catalog*, or write the Tax Office, 320 Holland Law Center.

## **International Taxation**

### **College**

Fredric G. Levin College of Law

**Department/School**

Taxation Department

**Degrees Offered with a Major in International Taxation**

Master of Laws in International Taxation

**Taxation Departmental Courses**

- LAW 7602: Taxation of Property Transactions
- LAW 7604: Timing Issues in Taxation
- LAW 7611: Corporate Taxation I
- LAW 7613: Corporate Taxation II
- LAW 7614: U.S. International Tax I
- LAW 7615: U.S. International Tax II
- LAW 7617: Partnership Taxation
- LAW 7623: Taxation of Gratuitous Transfers
- LAW 7625: Income Taxation of Trusts and Estates
- LAW 7626: Estate Planning
- LAW 7632: Deferred Compensation
- LAW 7633: Tax Exempt Organizations
- LAW 7640: Civil Tax Procedure
- LAW 7641: Procedures in Tax Fraud Cases
- LAW 7650: State and Local Taxation
- LAW 7660: Tax Policy
- LAW 7680: Comparative Taxation
- LAW 7682: Income Tax Treaties
- LAW 7683: Transfer Pricing
- LAW 7905: Independent Study
- LAW 7910: Supervised Research
- LAW 7911: Federal Tax Research
- LAW 7931: Current Federal Tax Problems

**Taxation****College**

Fredric G. Levin College of Law

**Department/School**

Taxation Department

**Degrees Offered with a Major in Taxation**

## Master of Laws in Taxation

### Taxation Departmental Courses

- LAW 7602: Taxation of Property Transactions
- LAW 7604: Timing Issues in Taxation
- LAW 7611: Corporate Taxation I
- LAW 7613: Corporate Taxation II
- LAW 7614: U.S. International Tax I
- LAW 7615: U.S. International Tax II
- LAW 7617: Partnership Taxation
- LAW 7623: Taxation of Gratuitous Transfers
- LAW 7625: Income Taxation of Trusts and Estates
- LAW 7626: Estate Planning
- LAW 7632: Deferred Compensation
- LAW 7633: Tax Exempt Organizations
- LAW 7640: Civil Tax Procedure
- LAW 7641: Procedures in Tax Fraud Cases
- LAW 7650: State and Local Taxation
- LAW 7660: Tax Policy
- LAW 7680: Comparative Taxation
- LAW 7682: Income Tax Treaties
- LAW 7683: Transfer Pricing
- LAW 7905: Independent Study
- LAW 7910: Supervised Research
- LAW 7911: Federal Tax Research
- LAW 7931: Current Federal Tax Problems

## College of Liberal Arts and Sciences

Interim Dean: David Richardson

Complete faculty listings: [Follow this link.](#)

The College of Liberal Arts and Sciences constitutes the intellectual core of the university. Its principal mission is to lead the academic quest to understand our place in the universe, and to help shape our society and environment.

For more information, please see our website: <http://www.clas.ufl.edu>

Departments and Programs within the College of Liberal Arts and Sciences

College of Liberal Arts and Sciences Courses

### Genetics and Genomics (CLAS)

#### College

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Medicine

## **Genetics and Genomics Program Information**

*Program Co-Directors:* Connie Mulligan and John M. Davis

*Complete faculty listing:* Follow this link

The University of Florida Genetics Institute is a multi-college, multi-faceted research center which offers the a degree program leading to the Ph.D. in Genetics and Genomics. Minimum requirements for this degree are available in the Graduate Degrees section of this catalog.

What defines the Genetics & Genomics Graduate Program is the philosophy that good geneticists are integrative geneticists, who incorporate many different subfields of genetics into their work. Accordingly, faculty interests and graduate research opportunities include a wide range of areas: advances in gene therapy, understanding the maintenance of genetic variation, understanding plant immune responses, developing improved algorithms for identifying regulatory motifs in DNA sequences, and the challenges of bioethics to strategies for controlling malaria. Due to the fundamental nature of genetics in the life sciences, our training program is distributed across several colleges at UF, including but not limited to the College of Medicine, the College of Liberal Arts and Sciences, and the College of Agricultural and the Life Sciences.

### **Graduate Program Overview**

#### **First Year:**

- Advanced Genetics (PCB 5065)
- Genomics & Bioinformatics (GMS 6231)
- Statistical Methods Research II (STA 6167)
- Advanced Molecular & Cellular Biology (BCH 6415)
- Ethics in Genetics (GMS 6221)
- Seminar in Genetics (GMS 6290) begins in the first semester and continues throughout students' graduate careers

The first year core training is the research rotation program, in which students "rotate" through three labs in a minimum of two colleges. Rotations are critical to selecting a graduate advisor: they provide a hands-on opportunity to participate in the research being conducted in a lab, and a mutual opportunity to evaluate fit between advisor and prospective student.

#### **Second Year:**

- Individual program of courses and requirements is developed in consultation with major professor and dissertation committee

**Admission Standards:** Prospective students should have strong backgrounds in biology and other hard sciences. Exceptional students with other backgrounds will also be considered. The research statement required as part of the application has a particularly important part in the admissions decision. Each applicant must describe his/her research interests, so that Graduate Faculty can evaluate knowledge of the discipline, fit to the program, and ability to articulate and motivate an interesting research problem. The required Letters of Recommendation are also extremely important in helping identify applicants with exceptional aptitude for genetics, and with research experience and promise.

Contact the Genetics and Genomics Graduate Program by email, [UFGI-Info@uad.ufl.edu](mailto:UFGI-Info@uad.ufl.edu) or by phone, 352-273-8100.

For more information, visit our website: <http://www.ufgi.ufl.edu>.

## **Degrees Offered with a Major in Genetics and Genomics**

Doctor of Philosophy

Doctor of Philosophy - Clinical and Translational Science

## **Courses**

- AGR 6322: Advanced Plant Breeding
- ANG 6532: Molecular Genetics of Disease
- ANG 7979: Advanced Research
- ANG 7980: Research for Doctoral Dissertation
- BCH 6415: Advanced Molecular and Cell Biology
- BCH 7410: Advanced Gene Regulation
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5805: Computer Simulation Concepts
- CIS 6930: Special Topics in CIS
- COT 5405: Analysis of Algorithms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6920: Genetics Journal Colloquy
- GMS 7979: Advanced Research
- GMS 7980: Research for Doctoral Dissertation
- HOS 6201: Breeding Perennial Cultivars
- PCB 5065: Advanced Genetics
- PCB 5235L: Experiments in Immunology
- PCB 5615: Molecular Evolution and Systematics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6178: Genetic Data Analysis
- STA 6208: Basic Design and Analysis of Experiments

- STA 6329: Matrix Algebra and Statistical Computing
- STA 6934: Special Topics in Statistics
- STA 7979: Advanced Research
- STA 7980: Research for Doctoral Dissertation
- ZOO 6927: Special Topics in Zoology
- ZOO 7979: Advanced Research
- ZOO 7980: Research for Doctoral Dissertation

## **Animal Molecular and Cellular Biology Department**

*Director:* P.J. Hansen

*Complete faculty listing by department:* Follow this link.

For more information about the program, contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu), follow the link below to our catalog page, or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

## **Animal Molecular and Cellular Biology**

### **College**

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Veterinary Medicine

### **Department/School**

Animal Molecular and Cellular Biology Department

### **Animal Molecular and Cellular Biology Program**

The animal molecular and cell biology (AMCB) graduate program offers Master of Science and Doctor of Philosophy degrees. Faculty are drawn from these disciplines:

- Animal Sciences
- Biochemistry and Molecular Biology
- Large Animal Clinical Sciences
- Obstetrics and Gynecology
- Zoology

Early in the program, students choose a faculty supervisor who will ensure the quality of their research experience. Students may also do optional rotations through the laboratories of one or more other faculty. The Annual Research Symposium features guest speakers and student research presentations. A weekly journal club and monthly seminars draw on the knowledge and diversity the campus offers in molecular and cell biology.

Core course requirements for the M.S. degree are BCH 5045 and registration in a 1-credit graduate seminar course. Core course requirements for the Ph.D. include BCH 5413 and GMS 6421 and registration in two graduate seminar courses.

Contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu) or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

## Degrees Offered with a Major in Animal Molecular and Cellular Biology

Doctor of Philosophy

Master of Science

## Animal Molecular and Cellular Biology Courses

- ALS 5905: Individual Study
- ALS 6046: Grant Writing
- ANS 5312C: Applied Ruminant Reproductive Management
- ANS 5446: Animal Nutrition
- ANS 5935: Reproductive Biology Seminar and Research Studies
- ANS 6288: Experimental Techniques and Analytical Procedures in Meat Research
- ANS 6314: Experimental Embryology
- ANS 6313: Current Concepts in Reproductive Biology
- ANS 6449: Vitamins
- ANS 6452: Principles of Forage Quality Evaluation
- ANS 6458: Advanced Methods in Nutrition Technology
- ANS 6636: Meat Technology
- ANS 6666L: Molecular and Cellular Research Methods
- ANS 6702: Lactation Physiology of Farm Animals
- ANS 6704: Mammalian Endocrinology
- PCB 6816: Thermal Physiology
- ANS 6707: Growth Physiology in Farm Animals
- ANS 6711: Current Topics in Equine Nutrition and Exercise Physiology
- ANS 6715: Gastrointestinal and Feed Microbiology
- ANS 6716: Physiology in Farm Animals
- ANS 6718: Nutritional Physiology of Domestic Animals
- ANS 6723: Mineral Nutrition and Metabolism
- ANS 6745: Introduction to Statistical Genetics
- ANS 6750: Reproductive Physiology in Farm Animals
- ANS 6751: Physiology of Reproduction
- **ANS 6751C**
- ANS 6767: Molecular Endocrinology
- ANS 6905: Problems in Animal Science
- ANS 6910: Supervised Research
- ANS 6932: Special Topics in Animal Science
- ANS 6933: Graduate Seminar in Animal Science
- ANS 6936: Graduate Seminar in Animal Molecular and Cell Biology
- ANS 6939: Animal Molecular and Cellular Biology Journal Colloquy
- ANS 6940: Supervised Teaching
- ANS 6971: Research for Master's Thesis
- ANS 7979: Advanced Research
- ANS 7980: Research for Doctoral Dissertation

- BCH 5045: Graduate Survey of Biochemistry
- BCH 6876: Recent Advances in Membrane Biology
- BME 5085: Patents, Product Development, and Technology Transfer
- BME 5401: Biomedical Engineering and Physiology I
- BCH 5413: Mammalian Molecular Biology and Genetics
- BCH 6740: Physical Biochemistry/Structural Biology
- BCH 6877: Recent Advances in Structural Biology
- BCH 6878: Recent Advances in Cytoskeletal Processes
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6031: Molecular Immunology
- GMS 6051: Signal Transduction
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6140: Principles of Immunology
- GMS 6331: Stem Cell Biology
- GMS 6421: Cell Biology
- GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation
- MCB 5305L: Microbial Genetics and Biotechnology Laboratory
- MCB 6485: Advanced Techniques in Microbiology and Cell Science
- PCB 5065: Advanced Genetics
- PCB 5235: Immunology
- PCB 5615: Molecular Evolution and Systematics
- PHA 6449: Pharmacogenomics
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6934: Special Topics in Statistics
- VME 5244: Physiology: Organ Systems
- VME 6602: General Toxicology
- VME 6810: Integrating Veterinary Medicine with Shelter Systems
- VME 6811: Shelter Animal Physical Health
- VME 6812: Shelter Animal Behavior and Welfare
- ZOO 6927: Special Topics in Zoology

## Anthropology Department

*Chair:* S. deFrance

*Graduate Coordinator:* P. Collings

*Complete faculty listing by department:* [Follow this link.](#)

The Anthropology Department takes pride in maintaining a holistic perspective, bridging the four traditional fields that have composed the discipline: sociocultural, archaeological, biological, and linguistic anthropology. Both graduate



students and faculty conduct research that cut across the four-fields, and extend anthropological investigations into other disciplines.

The graduate program is a mentoring program emphasizing the PhD degree. Students are mentored by faculty advisors, together with supervisory committees chosen by students with the advice of advisors. Graduate students are expected to be in residence to attend classes and seminars, and receive individualized training. Distance-education graduate degrees are not offered. Students formally report on their progress each year, and the progress of each graduate student is evaluated by the faculty in their primary field.

Students receiving graduate degrees are well-prepared intellectually and professionally for success in a wide variety of careers, and become leaders in developing the next generation of anthropology. The department offers teaching experience and resources for presenting conference papers, submitting grant proposals, conducting fieldwork, and other activities appropriate to their professionalization. Graduate students are welcome to contribute to discussions in departmental meetings, and serve on some departmental committees.

## **Anthropology**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Anthropology Department

### **Anthropology Program**

The department of Anthropology offers graduate work leading to the Master of Arts (thesis or nonthesis option) and Doctor of Philosophy degrees. Requirements for these degrees are given in the General Information section of this catalog. For more information, visit the departmental website: <http://anthro.ufl.edu>. Graduate training is offered in cultural anthropology, archeology, and biological anthropology.

Each graduate student should specify a major field of study among the four fields of anthropology. In addition, each must choose one of three tracks: the specialized track in which a student focuses on one field of anthropology, the multifield track in which a student combines two fields, or the interdisciplinary track in which a student adds study in a second discipline to anthropology. Knowledge of a foreign language or of statistics may be required by the student's supervisory committee.

The department generally requires applicants to have acceptable scores on the GRE (verbal and quantitative portions) and a 3.2 overall grade point average based on a 4.0 system. Previous work in anthropology is an asset but not a strict requirement for admission. Potential applicants are urged to visit the website to familiarize themselves with the specializations of our faculty and to indicate in their application those faculty with whom they might work. Barring special circumstances, the Department restricts admission to applicants interested in earning a Ph.D. Entering students who have earned a master's degree may apply for direct admission to the doctoral program. Students who enter without an M.A. will generally work for their M.A. on the way to the Ph.D. This requires either a formally-defended thesis or written comprehensive exams combined with a high-quality paper or research report. With their adviser's permission, they may opt to bypass the M.A.

Students enrolled in the M.A. program who wish to continue their studies for a Ph.D. must apply to the Department for certification.

New students are admitted into the graduate program only in the fall of each academic year. The deadline for receiving completed applications for admission into the graduate program is December 15, though the department encourages early applications.

## **Degrees Offered with a Major in Anthropology**

### **Doctor of Philosophy**

without a concentration

concentration in Historic Preservation

concentration in Tropical Conservation and Development

concentration in Women's/Gender Studies

### **Master of Arts**

without a concentration

concentration in Historic Preservation

concentration in Tropical Conservation and Development

### **Master of Arts in Teaching**

without a concentration

concentration in Tropical Conservation and Development

## **Courses**

- ANG 5012: Fantastic Anthropology and Fringe Science
- ANG 5085: Collection and Analysis of Visual Data in Anthropology
- ANG 5126: Zooarcheology
- ANG 5158: Florida Archeology
- ANG 5162: Maya Archeoastronomy and Ethnoastronomy
- ANG 5164: The Inca and Their Ancestors
- ANG 5172: Historical Archeology
- ANG 5194: Principles of Archeology
- ANG 5255: Rural Peoples in the Modern World
- ANG 5265: Methods in Ethnoecology
- ANG 5266: Economic Anthropology
- ANG 5303: Women and Development

- ANG 5310: The North American Indian
- ANG 5323: Peoples of Mexico and Central America
- ANG 5327: Maya and Aztec Civilizations
- ANG 5330: The Tribal Peoples of Lowland South America
- ANG 5331: Peoples of the Andes
- ANG 5336: The Peoples of Brazil
- ANG 5341: Anthropology of the Caribbean
- ANG 5352: Peoples of Africa
- ANG 5354: Anthropology of Modern Africa
- ANG 5395: Visual Anthropology
- ANG 5420: Social Network Analysis in Cultural Anthropology
- ANG 5426: Kinship and Social Organization
- ANG 5464: Culture and Aging
- ANG 5485: Research Design in Anthropology
- ANG 5486: Computing for Anthropologists
- ANG 5488: Geospatial Analysis in Cultural Anthropology
- ANG 5525: Human Osteology and Osteometry
- ANG 5531: Culture and Nutrition
- ANG 5546: Seminar: Human Biology and Behavior
- ANG 5620: Language and Culture
- ANG 5621: Proseminar in Cultural and Linguistic Anthropology
- ANG 5700: Applied Anthropology
- ANG 5702: Anthropology and Development
- ANG 5711: Culture and International Business
- ANG 5743: Human Rights Missions in Forensic Anthropology
- ANG 5744: International Forensic Fieldwork in Human Rights
- ANG 5802: Methods for the Observation of Behavior
- ANG 5824L: Field Sessions in Archeology
- ANG 6034: Seminar in Anthropological History and Theory
- ANG 6086: Historical Ecology
- ANG 6091: Research Strategies in Anthropology
- ANG 6110: Archaeological Theory
- ANG 6112: Critical Archaeology of Time
- ANG 6113: Ideology and Symbolic Approaches in Archaeology
- ANG 6120C: Environmental Archaeology
- ANG 6122C: Archaeological Ceramics
- ANG 6128: Lithic Technology
- ANG 6146: Archaeology of Maritime Adaptations
- ANG 6155: Southeastern U.S. Prehistory
- ANG 6161: Problems in Caribbean Prehistory
- ANG 6165: Problems in South American Archaeology
- ANG 6183: Laboratory Training in Archeology
- ANG 6185: Ethnoarchaeology
- ANG 6186: Seminar in Archeology
- ANG 6187: Experimental Archaeology
- ANG 6190: Seminar in Contemporary Methods
- ANG 6191: Archaeology of Death
- ANG 6224: Painted Books of Ancient Mexico: Codices of Aztecs, Mixtecs, and Mayas
- ANG 6241: Special Topics in Ecology of Religion

- ANG 6267: Anthropology, Geographic Information System, and Human Ecosystems
- ANG 6273: Legal Anthropology
- ANG 6274: Principles of Political Anthropology
- ANG 6286: Seminar in Contemporary Theory
- ANG 6304: Seminar in Gender and International Development
- ANG 6314: Peoples of the Arctic
- ANG 6351: Peoples and Culture in Southern Africa
- ANG 6360: Ethnicity in China
- ANG 6366: Family, Gender, and Population in China
- ANG 6407: Sickness and Power
- ANG 6421: Landscape, Place, Dwelling
- ANG 6452: Race and Racism in Anthropological Theory
- ANG 6453: Human Rights in Cross-Cultural Perspective
- ANG 6478: Evolution of Culture
- ANG 6481: Research Methods in Cognitive Anthropology
- ANG 6483L: Anthropology of Science
- ANG 6511: Seminar in Physical Anthropology
- ANG 6514: Human Origins
- ANG 6524: Skeletal Mechanics in Biological Anthropology
- ANG 6532: Molecular Genetics of Disease
- ANG 6547: Human Adaptation
- ANG 6552: Primate Behavior
- ANG 6553: Primate Cognition
- ANG 6555: Issues in Evolutionary Anthropology
- ANG 6583: Primate Functional Morphology
- ANG 6591L: Advanced Molecular Anthropology Laboratory
- ANG 6592: Seminar in Molecular Anthropology
- ANG 6593L: Biological Anthropology Laboratory
- ANG 6701: Seminar on Applied Anthropology
- ANG 6737: Medical Anthropology
- ANG 6740: Advanced Techniques in Forensic Anthropology
- ANG 6801: Ethnographic Field Methods
- ANG 6905: Individual Work
- ANG 6910: Supervised Research
- ANG 6915: Research Projects in Social, Cultural, and Applied Anthropology
- ANG 6917: Professions of Anthropology
- ANG 6930: Special Topics in Anthropology
- ANG 6940: Supervised Teaching
- ANG 6945: Internship in Anthropology
- ANG 6971: Research for Master's Thesis
- ANG 7979: Advanced Research
- ANG 7980: Research for Doctoral Dissertation

## Astronomy Department

*Chair:* C. Telesco

*Graduate Coordinator:* V. Sarajedini.

*Complete faculty listing by department:* Follow this link.

The University of Florida's Astronomy Department is one of the largest in the country. Research is an integral part of the graduate program. Students have opportunities to work with faculty and staff on a broad range of astronomical problems using in-house, national and international, and ground- and space-based facilities. Support for graduate studies is available through fellowships, research assistantships, and teaching assistantships. For more information on the program, please follow the link below or visit our website.

## Astronomy

### College

College of Liberal Arts and Sciences

### Department/School

Astronomy Department

### Astronomy Program Information

The Astronomy Department offers graduate programs leading to the M.S., M.S.T. or Ph.D. degrees in astronomy. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

**Planetary Systems:** Observational and theoretical studies concentrate in the areas of planet formation, the dynamical evolution of planetary systems and the detection and characterization of extrasolar planets. Members of the department are active in Kepler Mission and ground-based Dopple surveys to identify extrasolar planets. Researchers are also active in studying the origins and orbital evolution of interplanetary dust and small bodies in the solar system and around nearby stars.

**Stellar populations:** Observational studies concentrate on resolved stars in the Milky Way and nearby galaxies. Studies of particular classes of stars include various types of binary stars and blue stragglers. The goal of these studies is to apply our theoretical understanding of stellar structure and evolution to the properties of stars in a variety of environments.

**Origins of stars and planets:** Observational studies focus on the properties of giant molecular clouds, the collapse of molecular cloud cores, the formation of stars in clusters and in isolation, and the formation and evolution of circumstellar and protoplanetary disks. The department is active in several star formation surveys, involving many international ground- and space-based facilities. Theoretical studies emphasize the development of analytic models and numerical simulations, as well as their testing against observational constraints.

**Structure and evolution of galaxies:** Observational programs use multi-wavelength photometry of stars and star clusters in galaxies throughout the Local Group and in nearby groups, including the Milky Way, to study galaxy evolution. Other observations focus on the structure and dynamics of galaxies and their interstellar medium using neutral hydrogen (HI) and molecules such as carbon monoxide.

**Extragalactic astronomy and cosmology:** Observational programs investigate the nature of ultra-luminous galaxies, active galactic nuclei (AGNs), and the formation and chemical evolution of distant galaxies and clusters of galaxies. Theoretical investigations focus on the emission/absorption features in AGN spectra, the star-formation and

chemical-evolution properties of galaxies, and applications of general relativity and particle physics to conditions in the very early universe.

**Instrumentation programs:** The UF Infrared Astrophysics Laboratory is a world leader in designing and constructing advanced near-infrared and mid-infrared instrumentation for major telescopes around the world, including the 8m Gemini North and South Telescopes and the 10m Gran Telescopio Canarias. Instrumentation is also developed in the area of high precision Doppler techniques for planet searches and the development of high contrast imaging techniques for direct imaging of extrasolar planets.

**Computing facilities:** The Astronomy Department maintains a network of high-performance computers running Linux and OS-X. The local network is maintained by a full-time systems manager. Astronomy students have access to supercomputing facilities maintained by the UF High Performance Computing Center, including thousands of CPU cores with high-performance networking.

## Degrees Offered with a Major in Astronomy

Doctor of Philosophy

Master of Science

Master of Science in Teaching

## Courses

- AST 5113: Solar System Astrophysics I
- AST 5114: Solar System Astrophysics II
- AST 6112: Solar System Astrophysics
- AST 6215: Stellar Structure and Function
- AST 6245: Stellar Atmospheres and Radiative Processes
- AST 6309: Galactic and Extragalactic Astronomy
- AST 6336: Interstellar Matter
- AST 6415: Observational Cosmology
- AST 6416: Physical Cosmology
- AST 6506: Celestial Mechanics
- AST 6725C: Observational Techniques
- AST 6905: Individual Work
- AST 6910: Supervised Research
- AST 6925: Departmental Colloquium
- AST 6935: Frontiers in Astronomy
- AST 6936: Astronomy Journal Club
- AST 6971: Research for Master's Thesis
- AST 7939: Special Topics
- AST 7979: Advanced Research
- AST 7980: Research for Doctoral Dissertation

## **Biology Department**

College of Liberal Arts and Sciences

*Chair:* Craig W. Osenberg

*Graduate Coordinator:* W. Bradley Barbazuk

*Complete faculty listing by department:* Follow this link.

The Department of Biology offers two graduate programs: Botany and Zoology. Both programs offer graduate work leading to the degrees of Master of Science, Master of Science in Teaching, and Doctor of Philosophy. Requirements for these degrees are available in the Graduate Degrees section of this catalog.

More information regarding these programs is available by following the links below and by visiting our departmental website: <http://www.biology.ufl.edu>.

## **Botany**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Biology Department

### **Botany Program Information**

*Chair:* Craig W. Osenberg

*Graduate Coordinator:* W. Bradley Barbazuk

The Department of Biology offers graduate work in Botany leading to the degrees of Master of Science, Master of Science in Teaching, and Doctor of Philosophy. Requirements for these degrees are given in the Graduate Degrees section of this catalog.

The Department offers studies in the areas of biochemistry, molecular biology, cell biology, physiology, ecology, systematics, and evolution. Specific areas of specialization include anatomy/morphology with emphasis on extant and fossil vascular plants; ecology and environmental studies including ecosystem ecology, conservation biology and genetics, fire ecology, exotic invasive species, and tropical botany and ecology; cell biology with emphasis on the cytoskeleton and cell morphogenesis; physiology, biochemistry, and molecular biology with emphasis on photosynthesis, growth and development of angiosperms, protein phosphorylation and signal transduction, global analysis of spatial patterns of gene expression; plant secondary metabolism and proteomics; systematics with emphasis on DNA- and morphology-based phylogenetic analyses, phylogeographic studies, molecular evolution/development, and monographic and floristic studies. To be considered for admission to graduate studies, students should have:

- The equivalent of an undergraduate degree in botany or biology with basic course work in their area of interest
- Acceptable GRE scores (verbal, quantitative, and analytical writing)

- Letters of recommendation
- International students must submit an acceptable score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute program. The program of graduate study for each student will be determined by a supervisory committee, and deficiencies in background coursework will be made up early in the graduate program. No more than 9 credits of BOT 6905 may be used to satisfy the credit requirements for a master's degree.

## **Degrees Offered with a Major in Botany**

### **Doctor of Philosophy**

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science**

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science in Teaching**

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## **Botany Courses**

- BOT 5225C: Plant Anatomy
- BOT 5305: Paleobotany
- BOT 5505C: Intermediate Plant Physiology
- BOT 5625: Plant Geography
- BOT 5655C: Physiological Plant Ecology
- BOT 5685C: Tropical Botany
- BOT 5695C: Ecosystems of Florida
- BOT 5725C: Taxonomy of Vascular Plants
- BOT 6508C: Proteomics Theory and Practice
- BOT 6516: Plant Metabolism
- BOT 6566: Plant Growth and Development



- BOT 6716C: Advanced Taxonomy
- BOT 6726C: Principles of Systematic Biology
- BOT 6905: Individual Studies in Botany
- BOT 6910: Supervised Research
- BOT 6927: Advances in Botany
- BOT 6935: Special Topics
- BOT 6936: Graduate Student Seminar
- BOT 6940: Supervised Teaching
- BOT 6943: Internship in College Teaching
- BOT 6971: Research for Master's Thesis
- BOT 7979: Advanced Research
- BOT 7980: Research for Doctoral Dissertation
- PCB 5046C: Advanced Ecology
- PCB 5338: Principles of Ecosystem Ecology
- PCB 5356: Tropical Ecology
- PCB 6675C: Evolutionary Biogeography
- PLP 6656C: Fungal Biology

## **Zoology**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Biology Department

### **Zoology Program Info**

*Chair:* Craig W. Osenberg

*Graduate Coordinator:* W. Bradley Barbazuk

The Department of Biology offers graduate programs in Zoology leading to the Master of Science in Teaching, Master of Science, and Doctor of Philosophy degrees. The requirements for these degrees can be found in the Graduate Degrees section of this catalog.

Our program emphasizes Integrative Biology, with integration accomplished through a focus on the theoretical foundations provided by evolutionary biology and ecology. Our faculty has expertise in ecology, evolution, behavior, comparative and environmental physiology, genetics, development, and phylogenetics. We work in a variety of terrestrial and aquatic environments and geographic regions (tropics through subpolar), and on a range of organisms (including plants). Our faculty value integrative research (e.g., by crossing levels of organization from gene expressions to species interactions), linking theory with data (through use of statistical and mathematical tools), and using natural history to guide the development and testing of rigorous conceptual frameworks. Many of our faculty also are interested in applying and testing basic science in applied contexts (e.g., conservation biology and ecotoxicology).

Our approach is highlighted through our first-year, required, graduate course, Integrative Principles. Each student's supervisory committee will recommend additional courses according to the academic background and research plans of the student.

## **Degrees Offered with a Major in Zoology**

### **Doctor of Philosophy**

without a concentration

concentration in Animal Molecular and Cellular Biology

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science**

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### **Master of Science in Teaching**

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## **Zoology Courses**

- BOT 6726C: Principles of Systematic Biology
- PCB 5307C: Limnology
- PCB 5415C: Behavioral Ecology
- PCB 5615: Molecular Evolution and Systematics
- PCB 6049: Seminar in Ecology
- PCB 6377C: Physiological Ecology of Vertebrates
- PCB 6447C: Community Ecology
- PCB 6675C: Evolutionary Biogeography
- PCB 6695: Seminar in Evolutionary Biology
- ZOO 5115C: Vertebrate Paleontology
- ZOO 5486C: Mammalogy
- ZOO 6005: Integrative Principles of Zoology I
- ZOO 6308: Dynamic Optimization Modeling in Behavioral and Evolutionary Ecology
- ZOO 6406: Biology of Sea Turtles

- ZOO 6456C: Ichthyology
- ZOO 6542: Nutritional Ecology
- ZOO 6905: Individual Studies
- ZOO 6910: Supervised Research
- ZOO 6920: Zoology Colloquium
- ZOO 6927: Special Topics in Zoology
- ZOO 6931: Seminar in Marine Turtle Biology
- ZOO 6939: Seminar in Animal Behavior
- ZOO 6971: Research for Master's Thesis
- ZOO 7979: Advanced Research
- ZOO 7980: Research for Doctoral Dissertation

## Chemistry Department

Chair: W. Dolbier

Graduate Coordinator: B. W. Smith

Complete faculty listing: [Follow this link.](#)

The Department of Chemistry granted its first master's degree in 1909 and the first Ph.D. in 1930. Specializations in biochemistry, organic, physical, inorganic and analytical are offered with extensive interdisciplinary research opportunities (e.g., bio/nano-science, particle science, green chemistry, polymer chemistry, chemical physics, health related biochemistry, chemistry-engineering, and genomics).

The Department presently offers the Master of Science and Doctor of Philosophy degrees with a major in chemistry. The non-thesis Master of Science in Teaching degree is also offered with a major in chemistry.

## Chemistry

### College

College of Liberal Arts and Sciences

### Department/School

Chemistry Department

### Chemistry Program

The department offers the Master of Science (thesis or nonthesis) and Doctor of Philosophy degrees with a major in chemistry and specialization in biochemistry, analytical, organic, inorganic, or physical chemistry. The nonthesis degree Master of Science in Teaching is also offered with a major in chemistry. New graduate students should have adequate undergraduate training in inorganic, analytical, organic, and physical chemistry. Normally this will include as a minimum a year of general chemistry, one semester of quantitative analysis, one year of organic chemistry, one year of physical chemistry, and one semester of advanced inorganic chemistry. Additional courses in instrumental analysis, biochemistry, and advanced physical and organic chemistry are desirable. Deficiencies in any of these

areas may be corrected during the first year of graduate study. Such deficiencies are determined by a series of placement tests given prior to registration, and the results of these tests are used in planning the student's program. Doctoral candidates are required to complete at least 9 semester credits of courses specified by the division of the Chemistry Department in which they choose to specialize, as well as at least 9 semester credits of out-of-major-division courses. There are some minor restrictions on courses that may be used to meet this requirement. Additional courses may be required by the student's supervisory committee or major professor.

Ph.D. candidates must serve not less than one year as teaching assistants. This requirement will be waived only when, in the opinion of the department, unusual circumstances justify such action. A chemical physics option is offered for students who will be doing research in areas of physical chemistry which require a strong background in physics. For this option, a student meets the departmental requirements for concentration in physical chemistry, except that only one out-of-major division course is required. In addition, a minimum of 14 credits in 4000 level or higher physics courses or a minimum of 7 such credits in physics and 7 in 4000 level or higher mathematics courses is required. Candidates for the master's degree are required to complete any two core courses. The Master of Science degree in chemistry has both thesis and nonthesis options. The nonthesis degree Master of Science in Teaching is offered with a major in chemistry and requires a written paper of substantial length (30 to 50 pages) on an approved topic pertaining to some phase of chemistry, under the course CHM 6905.

## **Degrees Offered with a Major in Chemistry**

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

concentration in Imaging Science and Technology

Master of Science

Master of Science in Teaching

## **Courses**

- CHM 5224: Basic Principles for Organic Chemistry
- CHM 5235: Organic Spectroscopy
- CHM 5275: The Organic Chemistry of Polymers
- CHM 5305: Chemistry of Biological Molecules
- CHM 5413L: Advanced Physical Chemistry Laboratory
- CHM 5511: Physical Chemistry of Polymers
- CHM 6036: Chemical Biology
- CHM 6037: Chemical Biology and Biochemistry Seminar
- CHM 6153: Electrochemical Processes
- CHM 6154: Chemical Separations
- CHM 6155: Spectrochemical Methods

- CHM 6158C: Electronics and Instrumentation
- CHM 6159: Mass Spectrometric Methods
- CHM 6165: Chemometrics
- CHM 6180: Special Topics in Analytical Chemistry
- CHM 6190: Analytical Chemistry Seminar
- CHM 6225: Advanced Principles of Organic Chemistry
- CHM 6226: Advanced Synthetic Organic Chemistry
- CHM 6227: Topics in Synthetic Organic Chemistry
- CHM 6251: Organometallic Compounds
- CHM 6271: The Chemistry of High Polymers
- CHM 6301: Enzyme Mechanisms
- CHM 6302: Chemistry and Biology of Nucleic Acids
- CHM 6303: Methods in Computational Biochemistry and Structural Biology
- CHM 6306: Special Topics in Biological Chemistry Mechanisms
- CHM 6381: Special Topics in Organic Chemistry
- CHM 6390: Organic Chemistry Seminar Presentation
- CHM 6391: Organic Chemistry Seminar Discussion
- CHM 6430: Chemical Thermodynamics
- CHM 6461: Statistical Thermodynamics
- CHM 6470: Chemical Bonding and Spectra I
- CHM 6471: Chemical Bonding and Spectra II
- CHM 6480: Elements of Quantum Chemistry
- CHM 6490: Theory of Molecular Spectroscopy
- CHM 6520: Chemical Physics
- CHM 6580: Special Topics in Physical Chemistry
- CHM 6586: Computational Chemistry
- CHM 6590: Physical Chemistry Seminar
- CHM 6620: Advanced Inorganic Chemistry I
- CHM 6621: Advanced Inorganic Chemistry II
- CHM 6626: Applications of Physical Methods in Inorganic Chemistry
- CHM 6628: Chemistry of Solid Materials
- CHM 6670: Inorganic Biochemistry
- CHM 6680: Special Topics in Inorganic Chemistry
- CHM 6690: Inorganic Chemistry Seminar
- CHM 6720: Chemical Dynamics
- CHM 6905: Individual Problems, Advanced
- CHM 6910: Supervised Research
- CHM 6934: Advanced Topics in Chemistry
- CHM 6935: Chemistry Colloquium
- CHM 6943: Internship in College Teaching
- CHM 6971: Research for Master's Thesis
- CHM 7485: Special Topics in Theory of Atomic and Molecular Structure
- CHM 7979: Advanced Research
- CHM 7980: Research for Doctoral Dissertation
- CHS 5110L: Radiochemistry Laboratory

## Classics Department

*Chair:* Mary Ann Eaverly.

*Graduate Coordinator:* Jennifer Rea.

*Complete faculty listing:* Follow this link.

The department offers the following degrees and programs: the Doctor of Philosophy in classical studies; the Master of Arts degree in classical studies or Latin; the Master of Latin degree, and the Master of Arts in Teaching degree in Latin. Requirements for these degrees are given in the *Graduate Degrees* section of this catalog.

Within the Ph.D. program are three tracks:

- Philology (prepares students for careers in colleges and universities)
- Classical civilization (available via distance course work)
- Latin and Roman studies (available via distance course work).

Requirements for the philology track of the doctoral degree include:

- 60 credit hours after the M.A. (or a total of 90 credit hours)
- Five additional seminars after the M.A. in classics at the 500 level or higher
- Three of the following seminars: GRE 6425, GRW 6105, LAT 6425, LNW 6105, and CLA 6805
- A reading knowledge of two modern languages, one of which must be German
- Reading lists in Greek and Roman authors
- Supervised experience in teaching Latin, Greek, or civilization courses is advised
- Successful completion of a series of qualifying examinations appropriate to the chosen specialization (Greek reading; Latin reading; classical Greek literature in its historical context; classical Latin literature in its historical context; special author/topic)
- An oral preliminary examination, dissertation, and final examination

The M.A. degree in classical studies is recommended for students who plan to continue on to the doctoral level. The M.A. degree in Latin is recommended for students who plan to pursue a career in secondary teaching. Both M.A. programs require 30 credit hours, including 6 credits of GRW 6971 or LNW 6971, a thesis, and final examination.

The Master of Latin degree is a non-thesis degree, designed for currently employed and/or certified teaching professionals who wish to widen their knowledge of Latin, broaden their education in the field of classics, and enhance their professional qualifications through a program of summer course work and directed independent study and/or distance learning courses during the regular academic year. The Master of Arts in Teaching, a non-thesis degree, is offered with a program in Latin and is intended for students preparing to teach in community colleges or high schools.

## **Classical Studies**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Classics Department

### **Classical Studies Program Information**

(The following information refers only to our on-campus programs. Please visit the Distance Learning Homepage for further details on our Distance Learning programs, especially aimed at elementary, secondary, or community college teachers.)

### **Ph.D. in Classical Studies**

The Ph.D. program in classical studies is a traditional course of study in Greek and Latin language and literature that prepares students for careers in research and teaching at colleges and universities. Students awarded a TA position receive a stipend plus a full tuition waiver. The University also offers competitive fellowships. The department routinely provides research fellowships for its Ph.D. candidates. Department awards are also available for study abroad opportunities. Students are expected to become Florida residents after one year.

### **M.A. in Classical Studies**

The Department of Classics at the University of Florida offers an M.A. degree in Classical Studies. Students awarded a TA position receive a stipend plus a full tuition waiver. Students are expected to become Florida residents after one year.

The **Master of Arts in Classical Studies** is recommended for students who plan to continue their studies at the doctoral level

For minimum degree requirements, see the Graduate Degrees section of the catalog. For additional requirements, please see the department website: <http://classics.ufl.edu>.

### **Admissions Requirements to the Classical Studies Programs:**

Admission into the university and the program for Classics is ultimately determined and granted according to the rules established by the Graduate School of the University of Florida (see the Graduate Catalog).

Submission of Graduate Record Examination (GRE) scores, with a minimum score of 1000 (combined verbal and quantitative). Competitive applicants for funding awards from the department typically have a combined score of at least 1200.

Ph.D. program (Level II) requirements include:

1. M.A. in Classics or the equivalent.
2. A GPA of at least 3.25 in previous graduate work, and an undergraduate average of at least 3.0.
3. Demonstrated reading knowledge of German, French, Italian or Modern Greek (competency in the second language to be demonstrated before the completion of the second year at Level II).
4. Deficiencies that can be corrected within one year will not necessarily prevent admission, if the applicant's record gives evidence of the capacity to undertake and complete guided independent reading and research at the doctoral level.

Master's program (Level I) requirements include:

1. Extensive study of Greek and Latin, with at least three years of coursework in one language and at least two years in the other language.
2. At least six hours in one or more of the following: ancient history, ancient art, archaeology, philosophy, literary criticism, linguistics.
3. A GPA of at least a 3.0.
4. Deficiencies that can be corrected within one year will not necessarily prevent admission, if the record shows promise on other grounds.

### **Degrees Offered with a Major in Classical Studies**

Doctor of Philosophy

Master of Arts

### **Classics Departmental Courses**

- CLA 6125: Augustan Age
- CLA 6515: Roman Dynasty: Nero and the Julio-Claudians
- CLA 6795: Greek and Roman Archeology
- CLA 6805: The Classical Research Tradition
- CLA 6885: Roman Law and Society
- CLA 6895: Athenian Law and Society
- CLA 6905: Individual Work
- CLA 6930: Greece and the Near East
- CLT 6295: Greek Drama in Translation
- GRE 6425: Greek Prose Composition
- GRE 6755: Epigraphy
- GRK 6905: Individual Work in Modern Greek
- GRW 6105: The Greek Tradition
- GRW 6216: Greek Novel
- GRW 6316: Greek Tragedy
- GRW 6317: Ancient Greek Comedy
- GRW 6345: Greek Lyric Poetry
- GRW 6346: Pindar
- GRW 6347: Homer
- GRW 6386: Greek Historians
- GRW 6506: Plato
- GRW 6705: Attic Orators
- GRW 6905: Individual Work
- GRW 6930: Special Topics in Greek Literature
- GRW 6931: Comparative Study of Greek and Latin Literature
- GRW 6971: Research for Master's Thesis
- GRW 7979: Advanced Research
- GRW 7980: Research for Doctoral Dissertation
- LAT 6425: Latin Prose Composition
- LNW 5325: Roman Elegiac Poetry
- LNW 5655: Roman Poets: Horace
- LNW 5665: Roman Poets: Vergil
- LNW 5675: Roman Poets: Ovid
- LNW 5931: Comparative Study of Latin and Greek Literature
- LNW 6105: The Roman Tradition
- LNW 6225: The Ancient Roman Novel
- LNW 6315: Plautus and Terence
- LNW 6335: Roman Oratory and Rhetoric
- LNW 6365: Studies in Roman Satire
- LNW 6385: Roman Historians



- LNW 6495: Late Latin Literature
- LNW 6905: Individual Work
- LNW 6933: Special Topics in Latin Literature
- LNW 6935: Proseminar in Classics
- LNW 6940: Supervised Teaching
- LNW 6971: Research for Master's Thesis
- LNW 7979: Advanced Research
- LNW 7980: Research for Doctoral Dissertation

## Latin

### College

College of Liberal Arts and Sciences

### Department/School

Classics Department

### Latin Program Information

(The following information refers only to our on-campus programs. Please visit the Distance Learning Homepage for further details on our Distance Learning MA and ML Programs, especially aimed at elementary, secondary, or community college teachers.)

The Department of Classics at the University of Florida offers an M.A. degree in Latin, an M.A.T. degree in Latin, as well as a Master of Latin degree. Students awarded a TA position receive a stipend plus a full tuition waiver. Students are expected to become Florida residents after one year.

The **Master of Arts in Latin** is a thesis degree designed specifically for students who are aiming toward a career in secondary teaching, but who still desire the writing experience and credential that a thesis provides.

The **Master of Arts in the Teaching of Latin (M.A.T.)** is recommended for students who wish to pursue a career in teaching and who want to include educational courses in their program. This is a non-thesis degree.

The **Master of Latin (M.L.) degree** is designed primarily for currently employed, and/or certified teaching professionals who wish to widen their knowledge of Latin, broaden their education in the field of Classics, and enhance their professional qualifications. This is a non-thesis degree.

For minimum degree requirements, see the Graduate Degrees section of the catalog. For additional requirements, please see the department website: <http://classics.ufl.edu>.

### Admission Requirements to the Latin Programs:

Admission into the university and the program for Classics is ultimately determined and granted according to the rules established by the Graduate School of the University of Florida (see the Graduate Catalog).

Submission of Graduate Record Examination (GRE) scores, with a minimum score of 1000 (combined verbal and quantitative). Competitive applicants for funding awards from the department typically have a combined score of at least 1200.

Master's level (Level I) requirements include:

1. Extensive study of Greek and Latin, with at least three years of coursework in one language and at least two years in the other language.
2. At least six hours in one or more of the following: ancient history, ancient art, archaeology, philosophy, literary criticism, linguistics.
3. A GPA of at least a 3.0.
4. Deficiencies that can be corrected within one year will not necessarily prevent admission, if the record shows promise on other grounds.

## **Degrees**

Master of Arts

Master of Arts in Teaching

Master of Latin

## **Classics Departmental Courses**

- CLA 6125: Augustan Age
- CLA 6515: Roman Dynasty: Nero and the Julio-Claudians
- CLA 6795: Greek and Roman Archeology
- CLA 6805: The Classical Research Tradition
- CLA 6885: Roman Law and Society
- CLA 6895: Athenian Law and Society
- CLA 6905: Individual Work
- CLA 6930: Greece and the Near East
- CLT 6295: Greek Drama in Translation
- GRE 6425: Greek Prose Composition
- GRE 6755: Epigraphy
- GRK 6905: Individual Work in Modern Greek
- GRW 6105: The Greek Tradition
- GRW 6216: Greek Novel
- GRW 6316: Greek Tragedy
- GRW 6317: Ancient Greek Comedy
- GRW 6345: Greek Lyric Poetry
- GRW 6346: Pindar
- GRW 6347: Homer
- GRW 6386: Greek Historians
- GRW 6506: Plato
- GRW 6705: Attic Orators
- GRW 6905: Individual Work
- GRW 6930: Special Topics in Greek Literature
- GRW 6931: Comparative Study of Greek and Latin Literature
- GRW 6971: Research for Master's Thesis
- GRW 7979: Advanced Research
- GRW 7980: Research for Doctoral Dissertation
- LAT 6425: Latin Prose Composition

- LNW 5325: Roman Elegiac Poetry
- LNW 5655: Roman Poets: Horace
- LNW 5665: Roman Poets: Vergil
- LNW 5675: Roman Poets: Ovid
- LNW 5931: Comparative Study of Latin and Greek Literature
- LNW 6105: The Roman Tradition
- LNW 6225: The Ancient Roman Novel
- LNW 6315: Plautus and Terence
- LNW 6335: Roman Oratory and Rhetoric
- LNW 6365: Studies in Roman Satire
- LNW 6385: Roman Historians
- LNW 6495: Late Latin Literature
- LNW 6905: Individual Work
- LNW 6933: Special Topics in Latin Literature
- LNW 6935: Proseminar in Classics
- LNW 6940: Supervised Teaching
- LNW 6971: Research for Master's Thesis
- LNW 7979: Advanced Research
- LNW 7980: Research for Doctoral Dissertation

## Computer and Information Science and Engineering Department

College of Liberal Arts and Sciences

*Chair:* Paul Gader

*Graduate Coordinator:* Jih-kwon Peir.

*Complete faculty listing by department:* Follow this link.

The Department of Computer and Information Science and Engineering is concerned with the theory, design, development, and application of computer systems and information processing techniques. The mission of the CISE Department is to educate undergraduate and graduate majors as well as the broader campus community in the fundamental concepts of the computing discipline, to create and disseminate computing knowledge and technology, and to use our expertise in computing to help society solve problems.

The Department of Computer and Information Science and Engineering (CISE) offers

- Ph.D., Master of Engineering, and Master of Science degrees in computer engineering through the College of Engineering.
- Master of Science degree in computer science through the College of Engineering.
- Master of Science degree in digital arts and sciences through the College of Engineering.
- Master of Science degree in computer science through the College of Liberal Arts and Sciences.

The CISE Department has six broad areas of specialization:

- **Computer systems:** computer architecture, distributed systems, networks and communication, operating systems, performance evaluation, security, mobile computing, software engineering, programming languages, multimedia systems, and web technologies
- **Database and information systems:** database management systems, database design, database theory and implementation, data mining, database machines, parallel and distributed databases, digital libraries, E-services and commerce, medical, and bio-informatics

- **High-performance computing/applied algorithms:** design and analysis of algorithms, data structures, parallel and distributed computing, medical algorithms, numerical methods, computational complexity, and applied computational geometry
- **Computer graphics, modeling, and art:** modeling methodology, simulation, virtual reality, aesthetic computing, computer arts, animation, real-time rendering, medical modeling, digital media, and musical acoustics
- **Intelligent systems and computer vision:** artificial intelligence, machine learning, visualization, image analysis and processing, pattern recognition, signal processing, biomedical imaging, and image databases
- **Computer networks and security:** wired and wireless networks, network routing and protocols, and QoS.

Applications for admission must be approved by both the Department and the college in which the student wishes to enroll. Applicants should have a strong computer science background.

All master's students must satisfy a core requirement by completing the appropriate number of core courses as specified by the degree program or their approved equivalents with no more than one of the core courses receiving a letter grade below "B." Students can select a thesis or nonthesis option for the master's degree. Digital Arts and Sciences students must choose either thesis or project in lieu of thesis. All options require a minimum of 30 credit hours. The thesis degree requires:

- A minimum of 6 credit hours must be taken in CIS 6971.
- Specific degree requirements can be found at: <https://www.cise.ufl.edu/academics/grad>

The non-thesis option requires:

- Each nonthesis master's student is required to pass a comprehensive examination.
- Specific degree requirements can be found at: <https://www.cise.ufl.edu/academics/grad>

The Digital Arts and Sciences project in lieu of thesis option requires 6 credit hours of project/performance credits.

To demonstrate breadth and proficiency, all Ph.D. students must take 4 required core courses obtaining a 3.4 GPA in 3 of the 4 required core courses, with no more than one of the core courses receiving a letter grade below B, to be eligible to take the Ph.D. qualifying examinations.

Ph.D. students are required to take a minimum of 90 credit hours. Of these, at least 36 hours must be graduate-level CISE course work excluding individual study and research credits. A minimum of 3 hours must be taken in CIS 7980. A maximum of 30 credits may be awarded toward the Ph.D. degree from an appropriate master's degree.

The Database Systems Research and Development Center, the Software Engineering Research Center, the Center for Computer Vision and Visualization Center, and a number of other campus research centers provide opportunities for students enrolled in the program.

The department offers a combined bachelor's/master's degree program. Contact the Department's Student Services Center for information.

For more information, please see the program pages below, or visit our website: <http://www.cise.ufl.edu>

## Computer Science (CLAS)

### College

College of Liberal Arts and Sciences

## **Department/School**

Computer and Information Science and Engineering Department

## **Computer Science (CLAS) Program Information**

The Department of Computer and Information Science and Engineering offers the Master of Science degree in Computer Science through the College of Liberal Arts and Sciences. Minimum requirements for this degree are given in the Graduate Degrees section of this catalog.

The department offers graduate study and research in Algorithms, Computer Vision, Databases, Graphics and Modeling, Machine Learning, Networks, and Systems, with active labs in Bioinformatics; Computational Science and Intelligence; Vision, Graphics and Medical Imaging; Database Systems Research and Development; Data Science Research; Mobile and Pervasive Computing; Human-Centered Computing; and Cybersecurity.

Specific degree requirements and options may be found here: <http://cise.ufl.edu/academics/grad>

Instructions for application for admission may be found here: <http://cise.ufl.edu/admissions/graduate>

## **Degrees Offered with a Major in Computer Science**

Master of Science

## **Computer and Information Science and Engineering Departmental Courses**

- CAP 5100: Human-Computer Interaction
- CAP 5416: Computer Vision
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5635: Artificial Intelligence Concepts
- CAP 5705: Computer Graphics
- CAP 5771: Introduction to Data Science
- CAP 5805: Computer Simulation Concepts
- CAP 6137: Malware Reverse Engineering
- CAP 6402: Aesthetic Computing
- CAP 6516: Medical Image Analysis
- CAP 6610: Machine Learning
- CAP 6615: Neural Networks for Computing
- CAP 6617: Advanced Machine Learning
- CAP 6685: Expert Systems
- CAP 6701: Advanced Computer Graphics
- CAP 6769: Advanced Topics in Data Science
- CAP 6779: Projects in Data Science
- CDA 5155: Computer Architecture Principles
- CDA 5636: Embedded Systems
- CDA 6156: High Performance Computer Architecture
- CEN 5035: Software Engineering
- CIS 5370: Computer and Information Security

- CIS 5371: Introduction to Cryptology
- CEN 5726: Natural User Interaction
- CEN 6070: Software Testing and Verification
- CEN 6075: Software Specification
- CIS 6905: Individual Study
- CIS 6910: Supervised Research
- CIS 6930: Special Topics in CIS
- CIS 6935: Graduate Seminar
- CIS 6940: Supervised Teaching
- CIS 6971: Research for Master's Thesis
- CIS 7979: Advanced Research
- CIS 7980: Research for Doctoral Dissertation
- CNT 5106C: Computer Networks
- CNT 5410: Computer and Network Security
- CNT 5412: Network and System Security
- CNT 5517: Mobile Computing
- CNT 6107: Advanced Computer Networks
- CNT 6885: Distributed Multimedia Systems
- COP 5536: Advanced Data Structures
- COP 5555: Programming Language Principles
- COP 5615: Distributed Operating System Principles
- COP 5618: Concurrent Programming
- COP 5625: Programming Language Translators
- COP 5725: Database Management Systems
- COP 6726: Database System Implementation
- COP 6755: Distributed Database Systems
- COT 5405: Analysis of Algorithms
- COT 5442: Approximation Algorithms
- COT 5519: Sparse Matrix Algorithms
- COT 5520: Computational Geometry
- COT 5615: Mathematics for Intelligent Systems
- COT 6315: Formal Languages and Computation Theory

## **College of Engineering Courses**

- EEE 5354L: Semiconductor Device Fabrication Laboratory
- EEL 5447: Laser Theory and Design
- EGN 5010L: NRF Training Lab
- EGN 5949: Practicum/Internship/Cooperative Work Experience
- EGN 6640: Entrepreneurship for Engineers
- EGN 6642: Engineering Innovation
- EGN 6039: Engineering Leadership
- EMA 6581: Polymeric Biomaterials

## **Economics Department**

College of Liberal Arts and Sciences

*Chair:* R. D. Blair

*Graduate Coordinator:* S. M. Slutsky.

*Complete faculty listing:* Follow this link.

The department offers the Master of Arts (thesis and nonthesis option) and Doctor of Philosophy degrees in economics with specializations in econometrics, economic theory, industrial organization, international economics, monetary economics, and public finance. Complete descriptions of the minimum requirements for the M.A. and Ph.D. degrees are provided on the Graduate Degrees Page of this catalog.

## **Economics**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Economics Department

### **Economics Program**

The Economics Department offers the Master of Arts degree and the Doctor of Philosophy degree in economics.

**M.A. requirements:** A minimum of 36 credits of course work is required for the M.A. with and without thesis. A maximum of six credits of the research course ECO 6971 may be included for a master's degree with thesis. The following core courses are required: ECO 7408 and ECO 7404 or equivalent, ECO 7415 or equivalent, ECO 7115, and ECO 7206.

**Ph.D. requirements:** Admission requirements for the Ph.D. include (a) a minimum grade point average of 3.0, (b) an acceptable score on the GRE, and (c) for nonnative speakers of English, an acceptable score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute program.

All core courses must be completed in the first year. In addition, students must complete courses in three fields of specializations and pass qualifying examinations in two of those fields. Additional information about degree requirements can be found by visiting the Graduate Degrees pages of this catalog.

### **Degrees Offered with a Major in Economics**

Doctor of Philosophy

Master of Arts

### **Economics Departmental Courses**

- ECO 5715: Open Economy Macroeconomics

- ECO 6075: Economics/Consumer Education
- ECO 6407: Game Theory and Competitive Strategy: Theory and Cases
- ECO 6409: Game Theory Applied to Business Decisions
- ECO 6716: International Macroeconomics
- ECO 6906: Individual Work in Economics
- ECO 6910: Supervised Research
- ECO 6936: Special Topics
- ECO 6940: Supervised Teaching
- ECO 6957: International Studies in Economics
- ECO 6971: Research for Master's Thesis
- ECO 7113: Information Economics
- ECO 7115: Microeconomic Theory
- ECO 7118: Markets and Institutions
- ECO 7119: Information, Incentives, and Agency Theory
- ECO 7120: General Equilibrium and Welfare Economics
- ECO 7206: Macroeconomic Theory I
- ECO 7272: Economic Growth I
- ECO 7404: Game Theory for Economists
- ECO 7405: Mathematical Economics: Game Theory
- ECO 7406: Dynamic Economics: Theory and Applications
- ECO 7408: Mathematical Methods and Applications to Economics
- ECO 7415: Statistical Methods in Economics
- ECO 7424: Econometric Models and Methods
- ECO 7426: Econometric Methods I
- ECO 7427: Econometric Methods II
- ECO 7452: Best Empirical Practices in Economics
- ECO 7516: Tax Theory and Public Policy
- ECO 7525: Welfare Economics and The Second Best
- ECO 7534: Empirical Public Economics I
- ECO 7535: Empirical Public Economics II
- ECO 7536: Theoretical Public Economics
- ECO 7706: Theory of International Trade
- ECO 7707: International Economic Relations
- ECO 7925: Research Skills Workshop
- ECO 7938: Advanced Economics Seminar
- ECO 7979: Advanced Research
- ECO 7980: Research for Doctoral Dissertation
- ECP 5415: Antitrust Policy and Managerial Decisions
- ECP 5702: Managerial Economics
- ECP 5705: Economics of Business Decisions
- ECP 6417: Public Policy and Social Control
- ECP 6701: Competitive Strategies in Expanding Markets
- ECP 6708: Cases in Competitive Strategy
- ECP 6407: Economics for Managing Information for Electronic Commerce
- ECP 7407: Theory of Industrial Organization: Product Differentiation and Strategy
- ECP 7408: Empirical Industrial Organization
- ECP 7418: Economics of Regulation
- ECP 7419: Current Research in Regulation
- HSA 6436: Health Economics



## English Department

Chair: K. Kidd

Graduate Coordinator: S. I. Dobrin

*Complete faculty listing by department:* Follow this link.

The Department of English offers the Master of Arts degree (thesis and nonthesis options) and the Doctor of Philosophy degree in English, along with the Master of Fine Arts degree in creative writing. Complete descriptions of the minimum requirements for the M.A., M.F.A., and Ph.D. degrees are provided in the Graduate Degrees section of this catalog. For more information about our programs, please follow the hyperlinks below or visit our website: <http://www.english.ufl.edu/programs.html>.

## Creative Writing

### College

College of Liberal Arts and Sciences

### Department/School

English Department

### Creative Writing Program Information

The Department of English offers the Master of Fine Arts degree in creative writing. Complete descriptions of the minimum requirements for the M.F.A. are provided in the Graduate Degrees section of this catalog. Full information concerning courses of study is available from the graduate coordinator or by visiting <http://www.english.ufl.edu/crw/>.

### Degrees

Master of Fine Arts

### English Departmental Courses

- AML 6017: Studies in American Literature Before 1900
- AML 6027: Studies in 20th-Century American Literature
- CRW 6130: Fiction Writing
- CRW 6166: Studies in Literary Form
- CRW 6331: Verse Writing
- CRW 6906: Individual Work
- ENC 5236: Advanced Business Writing for Accounting
- ENC 6428: Digital English

- ENG 6016: Psychological Approaches to Literature
- ENG 6075: Literary Theory: Issues
- ENG 6076: Literary Theory: Theorists
- ENG 6077: Literary Theory: Forms
- ENG 6137: The Language of Film
- ENG 6138: Studies in the Movies
- ENG 6906: Individual Work
- ENG 6910: Supervised Research
- ENG 6932: Film and Video Production
- ENG 6971: Research for Master's Thesis
- ENG 7939: Seminar in Variable Topics
- ENG 7979: Advanced Research
- ENG 7980: Research for Doctoral Dissertation
- ENL 6206: Studies in Old English
- ENL 6216: Studies in Middle English
- ENL 6226: Studies in Renaissance Literature
- ENL 6236: Studies in Restoration and 18th-Century Literature
- ENL 6246: Studies in Romantic Literature
- ENL 6256: Studies in Victorian Literature
- ENL 6276: Studies in 20th-Century British Literature
- LAE 6940: Supervised Teaching
- LAE 6947: Writing Theories & Practices
- LIT 5335: Approaches to Children's and Adolescent Literature
- LIT 6037: Studies in Verse
- LIT 6047: Studies in Drama
- LIT 6309: Communications and Popular Culture
- LIT 6236: Postcolonial Studies
- LIT 6308: Studies in Comics and Animation
- LIT 6327: Studies in Folklore
- LIT 6357: African-Amer. or African Diaspora Lit./Cultures
- LIT 6358: Theoretical Approaches to Black Cultural Studies
- LIT 6855: Issues in Cultural Studies
- LIT 6856: Cultural Studies: Interventions
- LIT 6857: Cultural Studies: Movements
- LIT 6934: Variable Topics
- SPC 6239: Studies in Rhetorical Theory

## **English**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

English Department

## English Program Information

The Department of English offers the Master of Arts degree (thesis and nonthesis options) and the Doctor of Philosophy degree in English with the specializations listed below. Complete descriptions of the minimum requirements for the M.A., M.F.A., and Ph.D. degrees are provided in the Graduate Degrees section of this catalog. Specific areas of specialization for the Master of Arts and the Doctor of Philosophy include literature (Medieval, Renaissance, Restoration, and 18th-century and 19th-century British literature, American literature to 1900, contemporary British and American literature), American studies, critical theory, cultural studies, film and media studies, feminisms, genders and sexualities, postcolonial studies, composition and rhetoric, comics and visual rhetoric, and children's literature.

New graduate students should have completed an undergraduate English major of at least 24 semester hours, and doctoral students should have a Master of Arts degree in English. Full information concerning courses of study is available from the graduate coordinator.

## Degrees

Doctor of Philosophy

Master of Arts

## English Departmental Courses

- AML 6017: Studies in American Literature Before 1900
- AML 6027: Studies in 20th-Century American Literature
- CRW 6130: Fiction Writing
- CRW 6166: Studies in Literary Form
- CRW 6331: Verse Writing
- CRW 6906: Individual Work
- ENC 5236: Advanced Business Writing for Accounting
- ENC 6428: Digital English
- ENG 6016: Psychological Approaches to Literature
- ENG 6075: Literary Theory: Issues
- ENG 6076: Literary Theory: Theorists
- ENG 6077: Literary Theory: Forms
- ENG 6137: The Language of Film
- ENG 6138: Studies in the Movies
- ENG 6906: Individual Work
- ENG 6910: Supervised Research
- ENG 6932: Film and Video Production
- ENG 6971: Research for Master's Thesis
- ENG 7939: Seminar in Variable Topics
- ENG 7979: Advanced Research
- ENG 7980: Research for Doctoral Dissertation
- ENL 6206: Studies in Old English

- ENL 6216: Studies in Middle English
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- ENL 6246: Studies in Romantic Literature
- ENL 6256: Studies in Victorian Literature
- ENL 6276: Studies in 20th-Century British Literature
- LAE 6940: Supervised Teaching
- LAE 6947: Writing Theories & Practices
- LIT 5335: Approaches to Children's and Adolescent Literature
- LIT 6037: Studies in Verse
- LIT 6047: Studies in Drama
- LIT 6309: Communications and Popular Culture
- LIT 6236: Postcolonial Studies
- LIT 6308: Studies in Comics and Animation
- LIT 6327: Studies in Folklore
- LIT 6357: African-Amer. or African Diaspora Lit./Cultures
- LIT 6358: Theoretical Approaches to Black Cultural Studies
- LIT 6855: Issues in Cultural Studies
- LIT 6856: Cultural Studies: Interventions
- LIT 6857: Cultural Studies: Movements
- LIT 6934: Variable Topics
- SPC 6239: Studies in Rhetorical Theory

## Geography Department

*Chair:* M. W. Binford

*Graduate Coordinator:* C. J. Matyas

*Complete faculty listing by department:* Follow this link.

The Department of Geography offers the Master of Arts, Master of Science, and Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the General Information section of this catalog.

The focus of the Department is in human-environment interactions, with "environment" interpreted very broadly. The Department provides four main areas of specialization for graduate research: economic and cultural geography; resource management and land use and land cover change; medical geography; and physical geography. Economic and cultural geography concerns such topics as spatial economic theory and; housing and care of the elderly. Resource management and land-use and land-cover change focus on agricultural change and resource conservation and development in the tropics and subtropics, and rural and urban land use and land cover change in tropical and temperate regions. Africa and Latin America are the primary areas of regional emphasis outside of the U.S. Physical geography in the Department concentrates on climatology, fluvial geomorphology, and hydrology. Medical geography studies the geographic aspects of human health including disease ecology and transmission and healthcare issues. The Department's extensive geographic information system, remote sensing, and computer cartography teaching and research facilities contribute to and support all of the areas of research. Faculty from the Department are also major participants in the Emerging Pathogens Institute, Florida Climate Institute, Land Use and Environmental Change Institute (L.U.E.C.I.), and the Water Institute. Prospective students should examine the research interests of the Graduate Faculty to obtain a more detailed sense of the Department's specialties (see the departmental website: [www.geog.ufl.edu](http://www.geog.ufl.edu)).

To ensure the incorporation of relevant interdisciplinary perspectives in each student's program, the Department maintains close ties with other departments in Liberal Arts and Sciences, and with programs in African studies, Latin American studies, the School of Natural Resources and Environment, the Institute on Aging, urban and regional planning, tropical agriculture, tropical ecology,, water resources, the Warrington College of Business Administration, the College of Agricultural and Life Sciences, College of Public Health and Health Professions, and the Hydrological Sciences Academic Cluster. Certificates in certain of these fields may be obtained in addition to graduate degrees in geography. Geography administers the Graduate Certificate in Applied Atmospheric Sciences.

A graduate student should preferably have an undergraduate major in geography, but applicants with degrees in one of the social or physical sciences are accepted into the Department's graduate program. Deficiencies in undergraduate work in geography must be corrected concurrently with registration in graduate level courses. All students in the graduate program are required to take courses in contemporary geographic thought and geographic research skills.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

## **Geography**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Geography Department

### **Geography Program Information**

The Department of Geography offers the Master of Arts, Master of Science, and Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the Graduate Degrees Section of this catalog.

### **Degrees**

Doctor of Philosophy

without a concentration

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Master of Arts

without a concentration

concentration in Applications of Geographic Technologies

concentration in Geographic Information Systems

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Master of Arts in Teaching

without a concentration

concentration in Geographic Information Systems

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Master of Science

without a concentration

concentration in Applications of Geographic Technologies

concentration in Geographic Information Systems

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Courses

- GEA 6419: Seminar: South America
- GEA 6466: Seminar on Geography of Amazonia
- GEA 6468: Resource Utilization and Conservation in Latin America
- GEO 5305: Environmental Biogeography
- GEO 5346: Natural Hazards
- GEO 5556: Geography of Innovation and Technological Change
- GEO 5605: Advanced Urban Geography
- GEO 5809: Geography of World Agriculture

- GEO 5905: Individual Study: Directed Reading
- GEO 5920: Geography Colloquium
- GEO 5945C: Field Course in Geography
- GEO 6118: Contemporary Geographic Thought and Research
- GEO 6119: Proposal Writing in Geography
- GEO 6160: Introduction to Quantitative Methods for Geographers
- GEO 6161: Intermediate Quantitative Methods for Geographers
- GEO 6166: Advanced Quantitative Methods for Spatial Analysis
- GEO 6255: Climatology
- GEO 6282: Fluvial Morphology
- GEO 6348: Floods Seminar
- GEO 6375: Land Change Science Seminar
- GEO 6429: Seminar: Cultural Geography
- GEO 6435: Seminar in Population
- GEO 6451: Medical Geography
- GEO 6495: Environment and Behavior
- GEO 6905: Individual Work
- GEO 6921: How to Survive and Thrive in Academia
- GEO 6931: Seminar in Cultural and Political Ecology
- GEO 6938: Selected Topics in Geography
- GEO 6971: Research for Master's Thesis
- GEO 7979: Advanced Research
- GEO 7980: Research for Doctoral Dissertation
- GEY 6341: Shelter and Care Options for U.S. Elderly
- GIS 5008C: Maps and Graphs
- GIS 5009C: Advanced Cartography
- GIS 5028C: Advanced Aerial Photo Interpretation
- GIS 5038C: Remote Sensing
- GIS 5107C: Geographic Information Systems in Research
- GIS 5306: Geographic Information Systems Applications in Environmental Systems
- GIS 5540: Business Geography and New Real Estate Market Analysis
- GIS 6104: Spatial Networks
- GIS 6425C: GIS Models for Public Health
- MET 5504: Weather and Forecasting
- MET 6530: Hurricanes
- MET 6565: Seminar in Atmospheric Teleconnections
- MET 6752: Atmospheric Data Analysis

## Geological Sciences Department

*Chair:* David A. Foster.

*Graduate Coordinator:* R. M. Russo.

Complete faculty listing: [Follow this link.](#)

The Department of Geological Sciences is composed of a group of internationally recognized faculty, graduate students, and dedicated support staff. Faculty and students in the Department of Geological Sciences are involved in exciting and groundbreaking research projects throughout the world and in Florida. The Department houses world-class analytical and computing facilities for research and teaching.

The Department has identified six primary areas of emphasis in its research and teaching programs: environmental geology and hydrology, paleoclimatology, tectonophysics, geochemistry and mineralogy/petrology, marine and coastal geology, and paleomagnetism. The Department has collaborative, interdisciplinary programs of study and research with the Florida Museum of Natural History, the Center for Wetlands Research, the Land Use and Environmental Change Institute (L.U.E.C.I.), the Florida Climate Institute, and the University of Florida Water Institute.

For information on our degree programs, current departmental activities, faculty, and research centers, please see the program page below and <http://geology.ufl.edu>.

## **Geology**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Geological Sciences Department

### **Geology Program**

The Department of Geological Sciences offers programs leading to the Master of Science (thesis), the Master of Science in Teaching (nonthesis), and the Doctor of Philosophy degrees in geology. Minimum requirements for these degrees are described in the Graduate Degrees section of this catalog.

For admission to graduate status in the Department of Geological Sciences, a student must have a baccalaureate degree with a major in geology or a related field or its equivalent. Deficiencies in undergraduate preparation can be corrected by completing the undergraduate courses without credit while enrolled as a graduate student.

Applicants should take the GRE general test. The scores of this examination must be reported to the Department of Geological Sciences. Three letters of recommendation are also required for admission to the doctoral program and for financial aid applications at any level.

A minimum of 32 semester hours of graduate level courses are required for the Master of Science in geology. At least 24 hours must be in organized graduate-level geology courses (excluding research, teaching, special projects, etc.). Six hours of thesis research credit are required. All master's degrees are terminal; a separate and new application for admission to the doctoral program is required.

For the Master of Science in Teaching degree, at least 36 hours are required. Six of these hours must be in GLY 6943 and at least 24 must be in organized graduate-level geology courses. The remaining 6 hours must be in approved electives. A minor in education is required. Candidates also must pass the final oral examination.

90 semester hours of graduate-level class work are required for the Ph.D., including organized course work, individual work, supervised research and teaching, advanced research, dissertation, special projects, or courses in a related field.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

For more information, please see the program page below and our department website: <http://geology.ufl.edu>.



## Degrees

### Doctor of Philosophy

without a concentration

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### Master of Science

without a concentration

concentration in Hydrologic Sciences

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

### Master of Science in Teaching

without a concentration

concentration in Tropical Conservation and Development

concentration in Wetland Sciences

## Courses

- BOT 5305: Paleobotany
- ESC 5211: Current Topics in Earth Science for Teachers
- ESC 5211L
- GLY 5020
- GLY 5020L
- GLY 5075
- GLY 5156: Geologic Evolution of North America
- GLY 5246: Geochemistry
- GLY 5245: Hydrogeochemistry
- GLY 5247: Surface and Ground Water Interactions
- GLY 5248: Physical Geochemistry
- GLY 5255: Organic Geochemistry and Geobiology
- GLY 5328: Advanced Igneous Petrology
- GLY 5455: Introduction to Geophysics and Tectonics

- GLY 5456
- GLY 5466: Seismology and Earth Structure
- GLY 5468: Terrestrial Gravity and Magnetism
- GLY 5476: Environmental Geophysics
- GLY 5558C: Sedimentology
- GLY 5576: Continental Margin Stratigraphy
- GLY 5705: Geomorphology
- GLY 5736: Marine Geology
- GLY 5786L: Topics in Field Geology
- GLY 5827: Ground Water Geology
- GLY 6075: Global Climate Change: Past, Present, and Future
- GLY 6268C: Isotope Geology
- GLY 6297: Topics in Geochemistry
- **GLY 6424**
- GLY 6425: Tectonics
- GLY 6519: Stratigraphy and Timescales
- GLY 6620C: Micropaleontology
- **GLY 6660C**
- GLY 6695: Topics in Paleoclimatology
- GLY 6826: Hydrogeologic Modeling
- GLY 6862: Numerical Methods in Earth Sciences
- GLY 6905: Individual Work
- GLY 6931: Seminar
- GLY 6932: Special Topics in Geology
- GLY 6940: Supervised Teaching
- GLY 6943: Internship in College Teaching
- GLY 6971: Research for Master's Thesis
- GLY 7979: Advanced Research
- GLY 7980: Research for Doctoral Dissertation

## History Department

### College of Liberal Arts and Sciences

Chair: Sean P. Adams

Graduate Coordinator: Elizabeth Dale

The Department of History offers the following graduate degrees: Master of Arts with fields of specialization in African, Asian, European, Latin American, and United States history, and the Doctor of Philosophy with fields of specialization in African, European, Latin American, and United States history. In addition to materials required by the Graduate School for admission, applicants must send directly to the History Department the following evidence of aptitude and interest: Three recommendations, from persons competent to evaluate your potential for graduate work; A 3- to 5-page essay identifying your career goals and particular areas of interest; a sample of your written work in history. Interested students should consult the department web page for more information.

## History

## **College**

College of Liberal Arts and Sciences

## **Department/School**

History Department

## **History Program**

The Department of History offers the following graduate degrees: Master of Arts degree with fields of specialization in African, Asian, European, Latin American, and United States history and the Doctor of Philosophy degree with fields of specialization in African, European, Latin American, and United States history, or with a dual major which allows students to create their own major fields.

**Master of Arts:** This degree serves to prepare students for admission to a Ph.D. program, for a teaching career in high school or community colleges, or for a career in government or business.

### **Fields of specialization:**

- African (East Africa, Southern Africa, West Africa)
- European (medieval, early modern, or modern)
- Latin American (colonial Latin America, post-Colonial Latin America, Brazil, and the Caribbean or Spanish America)
- United States history (early America, 19th century, 20th century)

### **Thesis option requirements:**

- A minimum of 30 credit hours
- At least 12 graduate-level regular course credit hours in your major field. In European, you must take at least two seminars in your area of specialization. In U.S. history, you must take the 19th-century America readings seminar, either the 20th-century or early America readings seminar, and at least one research seminar. In Latin American and African history, you must take the relevant readings seminars in your area of specialization, one other readings seminar, and at least one research seminar.
- At least 6 graduate-level regular course credit hours outside the major field (but in the Department of History). We recommend that you invest these regular course hours in readings seminars.
- Take 3 hours of historiography (HIS 6061 ) by the fourth semester of graduate study.
- Take 3 regular course credit hours from outside the Department. These should be graduate-level hours, but undergraduate 3000 or 4000 level hours may be taken subject to approval by your adviser.
- Complete a master's thesis. The semester you graduate, you must be registered for a minimum of 3 thesis research hours (HIS 6971 ) in the fall or spring terms or 2 in a summer term. Your thesis should demonstrate your ability to handle the primary-source material of your field, and a working knowledge of the secondary literature; and should demonstrate your ability to present research results in a coherent, well-written study. The student must complete the thesis and make it available to readers 2 weeks before the oral examination, complete the application for the degree at the Office of the University Registrar before the deadline, and take the examination.
- Each student must pass a final comprehensive oral examination at the end of the program.

### **Non-thesis option requirements:**

- A minimum of 30 credit hours.
- At least 12 graduate-level regular course credit hours inside your major field. In European, you must take at least two seminars in your area of specialization. In U.S. history, you must take the 19th-century American readings seminar, either the 20th-century or the early America readings seminar, and at least one research seminar. In Latin American or African history, you must take the relevant readings seminars in your area of specialization, one other readings seminar, and at least one research seminar.
- At least 6 graduate-level regular course credit hours outside your major field (but in the Department of History). We recommend that you invest these regular course hours in readings seminars.
- Take 3 hours of historiography (HIS 6061 ) by your fourth semester of graduate study.
- Take 3 regular course credit hours from outside the Department; these should be graduate-level hours, but undergraduate 3000 or 4000 level hours may be taken subject to approval by your adviser.
- Complete a research seminar and/or a nonthesis project in history. Your primary goal in either is to complete an article-length essay (approximately 35 to 40 pages) of publishable or near-publishable quality. The essay should be based largely on primary sources.
- You must pass a final comprehensive oral and written examination conducted by your supervisory committee.

**Supervisory committee for the M.A.:** The committee normally consists of the chair and two other members of the graduate faculty. Additional members may be added if desirable. The committee assists in planning and supervising the student's program and conducts the final examination. The chair is also the thesis director if that option is chosen.

**Duration:** The M.A. program can be completed in 3 semesters of full-time registration but may take longer. The Department believes that normally no more than 4 semesters of full-time registration should be spent on the degree. These semesters need not be consecutive. The Board of Education has established 60 credit hours as a maximum for the master's degree. Up to 6 credits of graduate-level courses taken at another school with a grade of B or better may be transferred into the master's program if approved by the Graduate School.

**Bachelor's/master's program:** The Department offers a combined 4/1 degree program that enables outstanding undergraduates to obtain both the B.A. and M.A. degrees in history after successful completion of 150 credit hours. The program is designed for the students who wish to continue their education in history past the bachelor's level but do not intend to pursue a doctorate in history or for students who wish to expand their training in a specific field before moving on to a doctoral program. The department offers a 4/1 degree program in the standard M.A. fields of study and offers two specialized tracks: oral history and academic publishing. Please see the Department website for more information. Students in this program are not eligible for departmentally controlled financial aid.

#### **Doctor of Philosophy requirements:**

- Professional competence in your major field, or major fields for students pursuing a dual degree.
- Knowledge of a minor, which may be drawn from the approved major fields of specialization for the doctorate (African, European, Latin American, or U.S. history), from approved minor fields (Atlantic history, gender, legal history), or may be self designed as a thematic research or teaching field. It must include at least 3 hours outside the historical area that defines your major field. Note: Students pursuing a dual major do not take a department minor field.
- At least 3 regular course credit hours from outside the Department; these should be graduate-level hours, but undergraduate 3000 or 4000 level hours may be taken subject to approval by your adviser.
- Pass a set of written and oral qualifying examinations testing competence in major and additional fields and your knowledge of the nature of history and the historian's task.
- A dissertation for which credit is given in HIS 7980 .

**History/law joint degree program:** The Department of History and the College of Law offer a program in legal history leading to either the M.A. or a Ph.D. degree in history and the J.D. in law. Because the faculties of history and law stress interdisciplinary training, students admitted to the joint degree program will be allowed to count a

significant number of hours toward both degrees. Applicants must be accepted by both the Graduate School and the College of Law. Normally, students will complete the course and examination requirements of both degrees in 4 years. Students may begin their first year of work in either history or law, but they must complete the first year of law school within 1 year and they must do so within the first 2 years after admission to the joint degree program. For further information write to the Legal History Coordinator, Department of History, University of Florida, Box 117320, Gainesville, FL 32611-7320.

## **Degrees**

### **Doctor of Philosophy**

without a concentration

concentration in Historic Preservation

concentration in Women's/Gender Studies

### **Master of Arts**

without a concentration

concentration in Historic Preservation

concentration in Jewish Studies

## **Courses**

- AFH 5297: History of African Agriculture
- AFH 5348: History of West Africa
- AFH 5458: Southern Africa
- AFH 5934: Topics in African History
- AFH 6259: Seminar in Modern Africa
- AFH 6805: Theories and Methods of African History
- AFH 6934: Africa
- AFH 6936: Readings in African History
- AMH 5405: The South to 1860
- AMH 5905: Special Studies
- AMH 5930: Topics in United States History
- AMH 6198: Early American Society
- AMH 6199: Nineteenth Century America
- AMH 6290: Modern America
- AMH 6356: Research in U.S. History
- AMH 6406: Readings in Southern History, 1607-1865
- AMH 6465: Seminar in U.S. Urban History
- AMH 6506: Seminar in American Labor History
- AMH 6516: Seminar in American Foreign Relations and Expansion
- AMH 6557: Seminar in Constitutional or Legal History of the United States

- ASH 5388: Topics in East Asian History
- EUH 5546: Topics in British History
- EUH 5934: Topics in European History
- EUH 6126: Readings in Medieval History
- EUH 6174: Conversion in the Middle Ages
- EUH 6175: Ethnicity in the Middle Ages
- EUH 6176: Villages and Peasants in the Middle Ages
- EUH 6177: Economy and Society in Late Antiquity and the Early Middle Ages
- EUH 6213: Europe, 1500-1763
- EUH 6289: Readings, Modern Europe
- EUH 6469: Modern German History
- EUH 6935: Readings, Early Modern Europe
- EUH 6937: Readings in Mediterranean History
- HIS 5450: Slavery in the New World: Comparative Perspectives
- HIS 5484: Science and the Enlightenment
- HIS 5485: Special Studies in the History of Science
- HIS 6060: Historical Method
- HIS 6061: Introduction to Historiography
- HIS 6416: Problems in Comparative Legal History
- HIS 6445: Postcolonial Theories
- HIS 6469: Topics in Historiography of History of Science
- HIS 6478: Topics in the Scientific Revolution
- HIS 6480: Pre-Newtonian Sciences
- HIS 6488: Readings in the History of Science
- HIS 6905: Individual Study
- HIS 6910: Supervised Research
- HIS 6940: Supervised Teaching
- HIS 6943: Internship in College Teaching
- HIS 6957: Nonthesis Project in History
- HIS 6971: Research for Master's Thesis
- HIS 7979: Advanced Research
- HIS 7980: Research for Doctoral Dissertation
- LAH 5438: Modern Mexico
- LAH 5475: Caribbean, Nineteenth and Twentieth Centuries
- LAH 5476: Caribbean History to 1800: Slavery, Colonization, and International Conflict
- LAH 5527: Andean Nations
- LAH 5607: History of Amazonia
- LAH 5637: Brazil Since 1750
- LAH 5933: Topics in Caribbean History
- LAH 5934: Topics in Latin American History
- LAH 6934: Seminar in Colonial Spanish America
- LAH 6936: Seminar in History of Brazil
- LAH 6938: Seminar in Modern Spanish America
- EUH 5195: The Archaeology of the Middle Ages

## Department of Languages, Literatures and Cultures

*Complete faculty listing by department:* Follow this link.

## **French and Francophone Studies**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Department of Languages, Literatures and Cultures

### **French and Francophone Studies Program Information**

**Bachelor's/master's program:** French and Francophone Studies offers a combined 4/1 degree program that enables outstanding undergraduates to obtain both the B.A. and M.A. degrees after successful completion of 152 credit hours. The program is designed for the students who wish to continue their education in French and Francophone Studies past the bachelor's level but do not intend to pursue a doctorate or for students who wish to expand their training in a specific field before moving on to a doctoral program. Since students in the bachelor's/master's program have a graduate classification, students receiving undergraduate scholarships or Pell grants should check with the funding provider to make sure that they will not lose eligibility.

### **Degrees**

Master of Arts

Master of Arts in Teaching

### **Courses**

- FLE 6385: Foreign Languages Teaching Methods
- FRE 6060: Beginning French for Graduate Students I
- FRE 6061: Beginning French for Graduate Students II
- FRE 6466: Advanced Translation and Stylistics
- FRE 6735: Special Studies in French Linguistics
- FRE 6736: The French language in the Americas
- FRE 6785: French Phonetics and Phonology
- FRE 6827: Sociolinguistics of French
- FRE 6845: History of the French Language
- FRE 6855: Structure of French
- FRE 6856: French in the 21st Century
- FRE 6940: Supervised Teaching
- FRE 6943: Romance Language Teaching Methods
- FRE 6945: Practicum in Advanced College Teaching
- FRE 6956: Overseas Studies in French
- FRW 6217: Seventeenth-Century French Prose
- FRW 6276: Readings in Eighteenth-Century Literature
- FRW 6288: Twentieth-Century French Novel

- FRW 6315: Seventeenth-Century French Drama
- FRW 6328: Twentieth-Century French Theater
- FRW 6346: French Poetry of the Renaissance
- FRW 6355: Modern French Poetry
- FRW 6396: French Cinema
- FRW 6416: Later French Medieval Literature
- FRW 6536: The Romantic Period
- FRW 6556: French Realism and Naturalism
- FRW 6715: The Philosophic Movement
- FRW 6780: Studies in Francophone Literature and Culture (Excluding the Caribbean and Sub-Saharan Africa)
- FRW 6805: Introduction to Graduate Study and Research
- FRW 6825: French Critical Theory
- **FRW 6827**
- FRW 6900: Special Study in French Literature
- FRW 6905: Individual Work
- FRW 6910: Supervised Research
- FRW 6938: Seminar in French Literature
- FRW 6971: Research for Master's Thesis
- FRW 7979: Advanced Research
- FRW 7980: Research for Doctoral Dissertation

## **German**

Chair: M. Watt

Graduate Coordinator: W. Hasty

Complete faculty listings: [Follow this link.](#)

## **College**

College of Liberal Arts and Sciences

## **Department/School**

Department of Languages, Literatures and Cultures

## **German Program Information**

The Department of Languages, Literatures and Cultures offers Master of Arts (thesis or professional non-thesis option) and Doctor of Philosophy degrees in German. The department also offers a Doctor of Philosophy degree in German with a specialization in women's/gender studies.

## **Degrees**

Doctor of Philosophy

without a concentration



concentration in Women's/Gender Studies

Master of Arts

### **German Literature and Cinema**

- GET 6295: Weimar Cinema
- GET 6299: New German Cinema and its Legacy
- GEW 6205: Foundations of Literary Study
- GEW 6266: History of the German Novel
- GEW 6305: Studies in German Drama and Theater
- GEW 6405: Medieval and Renaissance Literature
- GEW 6425: From Luther to Lessing: Early Modern German Literature
- GEW 6535: German Classical and Romantic Literature
- GEW 6558: Young Germany, Biedermeier, Realism, and Naturalism
- GEW 6725: Culture and Society in the Weimar Republic
- **GEW 6726**
- GEW 6735: Modern German Literature
- GEW 6736: Contemporary German Literature
- GEW 6745: Literature and Culture in the Third Reich
- GEW 6826: German Literary Theory
- GEW 6900: Seminar in Germanic Languages and Literatures
- GEW 6901: Special Study in Germanic Languages and Literatures
- GEW 6905: Independent Study
- GEW 6910: Supervised Research
- GEW 6971: Research for Master's Thesis
- GEW 7979: Advanced Research
- GEW 7980: Research for Doctoral Dissertation

### **German Language**

- GER 6060: Beginning German for Graduate Students I
- GER 6061: Beginning German for Graduate Students II
- GER 6505: German Culture
- GER 6940: Supervised Teaching

### **Romance Languages (Language, Literature and Culture)**

#### **College**

College of Liberal Arts and Sciences

#### **Department/School**

Department of Languages, Literatures and Cultures

## **Romance Languages (Language, Literature and Culture) Program Information**

The Language, Literature and Culture Department offers a Doctor of Philosophy degree in romance languages with a specialization in French and francophone studies.

### **Degrees Offered with a Major in Romance Languages**

Doctor of Philosophy

concentration in French and Francophone Studies

### **Spanish and Portuguese Studies Departmental Courses**

- FOL 6326: Technology in Foreign Language Education
- FOW 6930: Special Study in Romance Languages and Literatures
- SPN 6166: Teaching Spanish for the Professions
- SPN 6940: Supervised Teaching
- SPW 6545: Spanish Romanticism
- SPN 6705: Foundations of Hispanic Linguistics
- SPN 6845: History of the Spanish Language
- SPS 6905: Individual Study
- SPS 6910: Supervised Research
- SPS 6940: Supervised Teaching
- SPS 7979: Advanced Research
- SPS 7980: Research for Doctoral Dissertation
- SPW 6535: Spanish Romanticism

### **Spanish**

- SPN 6315: Advanced Composition and Syntax
- SPN 6715: Formal Instruction and Acquisition of Spanish
- SPN 6735: Special Study in Spanish Linguistics
- SPN 6785: Advanced Spanish Phonetics
- SPN 6827: Sociolinguistics of the Spanish-Speaking World
- SPN 6835: Spanish and Spanish-American Dialectology
- SPN 6845: History of the Spanish Language
- SPN 6848: Medieval Spanish Linguistics
- SPN 6855: Structure of Spanish
- SPN 6856: Spanish in Contact: Issues in Bilingualism
- SPN 6900: Directed Readings in Spanish
- FOL 6943: Romance Language Teaching Methods
- SPN 6945: Practicum in Advanced College Teaching
- SPW 6209: Colonial Spanish-American Literature
- SPW 6216: Spanish Prose Fiction of the Golden Age
- SPW 6236: Spanish-American Narrative from the origins to Criollismo
- SPW 6269: Spanish Novel of the Nineteenth Century

- SPW 6278: Postwar Spanish Fiction
- SPW 6285: Contemporary Spanish-American Narrative I
- SPW 6286: Contemporary Spanish-American Narrative II
- SPW 6306: Spanish-American Theater
- SPW 6315: Spanish Drama of the Golden Age
- SPW 6337: Golden Age Poetry
- SPW 6345: Twentieth-Century Spanish Poetry
- SPW 6356: Spanish-American Poetry from Romanticism to Vanguardismo
- SPW 6357: Contemporary Spanish-American Poetry
- SPW 6366: Spanish-American Essay
- SPN 6425: Writing for the Profession
- SPW 6606: Cervantes
- SPW 6729: The Generation of 1898
- SPW 6806: Introduction to Graduate Study and Research
- SPW 6902: Special Study in Spanish or Spanish-American Literature
- SPW 6905: Individual Work
- SPW 6910: Supervised Research
- SPW 6934: Seminar in Spanish American Literature and Culture
- SPW 6938: Seminar in Spanish Literature and Culture
- SPW 6971: Research for Master's Thesis
- SPW 7979: Advanced Research
- SPW 7980: Research for Doctoral Dissertation

## Portuguese

- POW 6276: Twentieth-Century Brazilian Novel
- POW 6385: Brazilian Lyric
- POW 6386: Brazilian Drama
- POW 6905: Individual Work
- POW 6930: Rotating Topics in Brazilian or Portuguese Literature

## Center for Latin American Studies

*Director:* P.J. Williams

*Graduate Coordinator:* Richmond F. Brown

*Complete faculty listing by department:* Follow this link.

The Center for Latin American Studies offers the following graduate programs:

- Latin American Studies
- Sustainable Development Practice

For more information, please see the program pages below and our website: <http://www.latam.ufl.edu>.

## Latin American Studies

## **College**

College of Liberal Arts and Sciences

## **Department/School**

Center for Latin American Studies

## **Latin American Studies Program Information**

The Center for Latin American Studies offers the following graduate programs:

- An interdisciplinary Master of Arts degree
- Graduate certificate in Latin American studies in conjunction with disciplinary degrees in the Colleges of Agricultural and Life Sciences; Design, Construction, and Planning; Business Administration; Education; Fine Arts; Journalism and Communications; Law; and Liberal Arts and Sciences.

The graduate program in Latin American studies relies on over 250 courses with Latin American content taught in more than 35 academic units of the above colleges. The degree and certificate programs in Latin American studies are described on our website [www.latam.ufl.edu/academics/graduate-programs](http://www.latam.ufl.edu/academics/graduate-programs). Complete course listings are also available on the Center's website: <http://www.latam.ufl.edu/academics/las-courses>.

## **Degrees**

Master of Arts

without a concentration

concentration in Tropical Conservation and Development

## **Latin American Studies Courses**

- FOT 6940: Translation Studies Practicum
- LAS 6008: Ecological Principles
- LAS 6220: Issues and Perspectives in Latin American Studies
- LAS 6290: Tropical Conservation and Development
- LAS 6291: Conservation and Development Skills
- LAS 6292: Tropical Conservation and Development Research Methods
- LAS 6293: Design and Methods of Research in Latin American Studies
- LAS 6295: Latin American Business Environment
- LAS 6296: Latin American Business Topics
- LAS 6905: Individual Work
- LAS 6938: Seminar in Modern Latin American Studies
- LAS 6941: Tropical Conservation and Development Practicum
- LAS 6943: Development Theory and Practice in Latin America
- LAS 6949: Internship In Latin American Studies
- LAS 6971: Research for Master's Thesis

## **Sustainable Development Practice**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Center for Latin American Studies

### **Sustainable Development Practice Program**

Director: G. Galloway

Program Coordinator: A. Noss

The Master of Sustainable Development Practice (MDP) Program offers the following academic programs:

- An interdisciplinary Master's degree in Sustainable Development Practice (MDP)
- A graduate certificate in Sustainable Development Practice (SDP)

The MDP Program is jointly administered by the Center for Latin American Studies and the Center for African Studies. The Master's degree is described in the Other Master's Degrees section of the Graduate Catalog.

The MDP prepares development practitioners to address development challenges in creative and dynamic ways, integrating the academic and development pillars of natural sciences, social sciences, health sciences and management through a vigorous and innovative program curriculum. The MDP Degree requires 45 credits of course work: 24 major or core credits across the four pillars, and 21 elective credits through which a student focuses on a specialization (for example entrepreneurship, agriculture, ecotourism, gender, community forest management, nonprofits, or M&E). The MDP is a non-thesis degree. Each student must successfully complete a set of requirements including a summer field practicum with a host organization, the development of a poster presented in a public poster session, a final practicum report approved by their committee, and a public presentation and private defense with committee members of the final report. All students will be expected to meet learning outcome objectives defined for knowledge, skills and professional behavior. Students are required to develop a study plan approved by the MDP Program Graduate Coordinator and by their supervisory committee.

The SDP certificate provides training in interdisciplinary knowledge and skills related to sustainable development practice. The 12 credits for Master's students and 15 credits for Ph.D. students include one required cross-cutting overview course plus 3-4 additional courses in the fields of social sciences, health sciences, natural sciences, and management skills.

MDP major or core courses are listed below under the listing for Sustainable Development Courses. Other courses listed, for example, under the College Agricultural and Life Sciences and the College of Public Health and Health Related Professions may also count toward the major, but only those with relevance to the MDP program will be candidates for inclusion by the department in a student's program of study. Please visit the MDP Program website for additional information on the SDP certificate, MDP degree and curriculum, including detailed course descriptions and syllabi: <http://mdp.africa.ufl.edu>.

### **Degrees**

## Master of Sustainable Development Practice

### Sustainable Development Courses

- AFS 6905: Individual Work in African Studies
- EVR 5705: Natural Resources and Innovation Systems
- LAS 6291: Conservation and Development Skills
- LAS 6938: Seminar in Modern Latin American Studies
- LAS 6943: Development Theory and Practice in Latin America
- PHC 6445: Global Public Health and Development II
- PHC 6764: Global Public Health and Development I

### African Studies Courses

- AFS 5061: Africana Bibliography
- AFS 6060: Research Problems in African Studies
- AFS 6305: Development Theory and Practice Intro
- AFS 6307: Foundations of Economics for Sustainable Development
- AFS 6357: Anthropology of Humanitarian Intervention
- AFS 6905: Individual Work in African Studies

### Latin American Studies Courses

- FOT 6940: Translation Studies Practicum
- LAS 6008: Ecological Principles
- LAS 6220: Issues and Perspectives in Latin American Studies
- LAS 6290: Tropical Conservation and Development
- LAS 6291: Conservation and Development Skills
- LAS 6292: Tropical Conservation and Development Research Methods
- LAS 6293: Design and Methods of Research in Latin American Studies
- LAS 6295: Latin American Business Environment
- LAS 6296: Latin American Business Topics
- LAS 6905: Individual Work
- LAS 6938: Seminar in Modern Latin American Studies
- LAS 6941: Tropical Conservation and Development Practicum
- LAS 6943: Development Theory and Practice in Latin America
- LAS 6949: Internship In Latin American Studies
- LAS 6971: Research for Master's Thesis

### Additional Course Offerings

### College of Agricultural and Life Sciences Courses

- ALS 5106: Food and the Environment
- ALS 5364C: Molecular Techniques Laboratory

- ALS 5905: Individual Study
- ALS 5932: Special Topics
- ALS 6046: Grant Writing
- ALS 6921: Colloquium on Plant Pests of Regulatory Significance
- ALS 6925: Integrated Plant Medicine
- ALS 6930: Graduate Seminar
- ALS 6931: Plant Medicine Program Seminar
- ALS 6942: Principles of Plant Pest Risk Assessment and Management
- ALS 6943: Internship in Plant Pest Risk Assessment and Management
- BCH 5045: Graduate Survey of Biochemistry

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health

- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II



- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## Linguistics Department

Chair: Fiona McLaughlin

Graduate Coordinator: Brent Henderson

Complete faculty listing by department: [Follow this link](#)

The Linguistics Department offers graduate programs leading to the M.A. and Ph.D. degrees with specializations in

- The core areas of linguistics (phonetics, phonology, morphology, syntax, semantics, pragmatics)
- Language documentation
- Sociolinguistics and language change
- Discourse analysis
- TESL
- Second language acquisition

- Psycholinguistics
- Neurolinguistics

Requirements for these degrees are given in the Graduate Degrees section of this catalog. For detailed information on the program, please visit the link below. For further information on the program, including financial aid, please visit <http://lin.ufl.edu>.

## **Linguistics**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Linguistics Department

### **Linguistics Program Information**

The Linguistics Department offers graduate programs leading to the M.A. and Ph.D. degrees with specializations in

- The core areas of linguistics (phonetics, phonology, morphology, syntax, semantics, pragmatics)
- Language documentation
- Sociolinguistics and language change
- Discourse analysis
- TESL
- Second language acquisition
- Psycholinguistics
- Neurolinguistics

For detailed information on the program, including financial aid, please visit the website <http://lin.ufl.edu>.

The Certificate in Second Language Acquisition and Teaching is offered to University of Florida graduate degree-seeking students in linguistics and related disciplines.

As part of its service to the University community, Linguistics also offers English as a Second Language training for international applicants and admitted students. These programs, the English Language Institute (ELI), Academic Written English (AWE), and Academic Spoken English (ASE), are described in the Student Services section of this catalog. This information, along with links to the application form, are available at <http://lin.ufl.edu>.

Applicants who lack a background in linguistics should develop basic competency in the core areas before commencing graduate work. These deficiencies can be met by taking LIN 3010, LIN 3201, and LIN 3460 or the equivalent.

### **Degrees**

Doctor of Philosophy

## Master of Arts

### Linguistics Departmental Courses

- EAP 5835: Academic Spoken English I
- EAP 5836: Academic Spoken English II
- EAP 5837: Academic Spoken English Tutorial
- EAP 5845: Academic Writing
- EAP 5846: Research and Technical Writing
- EAP 5937: Special Topics in Academic Spoken English
- LIN 5657: Gender and Language
- LIN 5741: Applied English Grammar
- LIN 6084: Introduction to Graduate Research
- LIN 6165: Field Methods
- LIN 6208: Phonetics for Linguists
- LIN 6226: Advanced Phonetics
- LIN 6323: Phonology 1
- LIN 6341: Phonology 2
- LIN 6402: Morphology 1
- LIN 6410: Morphology 2
- LIN 6501: Syntax 1
- LIN 6520: Syntax 2
- LIN 6571: Structure of Specific Language
- LIN 6601: Sociolinguistics
- LIN 6622: Bilingualism
- LIN 6707: Psycholinguistics
- LIN 6708C: Methods in Psycholinguistics
- LIN 6720: Second Language Acquisition
- LIN 6773: Topics in Computational Linguistics
- LIN 6796: Cognitive Neuroscience of Language
- LIN 6804: Semantics I
- LIN 6826: Introduction to Formal Pragmatics
- LIN 6856: Semantics II
- LIN 6905: Individual Study
- LIN 6910: Supervised Research
- LIN 6932: Special Topics
- LIN 6940: Supervised Teaching
- LIN 6971: Research for Master's Thesis
- LIN 7118: History of Linguistics
- LIN 7641: Seminar in Language Variation
- LIN 7725: Topics in Second Language Acquisition
- LIN 7885: Discourse Analysis and Pragmatics
- LIN 7979: Advanced Research
- LIN 7980: Research for Doctoral Dissertation
- TSL 6171: TESL I: Materials and Techniques
- TSL 6172: TESL II: Materials for Special Purposes

## Mathematics Department

*Chair:* Douglas Cenzer

*Graduate Coordinator:* Jean A. Larson

*Complete faculty listing:* Follow this link.

The Department of Mathematics offers the Master of Science (thesis or non-thesis) and the Doctor of Philosophy degrees. The non-thesis Master of Arts in Teaching and Master of Science in Teaching are also offered. Minimum requirements for these degrees are described in the Graduate Degrees section of this catalog.

Areas of specialization for graduate research include algebra, number theory, analysis, geometry, topology, logic and set theory, differential equations, dynamical systems, probability theory, optimization, combinatorial theory, biomathematics, and imaging. Faculty and graduate students in mathematics interact with counterparts in biology, biostatistics, computer science, industrial and systems engineering, philosophy, statistics, and the Emerging Pathogens Institute. The department houses the Center for Applied Mathematics and participates in the Center for Applied Optimization.

Aside from the regularly scheduled courses, the department offers a variety of seminars and special topics courses which engage faculty and graduate students at the frontiers of research.

For more information, please see the program page below or our website: <http://www.math.ufl.edu>.

## Mathematics

### College

College of Liberal Arts and Sciences

### Department/School

Mathematics Department

### Mathematics Program Information

The Department of Mathematics offers the degrees of Doctor of Philosophy, Master of Science, and the Master of Arts in Teaching and Master of Science in Teaching, each with a major in mathematics. Complete descriptions of the minimum requirements for these degrees are provided in the Graduate Degrees section of this catalog.

The Department has an accelerated bachelor's/master's program designed for superior undergraduate students who have the ability to pursue such a plan of study leading to the Master of Science degree. The main feature of the program is that up to 12 semester hours of approved graduate level mathematics courses may be used as dual credit for both the undergraduate and the graduate degree. All other requirements for both the bachelor's degree and the master's degree must be met. For admission requirements for this program, see the undergraduate coordinator.

There are opportunities for concentrated study in a number of specific areas of pure and applied mathematics at both the master's and doctoral levels. The faculty directs studies and research in algebra, number theory, analysis, geometry, topology, logic and set theory, differential equations, dynamical systems, probability theory, optimization, combinatorial theory, biomathematics, and imaging.

In addition to the requirements of the Graduate School, the minimum prerequisite for admission to the program of graduate studies in mathematics is the completion, with an average grade of B or better, of at least 24 credits of undergraduate mathematics, including a full year of calculus and three semesters of appropriate work beyond the calculus. The most appropriate courses for this purpose are advanced calculus, linear algebra and abstract algebra. Students lacking part of the requirements will be required to make up the deficiency early in their graduate work.

Prerequisites to individual courses should be determined before registration by consultation with the instructor concerned. Some of the courses listed are offered only as needed. Since times of offering courses are estimated a year in advance, certain changes may be made if needs are known by the Department.

Students pursuing the master's degree in mathematics must pass two comprehensive written examinations, one in algebra and one in analysis or prepare and provide an oral defense of a thesis on original research conducted under the supervision of a faculty adviser. Students pursuing the Master of Arts in Teaching or the Master of Science in Teaching degree must prepare a teaching portfolio and pass an oral examination. Each of these programs normally requires two years for completion.

The requirements for a doctoral degree include 36 hours of 6000-level course work in mathematics; no hours of teaching, colloquium, dissertation, or individual work will count toward this requirement. To become a candidate for the doctoral degree, the student must pass a comprehensive preliminary examination with written and oral components administered by the Department. The doctoral student must also pass a reading knowledge examination in one of the following foreign languages: French, German, or Russian. The dissertation is an important requirement for the doctoral degree in mathematics. The topic for the dissertation may be chosen from a number of areas of current research in pure and applied mathematics.

Details concerning all requirements for graduate degrees in mathematics may be obtained by writing the Mathematics Department Graduate Selection Committee or consulting the Department website, <http://www.math.ufl.edu>.

## **Degrees**

### Doctor of Philosophy

without a concentration

concentration in Imaging Science and Technology

concentration in Quantitative Finance

### Master of Arts in Teaching

### Master of Science

### Master of Science in Teaching

## **Courses**

- MAA 5104: Advanced Calculus for Engineers and Physical Scientists I
- MAA 5105: Advanced Calculus for Engineers and Physical Scientists II
- MAA 5228: Modern Analysis I
- MAA 5229: Modern Analysis II
- MAA 5404: Introduction to Complex Variables for Engineers and Physical Scientists

- MAA 6236: Mathematical Analysis for Statisticians
- MAA 6406: Complex Analysis I
- MAA 6407: Complex Analysis II
- MAA 6616: Analysis I
- MAA 6617: Analysis II
- MAA 7526: Advanced Topics in Functional Analysis I
- MAA 7527: Advanced Topics in Functional Analysis II
- MAD 6206: Combinatorial Theory I
- MAD 6207: Combinatorial Theory II
- MAD 6406: Numerical Linear Algebra
- MAD 6407: Numerical Analysis
- MAD 7396: Topics in Combinatorial Theory I
- MAD 7397: Topics in Combinatorial Theory II
- MAE 6940: Supervised Teaching
- MAE 6943: Internship in College Teaching
- MAP 5304: Intermediate Differential Equations for Engineers and Physical Scientists
- MAP 5345: Introduction to Partial Differential Equations
- MAP 5489: Modeling in Mathematical Biology
- MAP 6208: Numerical Optimization
- MAP 6327: Applied Differential Equations I
- MAP 6356: Partial Differential Equations I
- MAP 6357: Partial Differential Equations II
- MAP 6375: Numerical Partial Differential Equations
- MAP 6376: Finite Element Method
- MAP 6467: Stochastic Differential Equations and Filtering Theory I
- MAP 6468: Stochastic Differential Equations and Filtering Theory II
- MAP 6472: Probability and Potential Theory I
- MAP 6473: Probability and Potential Theory II
- MAP 6487: Biomathematics Seminar I
- MAP 6488: Biomathematics Seminar II
- MAP 6505: Mathematical Methods of Physics and Engineering
- MAP 6506: Mathematical Methods of Physics and Engineering II
- MAP 6941: Internship in Applied Mathematics
- MAP 7436: Seminar in Applied Mathematics I
- MAP 7437: Seminar in Applied Mathematics II
- MAS 5311: Introductory Algebra I
- MAS 5312: Introductory Algebra II
- MAS 6331: Algebra I
- MAS 6332: Algebra II
- MAS 7215: Theory of Numbers I
- MAS 7216: Theory of Numbers II
- MAS 7396: Advanced Topics in Algebra I
- MAS 7397: Topics in Algebra II
- MAT 6905: Individual Work
- MAT 6910: Supervised Research
- MAT 6932: Special Topics in Mathematics
- MAT 6971: Research for Master's Thesis
- MAT 7979: Advanced Research
- MAT 7980: Research for Doctoral Dissertation

- MHF 5107: Introduction to Set Theory
- MHF 5207: Foundations of Mathematics
- MHF 6306: Mathematical Logic I
- MHF 6307: Mathematical Logic II
- MTG 5316: Introduction to Topology I
- MTG 5317: Introduction to Topology II
- MTG 5411: Introduction to Fractal Geometry
- MTG 5412: Introduction to Dynamical Systems and Chaos
- MTG 6256: Differential Geometry I
- MTG 6257: Differential Geometry II
- MTG 6346: Topology I
- MTG 6347: Topology II
- MTG 6401: Ergodic Theory and Dynamical Systems I
- MTG 6402: Ergodic Theory and Dynamical Systems II
- MTG 7396: Advanced Topics in Topology I
- MTG 7397: Advanced Topics in Topology II

## Philosophy Department

*Chair:* Gene Witmer

*Graduate Coordinator:* Robert D'Amico

*Complete faculty listing by department: Follow this link.*

The Department offers the Master of Arts and the Doctor of Philosophy degrees. General requirements for these degrees are described in the Graduate Degrees section of this catalog, and program-specific requirements are provided on the Philosophy Program page below.

All graduate students must take in their first fall semester of enrollment the Graduate Proseminar (PHI 5935), an intensive workshop requiring regular writing and presentation of philosophical papers; they must also take in that first year the foundational course on Graduate Logic (PHI 5135). These two critical courses help ensure success in the core curriculum, which is designed to provide a thorough grounding in the three main divisions of philosophical work: history, value theory, and the various areas known together as M&E ("metaphysics and epistemology"). Requirements for the M.A. include an oral Final Exam administered by a selection of faculty but do not include a thesis.

Graduate students enjoy a supportive community. TAships are provided with shared office space, and most graduate students participate in organizing a yearly conference, the Southeast Graduate Philosophy conference (for more information, see <http://www.phil.ufl.edu/seg>). Some funding for supporting graduate student travel to conferences is available.

Funding for graduate students is provided primarily by Teaching Assistantships. Most M.A. students are funded in this way. A typical TA assignment renders a graduate student responsible for three discussion sections (associated with a single course), ranging in size from 15-22 students each, under the supervision of the main instructor. Such TAs lead discussions once a week for each such section, grade assigned work, proctor exams, take attendance, hold office hours, advise students, and other such tasks as assigned by their supervisor. Newer TAs assist with lower level courses (such as Introduction to Philosophy and Contemporary Moral Issues) and more experienced TAs may, depending on scheduling needs, assist with more advanced courses. Those M.A. students who have demonstrated exceptional teaching capabilities may have the chance to teach their own course during the summer after which they have completed all course requirements for the degree. Ph.D. students who already have an M.A. more regularly get these opportunities, both during the summer and the fall and spring semesters.

Additional funding support may be available via TAships assisting for the University's interdisciplinary humanities course HUM 2305 (What is the Good Life?) and working for the University Writing Program. TAships assisting with online philosophy courses may be available at times as well.

For more information, please see the program page below as well as our website at <http://www.phil.ufl.edu>.

## **Philosophy**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Philosophy Department

### **Philosophy Program Information**

The Department of Philosophy offers graduate degree programs leading to the M.A. and the Ph.D. degrees in Philosophy.

The Department is dedicated both to pursuing high quality research and providing a rigorous education to its graduate students, whether pursuing just the M.A. or the Ph.D. Faculty provide philosophical expertise in a wide variety of areas, including ancient Greek philosophy, modern philosophy, normative theory, political theory, bioethics, philosophy of education, metaphysics, epistemology, philosophy of mind, philosophy of logic, philosophy of science, philosophy of social science, philosophy of language, argument theory and Continental philosophy. For a full and updated list of areas of research see the pages of individual faculty. [Link: <http://www.phil.ufl.edu/faculty.html>].

The M.A. program is suitable for those planning or considering a Ph.D. in Philosophy, for those who hope to gain an advanced degree prior to pursuing professional degrees in such fields as law and medicine, and for those who are considering advanced work in related fields such as linguistics, classical studies, religious studies, psychology, and political science.

Admission to the M.A. program requires either a bachelor's degree in philosophy or sufficient course work in philosophy as determined by the department. Applicants are evaluated on the basis of academic achievement, GRE scores, three letters of recommendation, a statement of purpose, and a sample paper in philosophy.

The Ph.D. program is suitable for those planning to pursue an academic career, including both those focused more on research and those focused more on teaching. Graduates should expect to be trained in doing high quality research in philosophy, to be mentored in the practice of teaching, and to have opportunities for teaching in a broader array of contexts that should serve well the ability to teach courses in writing and the humanities more generally.

Admission to the Ph.D. program requires an M.A. in Philosophy. Applicants are evaluated on the basis of the same considerations as M.A. applicants (academic record, GRE scores, recommendations, purpose, and a writing sample). At present, due to a restriction imposed by the central UF administration during a budget crisis in 2008, the Department is presently unable to admit students into the Ph.D. program, though it hopes to reopen the program in the future.

### **General program information**



All graduate students are required to take in their first year the graduate Proseminar (PHI 5935), an intensive workshop requiring weekly writing and presentation as well as a substantial paper at the end. The Graduate Logic course (PHI 5135) is also required in the first year as a foundational area for philosophy generally. Additional core courses include surveys in ancient philosophy (PHP 5005 and PHP 5015), in modern philosophy (PHI 5405 and PHH 5406), ethical theory (PHI 5665), epistemology (PHI 5365) and foundations of analytic philosophy (PHP 5785).

### **M.A. program information**

The M.A. degree requires 36 hours of coursework, which can be completed in two years by registering for 9 credits each fall and spring semester. Distribution requirements mandate a selection of core courses and 6000-level seminars, while electives make up 6 hours of coursework. Core courses include comprehensive examination, and to graduate students must successfully pass an oral Final Exam administered by a group of faculty selected by the Graduate Studies Committee.

### **Ph.D. Program information**

The Ph.D. requires 90 credit hours, which may include 36 used as credit for the M.A. Distribution requirements include those required for the MA, additional courses at the 6000-level, 3 proposal research hours, 12 doctoral research hours, and the successful completion and defense of a dissertation. In completing the Ph.D. advanced students will normally have an opportunity to teach their own undergraduate courses under the supervision of faculty as well as to work as a Teaching Assistant in many other courses. Upon reopening of admissions, finally, the Department plans to institute a required regular workshop for Ph.D. students focusing on making progress in the dissertation and gaining experience with professional activities.

Further information about the department's programs and admissions can be obtained on the department's website at <http://www.phil.ufl.edu> or by contacting the Graduate Coordinator at [gradcoord@phil.ufl.edu](mailto:gradcoord@phil.ufl.edu).

## **Degrees**

Doctor of Philosophy

Master of Arts

## **Courses**

- PHH 5405: Modern Philosophy I
- PHH 5406: Modern Philosophy II
- PHH 5605: Studies in Continental Philosophy
- PHH 6105: Seminar in Ancient Philosophy
- PHH 6425: Seminar in Modern Philosophy
- PHI 5135: Graduate Logic
- PHI 5225: Philosophy of Language
- PHI 5325: Philosophy of Mind
- PHI 5365: Epistemology
- PHI 5405: Philosophy of Science
- PHI 5425: Philosophy of Social Science
- PHI 5505: Metaphysics
- PHI 5665: Ethical Theory
- PHI 5905: Individual Work
- PHI 5934: Topics in Philosophy
- PHI 5935: Proseminar

- PHI 6105: Seminar in Logic
- PHI 6226: Seminar in Philosophy of Language
- PHI 6306: Seminar in Epistemology
- PHI 6326: Seminar in Philosophy of Mind
- PHI 6406: Seminar in Philosophy of Science
- PHI 6506: Seminar in Metaphysics
- PHI 6667: Seminar in Ethics
- PHI 6787: Seminar in Continental Philosophy
- PHI 6905: Individual Work
- PHI 6910: Supervised Research
- PHI 6934: Special Topics
- PHI 6940: Supervised Teaching
- PHI 6971: Research for Master's Thesis
- PHI 7979: Advanced Research
- PHI 7980: Research for Doctoral Dissertation
- PHP 5005: Ancient Philosophy I
- PHP 5015: Ancient Philosophy II
- PHP 5785: Foundations of Analytic Philosophy
- PHP 6415: Seminar in Kant
- PHP 6795: Seminar in Analytic Philosophy
- PHP 6930: Seminar in a School or Thinker

## Physics Department

College of Liberal Arts and Sciences

*Chair:* Kevin Ingersent

*Graduate Coordinator:* Guido Mueller

Complete faculty listings: [Follow this link.](#)

The Department of Physics offers the Master of Science (thesis or nonthesis) and the Doctor of Philosophy degrees. The nonthesis Master of Science in Teaching is also offered. Requirements for these degrees are described in the *Graduate Degrees* section of this catalog.

Areas of specialization for graduate research include astrophysics and cosmology, atomic and molecular physics, biological physics, chemical physics, condensed matter physics (theory and experiment), nuclear physics, particle physics (theory and experiment), statistical physics, and low temperature physics.

Special interdisciplinary research programs include the Institute for Fundamental Theory (carried out jointly with the Department of Mathematics), the Institute for Theoretical and Computational Studies in Molecular and Materials Science (carried out jointly with the Department of Chemistry), the Institute of High Energy and Particle Astrophysics, and Microfabritech (jointly with the College of Engineering). A curriculum is offered by the Center for Chemical Physics for students interested in research related to chemistry or chemical engineering. The Center for Condensed Matter Sciences provides opportunities for investigations in a diverse range of subjects and fields, including the Microkelvin Research Laboratory. The University of Florida operates the National High Magnetic Field Laboratory jointly with Florida State University and Los Alamos National Laboratory.

The core curriculum is designed to provide a thorough foundation for all physics graduate students. It consists of PHY 6246, PHY 6346, PHY 6347, PHY 6536, PHY 6645, and PHY 6646. Doctoral students must achieve a 3.30 GPA in the core curriculum. All students must pass a preliminary examination at the undergraduate level. All degree

candidates are required, as part of their graduate education, to participate continuously in the research and/or teaching programs of the Department.

For more information, please see the program page below, and visit our website: <http://www.phys.ufl.edu>.

## **Physics**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Physics Department

### **Physics Program Information**

The Department of Physics is dedicated to advancing the forefronts of knowledge in both pure and applied physics, thus providing an exciting intellectual climate for our graduate students. Our research activities include astrophysics (particle astrophysics, cosmology and gravitation), condensed matter and materials physics (experimental, theoretical and computational), low temperature physics, elementary particle physics (experimental and theoretical) and biological physics. With such diversity in research offerings you will have an opportunity to pursue research in most areas of contemporary physics. In spite of the size of our Department, we are committed to designing a program of graduate study that is tailored to your experience and interests. Our Graduate Coordinator sees that each of our graduate students receives personal attention and advice as they progress toward their advanced degree.

### **Graduate Program Overview**

Preliminary Examination:

- Covers undergraduate subject matter
- Given twice a year; two years to complete

Graduate Core Courses

- Two semesters of quantum mechanics
- Two semesters of electromagnetism
- One semester of classical mechanics
- One semester of statistical mechanics
- Waivers given for equivalent
- work at other institutions
- Completed in first or second years

Distribution Requirement

- Advanced course work in three subfields
- Usually completed by the end of the second year

Highlights

- Involvement in research in first summer (or sooner)!
- Diversity of research interdisciplinary options!

- Individualized program designed to meet the unique background of each student!

For more information, please see our website: <http://www.physics.ufl.edu>.

## Degrees

Doctor of Philosophy

without a concentration

concentration in Imaging Science and Technology

Master of Science

Master of Science in Teaching

## Courses

- AST 6416: Physical Cosmology
- PHY 5277: Physics of Accident Reconstruction and Biomechanics
- PHY 5905: Individual Work
- PHY 6246: Classical Mechanics
- PHY 6346: Electromagnetic Theory I
- PHY 6347: Electromagnetic Theory II
- PHY 6536: Statistical Mechanics I
- PHY 6555C: Cryogenics
- PHY 6645: Quantum Mechanics I
- PHY 6646: Quantum Mechanics II
- PHY 6648: Quantum Field Theory I
- PHY 6905: Individual Work
- PHY 6910: Supervised Research
- PHY 6920: Departmental Colloquium
- PHY 6932: Seminar in Molecular and Computational Physics
- PHY 6943: Internship in College Teaching
- PHY 6971: Research for Master's Thesis
- PHY 7097: Advanced Topics in Theoretical Physics
- PHY 7669: Quantum Field Theory II
- PHY 7939: Special Topics
- PHY 7979: Advanced Research
- PHY 7980: Research for Doctoral Dissertation
- PHZ 5155C: Physical Modeling and Simulation
- PHZ 5245: Introduction to Magnetic Resonance
- PHZ 5354: Introduction to Particle Physics
- PHZ 5405: Introduction to Solid-State Physics
- PHZ 6156: Computer Methods in Physics
- PHZ 6166: Qualitative Methods of Theoretical Physics
- PHZ 6355: Elementary Particle Physics I

- PHZ 6358: Standard Model of Elementary Particles I
- PHZ 6391: Seminar in Astrophysics
- PHZ 6392: Seminar in Particle Physics
- PHZ 6426: Solid State I
- PHZ 6493: Seminar in Condensed Matter Physics
- PHZ 6607: Special and General Relativity
- PHZ 7357: Elementary Particle Physics II
- PHZ 7359: Standard Model of Elementary Particles II
- PHZ 7427: Solid State II
- PHZ 7428: Modern Condensed Matter Physics
- PHZ 7429: Phases of Condensed Matter
- PHZ 7608: Special and General Relativity II

## **Plant Molecular and Cellular Biology Department**

College of Agricultural and Life Sciences

College of Liberal Arts and Sciences

College of Medicine

*Complete faculty listing by department:* Follow this link.

Plant Molecular and Cellular Biology (PNCB) currently has 45 faculty members in the program. They are based in the departments of Agronomy, Biology, Environmental Horticulture, Forest Resources and Conservation, Horticultural Sciences, Microbiology and Cell Science, Molecular Genetics and Microbiology, and Plant Pathology within the colleges of Agriculture and Life Sciences, Medicine, and Liberal Arts and Sciences.

## **Plant Molecular and Cellular Biology (CLAS)**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Plant Molecular and Cellular Biology Department

## **Plant Molecular and Cellular Biology Program Information**

*Director:* Gloria A. Moore

*Graduate Coordinator:* Matias Kirst

Plant Molecular and Cellular Biology (PNCB) is an interdisciplinary and interdepartmental graduate degree program that emphasizes understanding the molecular and cellular mechanisms that mediate plant development, adaptation, and evolution. Students can pursue an M.S. or a Ph.D. degree through the PNCB program. All students complete core courses in Advanced Genetics, Plant Molecular Biology and Genomics, Plant Cellular and Developmental Biology, and Plant Biochemistry. In addition to the core classes, students can select from a variety of courses in biochemistry, molecular biology, physiology, breeding, genetics, evolution, microbiology, and plant pathology.

New students are exposed to a variety of faculty and experimental systems while they rotate through several laboratories during their first two semesters before selecting an adviser and dissertation research area. Both M.S. and Ph.D. students take four required courses: PCB 5065 Advanced Genetics, PCB 5530 Plant Molecular Biology and Genomics, PCB 6528 Plant Cell and Developmental Biology and BOT 6935 Plant Biochemistry, as well as journal colloquium classes (PCB 7922 Journal Colloquium). Additional elective courses are taken after approval by the student's supervisory committee. For additional information see <http://pmcb.ifas.ufl.edu>.

Successful candidates should have a strong interest in plant molecular and cellular mechanisms controlling development, metabolism, adaptation, and evolution. Applicants typically have a B.S. or M.S. in the agricultural, forestry, biological or chemical sciences with advanced undergraduate coursework in genetics, molecular and cellular biology, and biochemistry. However, outstanding students from a broad range of science disciplines are actively considered.

### **Degrees Offered with a Major in Plant Molecular and Cellular Biology**

Doctor of Philosophy

without a concentration

concentration in Toxicology

Master of Science

### **Plant Molecular and Cellular Biology Courses**

- BOT 6935: Special Topics
- PCB 5065: Advanced Genetics
- PCB 5530: Plant Molecular Biology and Genomics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 6910: Supervised Research
- PCB 6937: Special Topics in Plant Molecular and Cellular Biology
- PCB 6971: Research for Master's Thesis
- PCB 7922: Journal Colloquy in Plant Molecular and Cellular Biology
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation

## **Political Science Department**

*Chair:* Ido Oren

*Graduate Coordinator:* Daniel Smith

*Complete faculty listing:* Follow this link.

The Department of Political Science currently offers two graduate degrees: Master of Arts (thesis or nonthesis option) and Doctor of Philosophy. The political science--international relations program currently offers the Master of Arts (thesis or nonthesis option). Requirements for these degrees are given in the Graduate Degrees Section of this catalog. For further information, please contact the Political Science Department or follow the hyperlinks below to more information about the specific programs offered.

## Political Science

### College

College of Liberal Arts and Sciences

### Department/School

Political Science Department

### Political Science Program Information

The Department of Political Science currently offers two graduate degrees: Master of Arts (thesis or nonthesis option) and Doctor of Philosophy. The political science--international relations program currently offers the Master of Arts (thesis or nonthesis option). Requirements for these degrees are given in the Graduate Degrees Section of this catalog. For further information about international relations, please contact the Political Science Department or visit their departmental page in this catalog.

Admission to graduate study in the Department of Political Science normally requires the completion of an undergraduate major in political science or its equivalent. Students without this preparation may be required to make up deficiencies early in their graduate work. The core sequence begins in the fall term, providing basic knowledge that students need in later semesters. In evaluating candidates for admission, the Department considers

- Prior academic achievement
- GRE scores
- Letters of recommendation from three faculty members or others familiar with the academic potential or work habits of the applicant
- A statement of purpose that conveys intellectual ambitions, indicates how the program of study satisfies the student's interests and goals, and tells how the student would contribute to the program.

Fields of specialization offered by the Department include American government and politics, comparative politics, international relations, public policy, political theory, political behavior, and political methodology.

**Master of Arts:** The M.A. curricula are designed to serve students who want to pursue goals of an advanced general education, to gain skills and knowledge suitable for various types of public or private employment, or to prepare for further work at the doctoral level. M.A. students are required to complete POS 6736: The Conduct of Inquiry and either POS 6737: Political Data Analysis or STA 6126: Statistical Methods in Social Research I. Students may complete their M.A. degrees with or without writing a thesis. Students pursuing the thesis option must complete 30 hours of graduate course work. The thesis is expected to be of length and quality comparable to papers presented at professional academic conferences or published in academic journals. Students pursuing the nonthesis option must complete 36 semester hours of graduate course work and defend two qualifying papers. For both M.A. options, course work in political science, exclusive of core courses, must include a minimum of two graduate-level courses in one field of political science.

The M.A. degree may be taken in conjunction with the following certificate programs:

- Political campaigning
- Public affairs

Students in these certificate programs pursue the nonthesis option.

**Public affairs:** This program trains students for leadership positions in state, local, and national governments as well as for careers in nonprofit organizations by providing students with knowledge and skills in the areas of organization behavior, public budgeting and finances, public management, policy analysis, program evaluation, and computer applications. The curriculum consists of seminars in political science, public administration, public policy, process, state and local politics, and research methods. Supervised internships in selected agencies in Florida are arranged by the Department of Political Science as an integral part of the training program. This specialization requires 39 hours of course work plus satisfactory completion of a 3-hour internship at the discretion of the Department. Students must also defend a final management-policy paper that incorporates analytical and substantive expertise. Graduates of the program serve in a variety of professional positions, including city managers, heads of municipal departments, directors of nonprofit organizations, analysts for the state legislature, and budget analysts for the federal government. In addition to the M.A. degree in political science, students receive the Certificate in Public Affairs.

**Political campaigning:** The program is designed to provide students with the basic political skills, insights, and experience that are critical for success in the rapidly changing profession of politics and political consulting. The program combines an awareness of the academic literature on mass and elite behavior with exposure to the increasingly sophisticated techniques used by campaigns. Students take a total of 39 hours from four major areas:

- Courses required of all M.A. students
- Courses oriented to practical aspects of political campaigning and governmental affairs (lobbying), including a 3-credit campaign-related internship
- Courses placing campaigns and elections in the broader context of American politics
- Related courses offered by the College of Journalism and Communications

Entry-level jobs have included such positions as legislative aide, campaign (or deputy campaign) manager, polling analyst, state party political coordinator, general campaign consultant, and media relations. With additional experience, some former students have gone on to become state legislator (and later, member of the U.S. House of Representatives), deputy chief of staff to the governor of Florida, partner in a major Washington area polling firm, assistant to the Minister of Justice and Attorney General of Canada, and head lobbyist for a nationwide restaurant chain. In addition to the M.A. degree in political science, students receive the Certificate in Political Campaigning.

**Law/Public Affairs joint degree program:** This program culminates in the Master of Arts in political science and Juris Doctor degrees. A joint degree program culminating in the Master of Arts in political science international relations and Juris Doctor degrees is also available. The joint program enables students to earn both the J.D. and the M.A. in less time than would be required to earn both degrees consecutively. Full-time students who make satisfactory progress can usually earn both degrees in 4 years. Candidates for the joint degree program must meet the entrance requirements for, and be admitted to, both the College of Law and the Department of Political Science. These requirements include both the LSAT and the GRE. Students are encouraged to announce their intent of seeking a joint degree as soon as possible. The Department of Political Science will allow 12 hours of appropriate law school courses to be credited toward the M.A. degree. The 12 credits selected from the law curriculum must be approved by the Political Science graduate coordinator on the recommendation of the student's supervisory committee. The College of Law will permit 12 hours of credit earned in political science graduate courses to be credited toward the J.D. degree. Students in the joint degree program are permitted, but not required, to pursue a companion certificate program in public affairs, political campaigning, or international development policy and administration.

**Combined bachelor's/master's degree program:** This combined program is designed for superior students who have the ability to pursue an accelerated program leading to the Bachelor of Arts and the Master of Arts degrees in political science or political science international relations.

Up to 12 semester hours of approved graduate-level political science courses may be used as credit for both the undergraduate and graduate degree. Applicants to the program must present

- Acceptable scores on the verbal, quantitative, and analytical writing portions of the GRE
- Completion of at least 24 semester hours at the University of Florida (including at least 12 semester hours of political science) with a GPA of 3.7 or higher



- Letters of recommendation from two faculty members in the Department of Political Science

The combined program is not recommended for students considering a Ph.D. program in political science at UF but is appropriate for those considering one of the M.A. degree plus certificate programs described above. Further information concerning this program is available from the departmental undergraduate and graduate coordinators.

**Doctor of Philosophy:** The Ph.D. program emphasizes preparation for academic careers through seminars, independent work with faculty, and professional development experiences including graduate paper readings, placement workshops, and a distinguished lecture series. The Ph.D. prepares students for teaching and research in either an academic or governmental environment and opens doors to other career opportunities in both the private and public sectors. The Ph.D. program emphasizes the development of strong analytic skills and sophisticated research methods. As resources permit, the Department provides students with funding for travel expenses to scholarly meetings and professional (methodological) training support. As part of the preparation for careers in academia, doctoral students are also generally expected to contribute to the teaching mission of the Department. All Ph.D. students must complete the following:

- POS 6736: The Conduct of Inquiry
- POS 6716: Scope and Epistemologies of Political Science
- POS 6737: Political Data Analysis
- POT 6505: Politics and Theory
- Course work in a major and two minor fields of study
- Qualifying examinations in a major field and one minor field
- A dissertation

Fields of study open to Ph.D. students include comparative politics, American politics, public policy, international relations, political behavior, political theory, and political methodology. Applications are particularly welcome from students whose intellectual interests traverse these fields, including those with interests in religion and politics, state political institutions and policy, environmental politics, international development, and minority and ethnic politics.

University of Florida Ph.D. students benefit from associations with faculty in numerous other departments and centers. The Centers for Latin American Studies, African Studies, and European Studies, and the Asian Studies Program complement department faculty strengths in comparative politics and international relations. Students in the public policy concentration benefit from substantive expertise of faculty in the Institute for Child Health Policy, the Shimberg Center for Affordable Housing, and the Center for Gerontological Studies. Several faculty in the College of Journalism and Communications have interests in media and politics.

For more information, please see our website: <http://polisci.ufl.edu>.

## **Degrees Offered with a Major in Political Science**

### **Doctor of Philosophy**

without a concentration

concentration in Educational Policy

concentration in Tropical Conservation and Development

### **Master of Arts**

without a concentration

concentration in International Development Policy and Administration

concentration in Public Affairs

concentration in Political Campaigning

concentration in Tropical Conservation and Development

### **Political Science Departmental Courses**

- CPO 5935: Advanced Topics in Comparative Politics
- CPO 6046: Politics in Advanced Industrial Societies
- CPO 6059: Democracy and Its Competitors
- CPO 6077: Social Movements in Comparative Perspective
- CPO 6091: Introduction to Comparative Political Analysis
- CPO 6206: Seminar in African Politics
- CPO 6307: Latin American Politics I
- CPO 6728: Ethnicity and Nationalism
- CPO 6732: Democratization and Regime Transition
- CPO 6736: Post-Communist politics
- CPO 6756: Comparative Elections and Party Systems
- CPO 6757: The European Union In Comparative Perspective
- CPO 6786: Peasant Politics and Society
- CPO 6795: Environmental Politics
- CPO 6796: Water Politics
- INR 5935: Advanced Topics in International Relations
- INR 6036: Globalization, Regionalism, and Governance
- INR 6039: International Political Economy
- INR 6208: Advanced International Relations Theory
- INR 6213: Seminar: Politics of the European Union
- INR 6249: Inter-American Relations
- INR 6305: Politics of American Foreign Policy Making
- INR 6337: Survey of International Security
- INR 6352: International Environmental Relations
- INR 6507: International Organization
- INR 6607: International Relations Theory
- INR 6936: Seminar in Transnational and Global Studies
- INR 6938: Seminar in Culture and World Politics
- PAD 5935: Advanced Topics in Public Administration
- PAD 6108: Public Administration Theory
- PAD 6227: Public Budgeting and Finance
- PAD 6434: Leadership and Ethics in Public Agencies
- POS 6458: Politics of Campaign Finance
- PAD 6946: Internship in Government
- POS 5935: Advanced Topics in Political Science
- POS 6045: Seminar in American Politics
- POS 6048: American Political Development
- POS 6127: State Government and Politics

- POS 6146: Urban Politics
- POS 6157: Community Analysis
- POS 6196: Patrons, Clients, Corruption, and Accountability
- POS 6207: Political Behavior
- POS 6208: Empirical Political Research
- POS 6272: Political Participation
- POS 6274: Political Campaigning
- POS 6278: Advanced Campaign Strategy
- POS 6279: The Politics of Direct Democracy
- POS 6292: Religion and Politics
- POS 6427: Legislative Process
- POS 6453: Political Parties and Interest Groups
- POS 6476: Bureaucratic Politics in the U.S.
- POS 6707: Qualitative Research Methods for Political Science
- POS 6712: Empirical Theories of Politics
- POS 6716: Scope and Epistemologies of Political Science
- POS 6736: The Conduct of Inquiry
- POS 6737: Political Data Analysis
- POS 6747: Topics in Political Research Methodology
- POS 6757: Survey Research
- POS 6909: Individual Work
- POS 6910: Supervised Research
- POS 6933: Special Topics
- POS 6940: Supervised Teaching
- POS 6971: Research for Master's Thesis
- POS 7979: Advanced Research
- POS 7980: Research for Doctoral Dissertation
- POT 5935: Advanced Topics in Political Theory
- POT 6016: Ancient Political Thought
- POT 6056: Modern Political Thought
- POT 6067: Contemporary Political Theory
- POT 6306: Liberalism and Its Critics
- POT 6314: Democratic Theory
- POT 6416: The Marxist Tradition and its Critics
- POT 6505: Politics and Theory
- POT 6516: Political Judgment
- PUP 5935: Advanced Topics in Public Policy
- PUP 6006: Policy Evaluation
- PUP 6007: Policy Process
- PUP 6009: Public Policy Analysis
- PUP 6315: Race, Gender, and Politics

## **Political Science - International Relations**

### **College**

## Department/School

Political Science Department

### Political Science--International Relations Program Information

The Department of Political Science currently offers two graduate degrees: Master of Arts (thesis or nonthesis option) and Doctor of Philosophy. The political science--international relations program currently offers the Master of Arts (thesis or nonthesis option). Requirements for these degrees are given in the Graduate Degrees Section of this catalog. For further information, please contact the Political Science Department directly or visit their departmental catalog page.

Admission to graduate study in the Department of Political Science normally requires the completion of an undergraduate major in political science or its equivalent. Students without this preparation may be required to make up deficiencies early in their graduate work. The core sequence begins in the fall term, providing basic knowledge that students need in later semesters. In evaluating candidates for admission, the Department considers

- Prior academic achievement
- GRE scores
- Letters of recommendation from three faculty members or others familiar with the academic potential or work habits of the applicant
- A statement of purpose that conveys intellectual ambitions, indicates how the program of study satisfies the student's interests and goals, and tells how the student would contribute to the program.

**Political science--international relations:** The M.A. degree in political science-- international relations is designed to provide professional education to those whose primary interest is a career in foreign relations. In this program, students must complete course work in the core of international relations theory and in two or more of the four major subfields of international relations, international political economy, international security, foreign policy, and international organization. The M.A. is a 36-hour degree, requiring successful completion of a 6-credit political science core sequence, 15 credits of departmental or extra-department electives, and a 15- credit international relations major. Students may pursue either a thesis option or take a comprehensive examination at the end of the program.

**Law/Public Affairs joint degree program:** This program culminates in the Master of Arts in political science and Juris Doctor degrees. A joint degree program culminating in the Master of Arts in political science international relations and Juris Doctor degrees is also available. The joint program enables students to earn both the J.D. and the M.A. in less time than would be required to earn both degrees consecutively. Full-time students who make satisfactory progress can usually earn both degrees in 4 years. Candidates for the joint degree program must meet the entrance requirements for, and be admitted to, both the College of Law and the Department of Political Science. These requirements include both the LSAT and the GRE. Students are encouraged to announce their intent of seeking a joint degree as soon as possible. The Department of Political Science will allow 12 hours of appropriate law school courses to be credited toward the M.A. degree. The 12 credits selected from the law curriculum must be approved by the Political Science graduate coordinator on the recommendation of the student's supervisory committee. The College of Law will permit 12 hours of credit earned in political science graduate courses to be credited toward the J.D. degree. Students in the joint degree program are permitted, but not required, to pursue a companion certificate program in public affairs, political campaigning, or international development policy and administration.

**Combined bachelor's/master's degree program:** This combined program is designed for superior students who have the ability to pursue an accelerated program leading to the Bachelor of Arts and the Master of Arts degrees in political science or political science international relations.

Up to 12 semester hours of approved graduate-level political science courses may be used as credit for both the undergraduate and graduate degree. Applicants to the program must present

- Acceptable scores on the verbal, quantitative, and analytical writing portions of the GRE
- Completion of at least 24 semester hours at the University of Florida (including at least 12 semester hours of political science) with a GPA of 3.7 or higher
- Letters of recommendation from two faculty members in the Department of Political Science

The combined program is not recommended for students considering a Ph.D. program in political science at UF but is appropriate for those considering one of the M.A. degree plus certificate programs described above. Further information concerning this program is available from the departmental undergraduate and graduate coordinators.

## **Degrees**

Master of Arts

Master of Arts in Teaching

## **Political Science Departmental Courses**

- CPO 5935: Advanced Topics in Comparative Politics
- CPO 6046: Politics in Advanced Industrial Societies
- CPO 6059: Democracy and Its Competitors
- CPO 6077: Social Movements in Comparative Perspective
- CPO 6091: Introduction to Comparative Political Analysis
- CPO 6206: Seminar in African Politics
- CPO 6307: Latin American Politics I
- CPO 6728: Ethnicity and Nationalism
- CPO 6732: Democratization and Regime Transition
- CPO 6736: Post-Communist politics
- CPO 6756: Comparative Elections and Party Systems
- CPO 6757: The European Union In Comparative Perspective
- CPO 6786: Peasant Politics and Society
- CPO 6795: Environmental Politics
- CPO 6796: Water Politics
- INR 5935: Advanced Topics in International Relations
- INR 6036: Globalization, Regionalism, and Governance
- INR 6039: International Political Economy
- INR 6208: Advanced International Relations Theory
- INR 6213: Seminar: Politics of the European Union
- INR 6249: Inter-American Relations
- INR 6305: Politics of American Foreign Policy Making
- INR 6337: Survey of International Security
- INR 6352: International Environmental Relations
- INR 6507: International Organization
- INR 6607: International Relations Theory
- INR 6936: Seminar in Transnational and Global Studies
- INR 6938: Seminar in Culture and World Politics
- PAD 5935: Advanced Topics in Public Administration

- PAD 6108: Public Administration Theory
- PAD 6227: Public Budgeting and Finance
- PAD 6434: Leadership and Ethics in Public Agencies
- POS 6458: Politics of Campaign Finance
- PAD 6946: Internship in Government
- POS 5935: Advanced Topics in Political Science
- POS 6045: Seminar in American Politics
- POS 6048: American Political Development
- POS 6127: State Government and Politics
- POS 6146: Urban Politics
- POS 6157: Community Analysis
- POS 6196: Patrons, Clients, Corruption, and Accountability
- POS 6207: Political Behavior
- POS 6208: Empirical Political Research
- POS 6272: Political Participation
- POS 6274: Political Campaigning
- POS 6278: Advanced Campaign Strategy
- POS 6279: The Politics of Direct Democracy
- POS 6292: Religion and Politics
- POS 6427: Legislative Process
- POS 6453: Political Parties and Interest Groups
- POS 6476: Bureaucratic Politics in the U.S.
- POS 6707: Qualitative Research Methods for Political Science
- POS 6712: Empirical Theories of Politics
- POS 6716: Scope and Epistemologies of Political Science
- POS 6736: The Conduct of Inquiry
- POS 6737: Political Data Analysis
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- POS 6757: Survey Research
- POS 6909: Individual Work
- POS 6910: Supervised Research
- POS 6933: Special Topics
- POS 6940: Supervised Teaching
- POS 6971: Research for Master's Thesis
- POS 7979: Advanced Research
- POS 7980: Research for Doctoral Dissertation
- POT 5935: Advanced Topics in Political Theory
- POT 6016: Ancient Political Thought
- POT 6056: Modern Political Thought
- POT 6067: Contemporary Political Theory
- POT 6306: Liberalism and Its Critics
- POT 6314: Democratic Theory
- POT 6416: The Marxist Tradition and its Critics
- POT 6505: Politics and Theory
- POT 6516: Political Judgment
- PUP 5935: Advanced Topics in Public Policy
- PUP 6006: Policy Evaluation
- PUP 6007: Policy Process
- PUP 6009: Public Policy Analysis

- PUP 6315: Race, Gender, and Politics

## Psychology Department

College of Liberal Arts and Sciences

Chair: Lise Abrams

Graduate Coordinator: Julia A. Graber

*Complete faculty listing by department:* Follow this link.

The Department of Psychology offers the Master of Science and the Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the *Graduate Degrees* section of this catalog. Students are not accepted for a terminal master's degree.

For more information, please see the program page below and our website: <http://www.psych.ufl.edu>.

## Counseling Psychology

### College

College of Liberal Arts and Sciences

### Department/School

Psychology Department

### Counseling Psychology Program Information

The Department of Psychology offers the Doctor of Philosophy degree in Counseling Psychology. Students typically complete Masters of Science degree in Psychology prior to the Doctorate in Counseling Psychology. Complete descriptions of the minimum requirements for these degrees are provided in the Graduate Degrees section of this catalog. Students are not accepted for a terminal master's degree.

The Counseling Psychology Graduate Training Program at the University of Florida is one of five training programs offered in the Department of Psychology. The Program is accredited by the American Psychological Association. A predoctoral internship of one year is required. The Counseling Psychology Program at the University of Florida adheres to a generalist, scientist-practitioner training model that emphasizes education and training in the integration of theory, scientific thinking, assessment, research, and practice. This training model conceptualizes science and practice as inseparable and thus promotes practice that is science-based and science that is informed by practice. Furthermore, this training model promotes science and practice that consider individual, developmental, multicultural, and contextual perspectives and that emphasize human strengths with attention to aspects of psychopathology. A dedication to psychological science is essential.

Undergraduate preparation should include at least one course in experimental methods and one course in statistics. Other courses in psychology should include at least three or four of the following: cognition, developmental, learning, personality, physiological, sensory, and social. Applicants should have competitive GRE scores and GPA (3.5 or higher).

For more information, please see our website: <http://psych.ufl.edu/index.php/counselingpsychology>.

## Degrees Offered with a Major in Counseling Psychology

Doctor of Philosophy

## Psychology Departmental Courses

- CBH 6056: Comparative Psychology
- CLP 6169: Seminar: Psychology and Deviant Behavior
- CLP 7525: Best Methods for Studying Psychological Change
- DEP 6057: Advanced Developmental Psychology I
- DEP 6058: Advanced Developmental Psychology II
- DEP 6059: Seminar: Special Topics in Developmental Psychology
- DEP 6099: Survey of Developmental Psychology
- DEP 6216: Psychological Disturbances of Children
- DEP 6406: Advanced Adulthood and Aging
- DEP 6409: Seminar: Adult Development and Aging
- DEP 6799: Current Research Methods in Developmental Psychology
- DEP 6936: Current Research in Developmental Psychology
- DEP 7608: Theories of Developmental Psychology
- EAB 5436: Behavioral Pharmacology
- EAB 6099: Survey of Behavior Analysis
- EAB 6118: Theoretical Foundations of Behavior Analysis
- EAB 6707: Applied Behavior I
- EAB 6712: Experimental Psychopathology
- EAB 6716: Behavior Analysis in Developmental Disabilities
- EAB 6719: Seminar: Strategies and Tactics of Human Behavioral Research
- EAB 6750: Quantitative Methods
- EAB 6780: Ethics and Professional Issues
- EAB 6937C: Seminar: Special Topics in Experimental Analysis of Behavior
- EAB 6939: Seminar: Special Topics in Applied Behavior Analysis
- EAB 7089: Advanced Seminar: Experimental Analysis of Behavior
- EAB 7090: Verbal Behavior
- EXP 6099: Survey of Cognition and Sensory Processes
- EXP 6609: Seminar: Cognition
- EXP 6939: Seminar: Current Issues in Cognition and Sensory Processes
- GEY 7408: Psychotherapy with Older Adults
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 7431: Advanced Family Counseling
- PCO 6057: Psychology of Counseling I
- PCO 6058: Psychology of Counseling II
- PCO 6059: Psychology of Counseling III
- PCO 6278: Diversity and Multiculturalism in Counseling Psychology
- PCO 6316C: Psychological Assessment I
- PCO 6317C: Psychological Assessment II
- PCO 6931: History and Contemporary Issues in Counseling Psychology
- PCO 6939: Seminar: Current Topics in Counseling Psychology
- PCO 7217: Professional Ethics and Skills in Counseling Psychology



- PCO 7247: Group Counseling/Psychology
- PCO 7537: Vocational Psychology
- PCO 7944: Practicum in Counseling Psychology
- PCO 7945: Advanced Practicum in Counseling Psychology
- PCO 7949: Internship in Counseling Psychology
- PPE 6059: Seminar in Personality
- PSB 5445: Drug Use and Abuse
- PSB 5935: Seminar in Physiological Psychology
- PSB 6082: Neuroethology
- PSB 6087: Advanced Physiological Psychology
- PSB 6088L: Behavioral Neurobiology
- PSB 6099: Survey of Physiological and Comparative Psychology
- PSB 7248: Neurobehavioral Relations
- PSB 7249: Seminar in Neural Mechanisms and Behavior
- PSY 6608: History of Psychology
- PSY 6905: Individual Work
- PSY 6910: Supervised Research
- PSY 6930: Topics in Psychology
- PSY 6939: Seminar: The Teaching of Psychology
- PSY 6940: Supervised Teaching
- PSY 6971: Research for Master's Thesis
- PSY 7979: Advanced Research
- PSY 7980: Research for Doctoral Dissertation
- SOP 6099: Survey of Social Psychology
- SOP 6219C: Advanced Research Techniques in Social-Personality Psychology
- SOP 6409: Seminar: Current Topics in Social-Personality Psychology
- SOP 6419: Seminar: Attitudes and Social Cognition
- SOP 6509: Seminar: Interpersonal Relations and Group Processes
- SOP 6929: Colloquium on Research in Social-Personality Psychology

## **Psychology (CLAS)**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Psychology Department

### **Psychology Program Information**

The Department of Psychology offers the Master of Science and the Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the Graduate Degrees section of this catalog. Students are not accepted for a terminal master's degree.

Doctoral areas of specialization include the research areas of developmental, behavior analysis, behavioral and cognitive neuroscience, social psychology, and counseling psychology. The training program in counseling psychology is accredited by the American Psychological Association. A predoctoral internship of one year is required for the counseling psychology program.

Undergraduate preparation should include at least one course in experimental methods and one course in statistics. Other courses in psychology should include at least three or four of the following: cognition, developmental, learning, personality, physiological, sensory, and social. Applicants should have competitive GRE scores and GPA (3.5 or higher).

**Co-major:** The Department offers a co-major program in conjunction with the College of Education leading to the Doctor of Philosophy degree in psychology and research and evaluation methodology.

For more information, please see our department website: <http://psych.ufl.edu>.

## Degrees

Doctor of Philosophy

without a concentration

concentration in Women's/Gender Studies

Master of Arts

Master of Science

without a concentration

## Psychology Departmental Courses

- CBH 6056: Comparative Psychology
- CLP 6169: Seminar: Psychology and Deviant Behavior
- CLP 7525: Best Methods for Studying Psychological Change
- DEP 6057: Advanced Developmental Psychology I
- DEP 6058: Advanced Developmental Psychology II
- DEP 6059: Seminar: Special Topics in Developmental Psychology
- DEP 6099: Survey of Developmental Psychology
- DEP 6216: Psychological Disturbances of Children
- DEP 6406: Advanced Adulthood and Aging
- DEP 6409: Seminar: Adult Development and Aging
- DEP 6799: Current Research Methods in Developmental Psychology
- DEP 6936: Current Research in Developmental Psychology
- DEP 7608: Theories of Developmental Psychology
- EAB 5436: Behavioral Pharmacology
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- EAB 6118: Theoretical Foundations of Behavior Analysis
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- EAB 6716: Behavior Analysis in Developmental Disabilities
- EAB 6719: Seminar: Strategies and Tactics of Human Behavioral Research
- EAB 6750: Quantitative Methods
- EAB 6780: Ethics and Professional Issues
- EAB 6937C: Seminar: Special Topics in Experimental Analysis of Behavior
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- EAB 7089: Advanced Seminar: Experimental Analysis of Behavior
- EAB 7090: Verbal Behavior
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- EXP 6609: Seminar: Cognition
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- GEY 7408: Psychotherapy with Older Adults
- MHS 6430: Introduction to Family Counseling
- MHS 6440: Marriage Counseling
- MHS 7431: Advanced Family Counseling
- PCO 6057: Psychology of Counseling I
- PCO 6058: Psychology of Counseling II
- PCO 6059: Psychology of Counseling III
- PCO 6278: Diversity and Multiculturalism in Counseling Psychology
- PCO 6316C: Psychological Assessment I
- PCO 6317C: Psychological Assessment II
- PCO 6931: History and Contemporary Issues in Counseling Psychology
- PCO 6939: Seminar: Current Topics in Counseling Psychology
- PCO 7217: Professional Ethics and Skills in Counseling Psychology
- PCO 7247: Group Counseling/Psychology
- PCO 7537: Vocational Psychology
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- PSB 5445: Drug Use and Abuse
- PSB 5935: Seminar in Physiological Psychology
- PSB 6082: Neuroethology
- PSB 6087: Advanced Physiological Psychology
- PSB 6088L: Behavioral Neurobiology
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- PSB 7248: Neurobehavioral Relations
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- SOP 6099: Survey of Social Psychology
- SOP 6219C: Advanced Research Techniques in Social-Personality Psychology

- SOP 6409: Seminar: Current Topics in Social-Personality Psychology
- SOP 6419: Seminar: Attitudes and Social Cognition
- SOP 6509: Seminar: Interpersonal Relations and Group Processes
- SOP 6929: Colloquium on Research in Social-Personality Psychology

## Religion Department

*Chair:* Manuel A. Vasquez.

*Graduate Coordinator:* David G. Hackett

*Complete faculty listing by department:* Follow this link.

The Department of Religion offers the Master of Arts and Doctor of Philosophy degrees in three specialty fields:

- Religion in the Americas
- Religions of Asia
- Religion and nature.

Minimum requirements for these degrees are given in the *General Information* section of this catalog.

The first two specialty fields provide advanced education in the academic study of religion focusing on the religions and religious experiences of indigenous peoples. The third specialty field addresses the religious and ethical dimensions of human attitudes and practices regarding the natural world. Specific and current requirements are given at <http://religion.ufl.edu/graduate-studies/> under "Graduate Program." In special instances, and with the agreement of the supervisory committee and two sponsoring faculty members, master's degree students may choose an area outside the three specialty fields.

In addition to materials requested by the Graduate School for admission, applicants must send directly to the Religion Department the following evidence of aptitude and interest

- Three references from persons competent to evaluate the applicant's potential for graduate work
- An essay of 3 to 5 double-spaced, typewritten pages identifying the applicant's goals and particular interests pertinent to the three available specialty fields (this essay is extremely important and applicants should attend to it carefully)
- A writing sample.

Beyond these requirements, applicants need to show clear evidence of solid preparation before admission. This usually includes formal study of the primary language in the specialty field. Acceptable scores on the GRE General Test are required. In addition to evidence of preparation and academic promise, the Department gives careful consideration to the fit between an applicant's central scholarly interests and the resources the Department and University have to offer.

**Master of Arts:** The M.A. degree provides a broad background in the study of religious traditions, theoretical orientations in the discipline, and an initial concentration in one of the three specialty fields. Course work culminates in a thesis and oral examination on the thesis and course work.

*Total credits:* Thirty credit hours are required. These include Method and Theory I and II, the core course(s) of the major field (or equivalent for those not in one of the three specialty fields), and 6 hours of thesis research credits. The additional hours shall consist of further courses in the specialty field, other graduate seminars, and up to 6 hours of research language study.

*Language study:* All M.A. students are required to demonstrate competency in a scholarly language other than English before beginning the thesis. Most languages are acceptable, though students should consult the individual field requirements. The chosen language must be approved by the student's mentor and the graduate coordinator.

*Thesis:* Each student, guided by a supervisory committee, will prepare a Master of Arts thesis, acceptable to the Department of Religion and the Graduate School, and undergo an oral examination.

*Promotion to doctoral status:* The Department anticipates admitting only the best qualified M.A. students to the doctoral program. Resident graduate students who wish to apply for doctoral status (i.e., permission to fulfill requirements leading to doctoral qualifying examinations) must apply during the semester before they wish that status to be changed. A review and decision will be made by the field faculty and the graduate committee.

**Doctor of Philosophy:** The Ph.D. program trains future scholars to conduct original research and teach in colleges, universities, and other educational, governmental, and nongovernmental institutions. A student usually enters with a religion master's degree either from this or another institution. Those admitted with master's degrees in disciplines other than religion may petition to bypass the religion master's degree with additional religion course work. All students are admitted into one of the three specialty fields and must fulfill the requirements of that field, as outlined. In addition, all students are encouraged to take courses in other departments to support work in their specialty field.

*Course requirements:* The University of Florida requires 90 hours of course work for the Ph.D. These may include up to 30 hours from a completed M.A. degree. The number of hours credited toward the Ph.D. is at the discretion of department faculty. A minimum of 45 hours is devoted to course work at the doctoral level. The specific distribution of course work depends on the specialization but will include intensive work in the major area of specialization, 6 hours of method and theory (If not taken at the M.A. level) and 15 hours devoted to dissertation writing and research.

*Language requirements:* All doctoral students must demonstrate proficiency in at least one and in many cases two languages other than English. The chosen language(s) as well as how and when the student's competence will be judged must be approved by the student's supervisory committee chair. Frequently language competence is documented by 1) taking an appropriate course or courses in the language with a grade of "B" or better, or 2) passing a translation exam (usually administered by a department member or a language department at the University). Basic course work for scholarly languages will not count toward the required 90 credit hours. However, students studying a scholarly language connected to their research needs (above and beyond basic competence) can receive 6 (or more) credit hours for such advanced courses toward the required 90 total credit hours, with approval of the student's supervisory committee chair.

*Qualifying examinations:* Qualifying examinations form a bridge between course work and dissertation research. Normally students will take qualifying examinations during their third year in residence. The precise areas of questioning and the reading list are decided by the supervisory committee in consultation with the student, well in advance of the examinations, but no later than the beginning of the term in which the student intends to take the qualifying examinations.

*Dissertation proposal:* Each doctoral candidate submits a formal dissertation proposal to the candidate's supervisory committee chair at least 3 weeks before the end of the semester after the qualifying examination.

*Admission to candidacy:* On successfully completing the qualifying examination and the dissertation proposal, and all other course and language requirements, and with the approval of the supervisory committee, students make formal application to the Department and Graduate School for admission to Ph.D. candidacy.

*Dissertation and its defense:* The final years of the program are devoted to dissertation research and writing. The student is expected to present the completed dissertation and defend it at a public oral defense conducted by the supervisory committee.

**Mentoring:** Each student is assigned a faculty mentor on admission to the program, based on expressions of faculty interest and the student's intended area of concentration. The mentor and graduate coordinator answer questions and provide support for the student in choosing courses and planning a program. By the end of the second semester, all master's degree students must designate their supervisory committee chair and one additional department committee member. By the end of the second semester, all doctoral students must designate their committee chair. By no later than the end of the fourth semester of study, all doctoral students must designate a four-member

supervisory committee including the chair and one member from outside the department. For details about the programs listed above, visit <http://religion.ufl.edu/graduate-studies/>.

## **Religion**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Religion Department

### **Religion Program**

The Department of Religion offers the Master of Arts and Doctor of Philosophy degrees in three specialty fields:

- Religion in the Americas
- Religions of Asia
- Religion and nature.

Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog.

The first two specialty fields provide advanced education in the academic study of religion focusing on the religions and religious experiences of indigenous peoples. The third specialty field addresses the religious and ethical dimensions of human attitudes and practices regarding the natural world. Specific and current requirements are given at <http://www.religion.ufl.edu> under "Graduate Program." In special instances, and with the agreement of the supervisory committee and two sponsoring faculty members, master's degree students may choose an area outside the three specialty fields.

In addition to materials requested by the Graduate School for admission, applicants must send directly to the Religion Department the following evidence of aptitude and interest

- Three references from persons competent to evaluate the applicant's potential for graduate work
- An essay of 3 to 5 double-spaced, typewritten pages identifying the applicant's goals and particular interests pertinent to the three available specialty fields (this essay is extremely important and applicants should attend to it carefully)
- A writing sample.

Beyond these requirements, applicants need to show clear evidence of solid preparation before admission. This usually includes formal study of the primary language in the specialty field. Acceptable scores on the GRE General Test are required. In addition to evidence of preparation and academic

promise, the Department gives careful consideration to the fit between an applicant's central scholarly interests and the resources the Department and University have to offer.

**Master of Arts:** The M.A. degree provides a broad background in the study of religious traditions, theoretical orientations in the discipline, and an initial concentration in one of the three specialty fields. Course work culminates in a thesis and oral examination on the thesis and course work.

*Total credits:* Thirty credit hours are required. These include Method and Theory I and II, the core course(s) of the major field (or equivalent for those not in one of the three specialty fields), and 6 hours of thesis research credits. The additional hours shall consist of further courses in the specialty field, other graduate seminars, and up to 6 hours of research language study.

*Language study:* All M.A. students are required to demonstrate competency in a scholarly language other than English before beginning the thesis. Most languages are acceptable, though students should consult the individual field requirements. The chosen language must be approved by the student's mentor and the graduate coordinator.

*Thesis:* Each student, guided by a supervisory committee, will prepare a Master of Arts thesis, acceptable to the Department of Religion and the Graduate School, and undergo an oral examination.

*Promotion to doctoral status:* The Department anticipates admitting only the best qualified M.A. students to the doctoral program. Resident graduate students who wish to apply for doctoral status (i.e., permission to fulfill requirements leading to doctoral qualifying examinations) must apply during the semester before they wish that status to be changed. A review and decision will be made by the field faculty and the graduate committee.

**Doctor of Philosophy:** The Ph.D. program trains future scholars to conduct original research and teach in colleges, universities, and other educational, governmental, and nongovernmental institutions. A student usually enters with a religion master's degree either from this or another institution. Those admitted with master's degrees in disciplines other than religion may petition to bypass the religion master's degree with additional religion course work. All students are admitted into one of the three specialty fields and must fulfill the requirements of that field, as outlined. In addition, all students are encouraged to take courses in other departments to support work in their specialty field.

*Course requirements:* The University of Florida requires 90 hours of course work for the Ph.D. These may include up to 30 hours from a completed M.A. degree. The number of hours credited toward the Ph.D. is at the discretion of department faculty. A minimum of 45 hours is devoted to course work at the doctoral level. The specific distribution of course work depends on the specialization but will include intensive work in the major area of specialization, 6 hours of method and theory (if not taken at the M.A. level) and 12 hours devoted to dissertation writing and research.

*Language requirements:* All doctoral students must demonstrate proficiency in at least one and in many cases two languages other than English. The chosen language(s) as well as how and when the student's competence will be judged must be approved by the student's supervisory committee chair. Frequently language competence is documented by 1) taking an appropriate course or courses in the language with a grade of "B" or better, or 2) passing a translation exam (usually administered by a department member or a language department at the University). Basic course work for scholarly languages will not count toward the required 90 credit hours. However, students studying a scholarly language connected to their research needs (above and beyond basic competence) can receive 6 (or more) credit hours for such advanced courses toward the required 90 total credit hours, with approval of the student's supervisory committee chair.

*Qualifying examinations:* Qualifying examinations form a bridge between course work and dissertation research. Normally students will take qualifying examinations during their third year in residence. The precise areas of questioning and the reading list are decided by the supervisory committee in consultation with the student, well in advance of the examinations, but no later than the beginning of the term in which the student intends to take the qualifying examinations.

*Dissertation proposal:* Each doctoral candidate submits a formal dissertation proposal to the candidate's supervisory committee chair at least 3 weeks before the end of the semester after the qualifying examination.

*Admission to candidacy:* On successfully completing the qualifying examination and the dissertation proposal, and all other course and language requirements, and with the approval of the supervisory committee, students make formal application to the Department and Graduate School for admission to Ph.D. candidacy.

*Dissertation and its defense:* The final years of the program are devoted to dissertation research and writing. The student is expected to present the completed dissertation and defend it at a public oral defense conducted by the supervisory committee.

**Mentoring:** Each student is assigned a faculty mentor on admission to the program, based on expressions of faculty interest and the student's intended area of concentration. The mentor and graduate coordinator answer questions and provide support for the student in choosing courses and planning a program. By the end of the second semester, all master's degree students must designate their supervisory committee chair and one additional department committee member. By the end of the second semester, all doctoral students must designate their committee chair. By no later than the end of the fourth semester of study, all doctoral students must designate a four-member supervisory committee including the chair and one member from outside the department. For details about the programs listed above, visit <http://www.religion.ufl.edu>.

## **Degrees Offered with a Major in Religion**

### **Doctor of Philosophy**

without a concentration

concentration in Tropical Conservation and Development

concentration in Women's/Gender Studies

### **Master of Arts**

without a concentration

concentration in Jewish Studies

concentration in Tropical Conservation and Development

concentration in Women's/Gender Studies

## **Courses**



- REL 5\*\*\*
- RLG 5143: Religion and Social Change
- REL 5187
- RLG 5195: Topics in Religion and Society
- REL 5199
- RLG 5297: Topics in Biblical Studies
- RLG 5338: Topics in Asian Religions
- RLG 5365: Studies in Islam
- RLG 5396: Religion and Animals
- RLG 5495: Topics in Religious Thought
- RLG 5549: Studies in Christianity
- RLG 5696: Topics in Jewish Thought
- RLG 5906: Individual Work
- RLG 5937: Topics in Religious Studies
- REL 5xxxA
- REL 5xxxB
- REL 5xxxC
- REL 6\*\*\*
- RLG 6035: Method and Theory I
- RLG 6036: Method and Theory II
- RLG 6095: Utopias and Dystopias
- RLG 6107: Core Seminar in Religion and Nature
- RLG 6125: Religion and Politics in the Americas
- RLG 6129: Hindu Traditions in America
- RLG 6137: Religion in North America
- RLG 6138: New Religious Movements
- RLG 6126: Religion in the Americas
- RLG 6167: Radical Environmentalism
- RLG 6181: Ethics and the Natural Sciences
- RLG 6183: Religion and Environmental Ethics
- RLG 6187: Nature in Asian Religions
- RLG 6196: Globalizing the Sacred
- RLG 6319: Interpreting Asian Religions
- RLG 6339: Women in the Hindu Tradition
- RLG 6346: Buddhist Traditions
- REL 6347: American Buddhism
- REL 6368: Islam in Asia
- RLG 6310: Religion and Nature in South Asia
- RLG 6385: Native Religions in the Americas
- RLG 6387: Religions in Latin America
- REL 6397: Hindu Sacred Texts and Their Ritual Context
- RLG 6910: Supervised Research
- RLG 6940: Supervised Teaching
- RLG 6957: Overseas Studies in Religion
- RLG 6971: Research for Master's Thesis
- REL 6xxxA
- REL 6xxxB
- RLG 7979: Advanced Research

- RLG 7980: Research for Doctoral Dissertation
- SRK 6905: Individual Study in Sanskrit

## Sociology and Criminology & Law Department

Chair: Barbara Zsembik

Graduate Coordinator: Barbara Zsembik

*Complete faculty listing by department:* Follow this link.

The Department of Sociology and Criminology & Law offers several programs of graduate study leading to the Ph.D. in Sociology, the Ph.D. in Criminology, Law and Society, the MA in Sociology, the MA in Criminology, Law and Society, and a Joint MA in Criminology/JD degree. The department also partners with the School of Natural Resources and Environment Department to offer the Ph.D. or MA in Interdisciplinary Ecology. Advanced undergraduate majors may complete a combined BA/MA degree in Sociology or a combined BA/MA degree in Criminology, Law and Society.

## Criminology, Law and Society

### College

College of Liberal Arts and Sciences

### Department/School

Sociology and Criminology & Law Department

### Criminology, Law and Society Program Information

Requirements for the M.A. and Ph.D. degrees are given in the Graduate Degrees section of this catalog. The graduate program in criminology and law has two areas of special emphasis: crime and justice, and law and society. The degree programs are research-based and prepare students to conduct original exploration into relevant problems, issues, and policies.

**M.A. degree program:** Admission to the master's degree program requires a bachelor's degree from a criminology/criminal justice or relevant social science or humanities program (political science, sociology, anthropology, psychology, philosophy, history, women's studies, etc.). Qualified students may enter the master's program as undergraduates through the combined B.A./M.A. program. Both M.A. options (thesis and nonthesis) require satisfactory completion of at least 36 credit hours.

**Ph.D. degree program:** The Doctor of Philosophy program includes a minimum of 90 semester hours of credit beyond the B.A. Students with a criminology or closely related M.A. received in the last 7 years from an accredited U.S. university may request that up to 30 hours credit from their M.A. work be counted toward this total. Those with an M.A. from this department may apply 36 hours. The Department requires Ph.D. students to complete at least 66 hours of course work (excluding research credits), including the M.A. hours. Qualifying examinations take place at the end of a student's course work.

**Criminology, Law and Society/Law joint degree programs:** The Department of Sociology and Criminology & Law (CLS) and the College of Law offer a joint degree program leading to an M.A. or a Ph.D. in Criminology, Law and Society and a J.D. in law. The joint degree programs enable students to earn both the degrees (the J.D. and the M.A. or the J.D. and the Ph.D.) in less time than would be required to earn both degrees consecutively. Students wishing to pursue the joint program must be admitted to both the Graduate School and the College of Law. These requirements include both the LSAT and GRE. Admission to one may precede the other. Students are encouraged to announce their intent to seek a joint degree as soon as possible. CLS allows 12 hours of appropriate law school courses to be credited toward the CLS degree. The 12 credits selected from the law curriculum must be approved by the graduate coordinator on the recommendation of the student's supervisory committee. The College of Law will permit 12 hours of credit earned in graduate courses to be credited toward the J.D.

## **Degrees**

Doctor of Philosophy

Master of Arts

## **Courses**

- CCJ 5934: Contemporary Issues in Criminology and Law
- CCJ 6936: Proseminar in Crime, Law, and Justice
- CJL 6039: Law and Society
- CCJ 6063: Communities and Crime
- CCJ 6658: Drugs, Crime, and Policy
- CCJ 6285: Criminal Justice Process
- CCJ 6619: Crime and the Life Course
- CCJ 6643: White Collar Crime
- CCJ 6705: Research Methods in Crime, Law, and Justice
- CCJ 6708: Research Issues in Crime and Deviance
- CCJ 6712: Evaluation Research
- CCJ 6905: Independent Study
- CCJ 6910: Supervised Research
- CCJ 6920: Seminar in Criminological Theory
- CCJ 6971: Research for Master's Thesis
- CCJ 7742: Research Methods in Crime, Law, and Justice II
- CCJ 7921: Professional Development in Criminology, Law, and Society
- CCJ 7979: Advanced Research
- CCJ 7980: Research for Doctoral Dissertation
- CJC 6120: Corrections and Public Policy
- CJL 6089: Humanitarian Law
- CJL 6090: Law and Social Science
- CJL 6091: Anthropology of Law
- CJL 6095: Human Rights in Cultural Context

## **Sociology**

## **College**

College of Liberal Arts and Sciences

## **Department/School**

Sociology and Criminology & Law Department

## **Sociology Program Information**

Sociologists conduct research to understand the social forces that shape all of our lives, often in hopes of improving everyday life and the life chances of each person. Graduate studies in sociology provide the people skills and technical skills to organize information, communicate analytical research to academic and lay audiences, and prepare well-reasoned and carefully-written reports and documents that contribute to societal well-being. Our award-winning and internationally-known faculty successfully mentor graduate students to complete their studies and become established in their professional academic and nonacademic careers.

We offer particular expertise in these areas: environment and resources, families, aging, gender, health, sexualities, life course, and race-ethnicity in US and global perspectives. There is also considerable expertise in: demography, social inequality, Latin American studies, Latino sociology, social psychology, deviance, and political sociology. We take great pride in the fact that our faculty are involved in interdisciplinary research projects that span nearly of all of the University's colleges and academic programs, including: the School of Natural Resources and the Environment, the Water Institute, the Emerging Pathogens Institute, the Center for Latin American Studies, the Center for European Studies, the Center for Women's Studies and Gender Research, the Health Science Center, and the Jewish Studies Center. Wherever you go on campus, you will most likely find at least one Sociologist from our department making major contributions.

Minimum requirements for the M.A. and Ph.D. degrees are given in the Graduate Degrees section of this catalog.

Admission to either Sociology graduate program requires a bachelor's degree in Sociology or related social science as approved by the Department. Current UF students may also enter the M.A. program through the combined B.A./M.A. program. The Sociology graduate programs look for mature students with outstanding potential and research interests that complement those of our faculty.

Prospective students should examine the research interests of the Sociology Graduate Faculty to obtain a more detailed sense of faculty expertise and research areas, see the department website: <http://soccrim.clas.ufl.edu/graduate/>. Applications for admission and fellowship support are due December 1 of each year. Students planning to apply for admission should take the Graduate Record Examination at the earliest possible date.

## **Degrees Offered with a Major in Sociology**

Doctor of Philosophy

without a concentration

concentration in Tropical Conservation and Development

concentration in Women's/Gender Studies

## Master of Arts

without a concentration

concentration in Tropical Conservation and Development

## Courses

- SYA 6018: Classical Social Theories
- SYA 6126: Contemporary Sociological Theory
- SYA 6305: Methods in Social Research I
- SYA 6306: Methods in Social Research II
- SYA 6315: Qualitative Research Methods
- SYA 6327: Research Problems in Deviance
- SYA 6407: Quantitative Research Methods
- SYA 6905: Individual Work
- SYA 6910: Supervised Research
- SYA 6942: Applied Social Research Project
- SYA 6971: Research for Master's Thesis
- SYA 7933: Special Study in Sociology
- SYA 7979: Advanced Research
- SYA 7980: Research for Doctoral Dissertation
- SYD 6436: Metropolitan Growth and Development
- SYD 6517: Seminar in Environment and Society
- SYD 6518: Core Issues in Environmental and Resource Sociology
- SYD 6706: Racial and Ethnic Relations
- SYD 6707: Black and White Americans: Sociological Perspectives
- SYD 6807: Sociology of Gender
- SYD 6825: Men and Masculinities
- SYD 7808: Reproduction and Gender
- SYO 6107: American Families
- SYO 6126: Family Theories
- SYO 6175: Topics in Family Research
- SYO 6407: Health Disparities
- SYO 6427: Health and Aging
- SYO 6535: Social Inequality
- SYD 6806: Gender and Society
- SYP 6115: Seminar in Symbolic Interaction
- SYP 6517: Theories of Crime and Deviance
- SYP 6545: Sociology of Law
- SYP 6735: Sociology of Aging and the Life Course
- SYP 6736: Sociology of the Aged
- SYP 6745: Aging and End-of-Life Issues

## Spanish and Portuguese Studies Department

*Chair:* G. Lord

*Graduate Coordinator:* L. Álvarez Castro

*Complete faculty listing by department:* Follow this link.

The Department of Spanish and Portuguese Studies offers a Master of Arts degree (M.A.) in Spanish (thesis and non-thesis options) and a Doctor of Philosophy degree (Ph.D.) in Romance Languages and Literatures, with a concentration in Spanish. Descriptions of the minimum requirements for both degrees are provided in the General Information section of this catalog. For specific information about the program, please visit the graduate section of the departmental webpage:

<http://www.spanishandportuguese.ufl.edu/spanish/graduate.html>

Candidates for graduate degrees (both M.A. and Ph.D.) in Spanish can choose between two specializations—literature/culture or linguistics. In conjunction with their master's or doctoral work, students may also earn a Certificate in Latin American Studies. Though a graduate degree is not offered in Portuguese, extensive course offerings at the graduate level permit students to develop a strong specialization in Portuguese language and Luso-Brazilian literature, film and culture.

The main prerequisite for admission to the M.A. program is an undergraduate major in Spanish, ideally including advanced courses in the proposed area of specialization. Applicants for the Ph.D. should hold an M.A. or equivalent degree in Spanish. At the discretion of the Graduate Studies Committee, candidates from related fields of study (History, Sociology...) may be offered a conditional admission into the Ph.D. program pending the passing of the M.A. Comprehensive Examination within the first year of study.

All M.A. and Ph.D. students in Spanish who are appointed as teaching assistants must take Romance Language Teaching Methods (FOL / FOL 6943 ). Besides, all M.A. and Ph.D. students specializing in literature and culture must take Introduction to Graduate Study and Research (SPW 6806 ). Other requirements vary with degree and specialization. For details, consult the graduate section of the departmental webpage (see above).

The Department is able to offer most students a teaching assistantship that provides a maintenance stipend and includes a tuition waiver. Contingent on positive performance in teaching and graduate work, M.A. students are guaranteed four semesters of support, and Ph.D. students are guaranteed eight semesters of support beyond the M.A. In addition, there are several fellowships, supplements and stipends for which students may apply, and summer teaching may be available.

Prospective students are encouraged to review the departmental webpage in order to familiarize themselves with the program and the application process. Only those applications including all required materials and submitted by the advertised deadlines will be considered. For any questions about the program or how to apply, please contact the graduate coordinator: [lcastro@ufl.edu](mailto:lcastro@ufl.edu).

Highly qualified UF undergraduate students majoring in Spanish may apply for a combined B.A./M.A. program in Spanish that allows up to 12 graduate credits to be counted toward fulfillment of both degrees. Contact the graduate coordinator for qualifications and details.

## **Romance Languages (Spanish and Portuguese Studies)**

### **College**

College of Liberal Arts and Sciences

## **Department/School**

Spanish and Portuguese Studies Department

## **Romance Languages (Spanish and Portuguese Studies) Program Information**

The Department of Spanish and Portuguese Studies offers a graduate program leading to the degree of Ph.D. in Romance Languages and Literatures with a concentration in Spanish.

Students may choose a specialization in either literature/cultural studies or Hispanic linguistics. The program strives to achieve balance and depth. A minor is optional; it may be another Romance language or a different field related to the student's major (such as English, History, Latin American Studies, Philosophy, Portuguese/Brazilian Literature, or Women's Studies and Gender Research).

Ph.D. students determine their program of study in close consultation with their Supervisory Committee, which also prepares and administers the Qualifying Examination. Courses should be chosen to develop adequate background for teaching in the field as well as to prepare for more focused work in the area of the dissertation. In the literature/cultural studies track, all candidates must take two courses in literary theory, which will help them to achieve methodological coherence in their dissertations. In the language/linguistics track, students pursue course work in Spanish linguistics, including phonetics and phonology, morphology, syntax, sociolinguistics, historical linguistics and language acquisition. They complement these courses with work in the Linguistics Department. The Qualifying Examination normally covers the core areas listed above, the area of the anticipated dissertation, and any declared minor.

Most doctoral students will be given the opportunity to gain teaching experience through a teaching assistantship, dependent upon departmental need and availability of funds. Renewal of the assistantship is contingent upon satisfactory performance as a teaching assistant and as a graduate student.

For more information, go to: <http://spanishandportuguese.ufl.edu/graduate-programs> or contact the Graduate Coordinator at [grad-coord@spanish.ufl.edu](mailto:grad-coord@spanish.ufl.edu)

## **Degrees Offered with a Major in Romance Languages**

Doctor of Philosophy

concentration in Spanish

## **Spanish and Portuguese Studies Departmental Courses**

- FOL 6326: Technology in Foreign Language Education
- FOW 6930: Special Study in Romance Languages and Literatures
- SPN 6166: Teaching Spanish for the Professions
- SPN 6940: Supervised Teaching
- SPW 6545: Spanish Romanticism
- SPN 6705: Foundations of Hispanic Linguistics
- SPN 6845: History of the Spanish Language
- SPS 6905: Individual Study
- SPS 6910: Supervised Research
- SPS 6940: Supervised Teaching

- SPS 7979: Advanced Research
- SPS 7980: Research for Doctoral Dissertation
- SPW 6535: Spanish Romanticism

## Spanish

- SPN 6315: Advanced Composition and Syntax
- SPN 6715: Formal Instruction and Acquisition of Spanish
- SPN 6735: Special Study in Spanish Linguistics
- SPN 6785: Advanced Spanish Phonetics
- SPN 6827: Sociolinguistics of the Spanish-Speaking World
- SPN 6835: Spanish and Spanish-American Dialectology
- SPN 6845: History of the Spanish Language
- SPN 6848: Medieval Spanish Linguistics
- SPN 6855: Structure of Spanish
- SPN 6856: Spanish in Contact: Issues in Bilingualism
- SPN 6900: Directed Readings in Spanish
- FOL 6943: Romance Language Teaching Methods
- SPN 6945: Practicum in Advanced College Teaching
- SPW 6209: Colonial Spanish-American Literature
- SPW 6216: Spanish Prose Fiction of the Golden Age
- SPW 6236: Spanish-American Narrative from the origins to Criollismo
- SPW 6269: Spanish Novel of the Nineteenth Century
- SPW 6278: Postwar Spanish Fiction
- SPW 6285: Contemporary Spanish-American Narrative I
- SPW 6286: Contemporary Spanish-American Narrative II
- SPW 6306: Spanish-American Theater
- SPW 6315: Spanish Drama of the Golden Age
- SPW 6337: Golden Age Poetry
- SPW 6345: Twentieth-Century Spanish Poetry
- SPW 6356: Spanish-American Poetry from Romanticism to Vanguardismo
- SPW 6357: Contemporary Spanish-American Poetry
- SPW 6366: Spanish-American Essay
- SPN 6425: Writing for the Profession
- SPW 6606: Cervantes
- SPW 6729: The Generation of 1898
- SPW 6806: Introduction to Graduate Study and Research
- SPW 6902: Special Study in Spanish or Spanish-American Literature
- SPW 6905: Individual Work
- SPW 6910: Supervised Research
- SPW 6934: Seminar in Spanish American Literature and Culture
- SPW 6938: Seminar in Spanish Literature and Culture
- SPW 6971: Research for Master's Thesis
- SPW 7979: Advanced Research
- SPW 7980: Research for Doctoral Dissertation

## Portuguese



- POW 6276: Twentieth-Century Brazilian Novel
- POW 6385: Brazilian Lyric
- POW 6386: Brazilian Drama
- POW 6905: Individual Work
- POW 6930: Rotating Topics in Brazilian or Portuguese Literature

## **Spanish**

### **College**

College of Liberal Arts and Sciences

### **Department/School**

Spanish and Portuguese Studies Department

### **Spanish Program Information**

The Department of Spanish and Portuguese Studies offers a graduate program leading to the degrees of Master of Arts in Spanish or Master of Arts in Teaching in Spanish.

Students may choose to specialize in literature/culture or language/linguistics. A secondary specialization in Portuguese is also offered. Qualified applicants to the M.A. program are eligible for teaching assistantships.

A Master of Arts in Spanish may be earned in one of two ways:

- Non-thesis M.A. This is considered a terminal degree for those anticipating teaching careers in secondary schools or junior colleges, as well as employment in business, government, tourism, etc. Requirements: 30 credit hours and a comprehensive examination.
- M.A. with thesis. This option prepares students for later work toward a Ph.D. Requirements: 30 credit hours, a comprehensive examination, and a thesis. (Internal candidates to the Ph.D. program at UF can submit an extended paper as an alternative to the thesis.)

For more information on the M.A. or M.A.T., go to: <http://spanishandportuguese.ufl.edu/graduate-programs> or contact the Graduate Coordinator at [grad-coord@spanish.ufl.edu](mailto:grad-coord@spanish.ufl.edu).

### **Degrees Offered with a Major in Spanish**

Master of Arts

Master of Arts in Teaching

### **Spanish and Portuguese Studies Departmental Courses**

- FOL 6326: Technology in Foreign Language Education
- FOW 6930: Special Study in Romance Languages and Literatures
- SPN 6166: Teaching Spanish for the Professions
- SPN 6940: Supervised Teaching

- SPW 6545: Spanish Romanticism
- SPN 6705: Foundations of Hispanic Linguistics
- SPN 6845: History of the Spanish Language
- SPS 6905: Individual Study
- SPS 6910: Supervised Research
- SPS 6940: Supervised Teaching
- SPS 7979: Advanced Research
- SPS 7980: Research for Doctoral Dissertation
- SPW 6535: Spanish Romanticism

## Spanish

- SPN 6315: Advanced Composition and Syntax
- SPN 6715: Formal Instruction and Acquisition of Spanish
- SPN 6735: Special Study in Spanish Linguistics
- SPN 6785: Advanced Spanish Phonetics
- SPN 6827: Sociolinguistics of the Spanish-Speaking World
- SPN 6835: Spanish and Spanish-American Dialectology
- SPN 6845: History of the Spanish Language
- SPN 6848: Medieval Spanish Linguistics
- SPN 6855: Structure of Spanish
- SPN 6856: Spanish in Contact: Issues in Bilingualism
- SPN 6900: Directed Readings in Spanish
- FOL 6943: Romance Language Teaching Methods
- SPN 6945: Practicum in Advanced College Teaching
- SPW 6209: Colonial Spanish-American Literature
- SPW 6216: Spanish Prose Fiction of the Golden Age
- SPW 6236: Spanish-American Narrative from the origins to Criollismo
- SPW 6269: Spanish Novel of the Nineteenth Century
- SPW 6278: Postwar Spanish Fiction
- SPW 6285: Contemporary Spanish-American Narrative I
- SPW 6286: Contemporary Spanish-American Narrative II
- SPW 6306: Spanish-American Theater
- SPW 6315: Spanish Drama of the Golden Age
- SPW 6337: Golden Age Poetry
- SPW 6345: Twentieth-Century Spanish Poetry
- SPW 6356: Spanish-American Poetry from Romanticism to Vanguardismo
- SPW 6357: Contemporary Spanish-American Poetry
- SPW 6366: Spanish-American Essay
- SPN 6425: Writing for the Profession
- SPW 6606: Cervantes
- SPW 6729: The Generation of 1898
- SPW 6806: Introduction to Graduate Study and Research
- SPW 6902: Special Study in Spanish or Spanish-American Literature
- SPW 6905: Individual Work
- SPW 6910: Supervised Research
- SPW 6934: Seminar in Spanish American Literature and Culture
- SPW 6938: Seminar in Spanish Literature and Culture

- SPW 6971: Research for Master's Thesis
- SPW 7979: Advanced Research
- SPW 7980: Research for Doctoral Dissertation

## Portuguese

- POW 6276: Twentieth-Century Brazilian Novel
- POW 6385: Brazilian Lyric
- POW 6386: Brazilian Drama
- POW 6905: Individual Work
- POW 6930: Rotating Topics in Brazilian or Portuguese Literature

## Statistics Department

Chair: M. J. Daniels

Graduate Coordinator: J. P. Hobert

Complete faculty listing: [Follow this link.](#)

Graduate programs are available leading to Master of Science in Statistics, Master of Statistics, and Doctor of Philosophy degrees. Minimum requirements for these degrees are described in the *General Information* section of this catalog.

Both master's programs usually require 2 years of course work including material covered in STA 6208, 6208, STA 6326, STA 6327, STA 6246, and STA 6329. In addition to earning a "Ph.D. pass" on the first-year evaluation, requirements for the Ph.D. degree include STA 6466, 6467, STA 7249, and STA 7346.

**Interdisciplinary programs:** The Department offers a co-major program in conjunction with the Fisher School of Accounting leading to the Doctor of Philosophy degree in statistics and business administration accounting. The Department is also a partner in the interdisciplinary concentration in quantitative finance, along with the Departments of Mathematics; Industrial and Systems Engineering; and Finance, Insurance, and Real Estate. For information on these programs, consult the departmental graduate coordinator.

**Combined program:** The Department offers a bachelor's/master's degree program. Contact the graduate coordinator for information.

## Statistics

### College

College of Liberal Arts and Sciences

### Department/School

Statistics Department

### Degrees Offered with a Major in Statistics

Doctor of Philosophy

without a concentration

concentration in Quantitative Finance

Master of Science in Statistics

Master of Statistics

### **Statistics Departmental Courses**

- STA 5106: Computer Programs in Statistical Analysis
- STA 5223: Applied Sample Survey Methods
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 5503: Categorical Data Methods
- STA 5507: Applied Nonparametric Methods
- STA 5701: Applied Multivariate Methods
- STA 5715: Applied Survival Analysis
- STA 5823: Stochastic Process Methods
- STA 5856: Applied Time Series Methods
- STA 6092: Applied Statistical Practice
- STA 6126: Statistical Methods in Social Research I
- STA 6127: Statistical Methods in Social Research II
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6177: Applied Survival Analysis
- STA 6178: Genetic Data Analysis
- STA 6207: Regression Analysis
- STA 6208: Basic Design and Analysis of Experiments
- STA 6209: Design and Analysis of Experiments
- STA 6226: Sampling Theory and Application
- STA 6246: Theory of Linear Models
- STA 6326: Introduction to Theoretical Statistics I
- STA 6327: Introduction to Theoretical Statistics II
- STA 6329: Matrix Algebra and Statistical Computing
- STA 6505: Analysis of Categorical Data
- STA 6526: Nonparametric Statistics
- STA 6707: Analysis of Multivariate Data
- STA 6826: Stochastic Processes
- STA 6857: Time Series Analysis
- STA 6866: Monte Carlo Statistical Methods
- STA 6905: Individual Work
- STA 6910: Supervised Research
- STA 6934: Special Topics in Statistics
- STA 6938: Seminar
- STA 6940: Supervised Teaching

- STA 6942: Internship
- STA 6971: Research for Master's Thesis
- STA 7179: Survival Analysis
- STA 7249: Generalized Linear Models
- STA 7334: Limit Theory
- STA 7346: Statistical Inference
- STA 7347: Advanced Inference
- STA 7348: Bayesian Theory
- STA 7466: Probability Theory I
- STA 7467: Probability Theory II
- STA 7527: Theory of Nonparametric Statistics
- STA 7828: Topics in Stochastic Processes
- STA 7934: Special Topics in Statistics
- STA 7979: Advanced Research
- STA 7980: Research for Doctoral Dissertation

## Women's Studies Department

*Director:* Bonnie Moradi

*Graduate Coordinator:* Kendal Broad

*Complete faculty listing by department:* Follow this link.

The Women's Studies program is administered by the Center for Women's Studies and Gender Research. This interdisciplinary forum for graduate studies offers both a Thesis and a Non-Thesis M.A., as well as a two certificates. These options give students the opportunity to take advantage of scholarship in this dynamic field, and to become acquainted with different research perspectives and methodologies. Students become well grounded in theories of gender in cultural systems and in ways that gender intersects with other categories of difference such as race, ethnicity, religion, class, sexuality, nation, physical and mental ability, age, and economic and civil status. Faculty and students employ feminist and other appropriate theoretical approaches and methodologies.

The Center offers a regular colloquium series, frequently sponsors speakers, and distributes a newsletter each fall and spring. The Center in Ustler Hall houses archives, a small library, offices, and meeting space.

For more information about our program, please see the program page below or our website: <http://web.wst.ufl.edu>.

## Women's Studies

### College

College of Liberal Arts and Sciences

### Department/School

Women's Studies Department

## Women's Studies Program Information

The Women's Studies program is administered by the Center for Women's Studies and Gender Research. This interdisciplinary forum for graduate studies offers both a Thesis and a Non-Thesis M.A., as well as a two certificates. The Center also offers a regular colloquium series, frequently sponsors speakers, and distributes a newsletter each fall and spring.

**Master of Arts (thesis and non-thesis):** The Center offers the Master of Arts (M.A.) thesis degree option, which requires the completion and defense of a thesis (30 credit hours), and the Master of Arts non-thesis degree option, which requires completion and defense of a project or paper (30 credit hours). All Master's students take a core curriculum of 9 graduate credits (3 courses). For the thesis M.A., the remaining 21 hours consist of 15 credits of approved electives and 6 thesis credits. For the non-thesis M.A., 21 credits of approved electives are required.

Required courses for all MA students (9 credits):

- WST 5933: Proseminar in Women's Studies
- WST 6508: Advanced Feminist Theory
- WST 6935: Special Topics in Women's Studies

#### **Thesis**

15 approved credits at 5000-level or higher

6 credits of WST 6971: Research for Master's Thesis

(3 of which must be taken in the final graduating term)

Total for MA thesis: 30 credits

#### **Non-thesis**

21 approved credits at 5000-level or higher;

at least 6 of these credits must be classes in WST.

Total for MA non-thesis: 30 credits

**BA/ MA Program:** UF offers a number of Bachelor's/Master's programs for superior students. The university created combined degree programs to provide academically talented students an opportunity to complete both a bachelor's and a master's degree in a shorter period of time. The program allows you to double-count graduate courses toward both degrees, thus reducing the time it would normally take to graduate by a semester or more. The combined-degree program reduces the cost of both degrees and enhances your marketability for career advancement.

**Concurrent degree -MA in Women's Studies and an MA in Mass Communications (MAMC) with specialization in Journalism:** When appropriate, the Center for Women's Studies and Gender Research will work with individual students to develop a collaborative degree program with the College of Journalism and Communication. At the University of Florida, students may apply to complete Master's degrees in two different programs or two Master's degrees in the same program concurrently. Those interested should discuss the proposed study with the office of Graduate Student Records (392-4643, 106 Grinter) before applying. Written approval is needed from each academic unit and the Graduate School Dean. The student must be officially admitted to both programs through regular procedures. No more than 9 credits from the first program may be applied toward the second.

**M.A./J.D. Joint Degree:** The faculties of the Levin College of Law and Women's Studies in the College of Liberal Arts and Sciences have approved a joint degree program culminating in both a J.D. degree, awarded by the College of Law, and an M.A. degree (thesis or non-thesis), awarded by the College of Liberal Arts and Sciences. Under this joint degree program, a student can obtain both degrees in approximately one year less than it would take to obtain both degrees if pursued consecutively. A student must satisfy the curriculum requirements for each degree before either degree is awarded. At least 12 credits must be taken in each program. The graduate program in Women's Studies will accept 12 credits of appropriate professional courses toward the M.A. degree. The 12 credits selected from the professional curriculum must be approved by the Graduate Coordinator upon the recommendation of the student's graduate supervisory committee. Reciprocally, the law school will accept 12 credits of appropriate Women's Studies courses toward the satisfaction of the J.D. degree. Admission to the second program is required no later than the end

of the third consecutive semester after beginning one degree of the joint degree program. A summer term is counted as a single semester.

**Certificates (M.A. or Ph.D. level):** Two graduate certificates in Women's Studies for master's and doctoral students are offered in conjunction with degree programs in other academic units. The Graduate Certificate in Women's Studies and the Graduate Certificate in Gender and Development require specific sets of course work, designed to give students a thorough grounding in the discipline. The Graduate Certificate in Women's Studies offers students a general overview of the field. The Graduate Certificate in Gender and Development allows students to focus on issues related to gender, economic development, and globalization.

Graduate courses in women's studies are also available from the following academic units or programs:

- Agricultural and Life Sciences
- Anthropology
- Counselor Education
- English
- History
- Journalism and Communication
- Languages, Literatures, and Cultures
- Latin American Studies
- Linguistics
- Medicine
- Philosophy
- Psychology
- Religion
- Sociology
- Teaching and Learning

For more information, please see our website: <http://web.wst.ufl.edu>.

## **Degrees Offered with a Major in Women's Studies**

Master of Arts

### **Courses**

- WST 5933: Proseminar in Women's Studies
- WST 6348: Ecofeminism
- WST 6508: Advanced Feminist Theory
- WST 6905: Independent Study
- WST 6935: Special Topics in Women's Studies
- WST 6936: Feminist Challenges to Disciplinary Paradigms
- WST 6946: Internship in Applied Women's Studies and Gender Research
- WST 6957: International Studies in Women's Studies and Gender Research
- WST 6971: Research for Master's Thesis

## **College of Medicine**

Dean: M.L. Good

Complete faculty listings: Follow this link.

The College of Medicine offers training opportunities leading to either the Doctor of Philosophy or Master of Science degree in medical sciences. Minimum requirements for these degrees are given in the Graduate Degrees section of this catalog. For more information, please see our website: <http://med.ufl.edu>.

The interdisciplinary program (IDP) in biomedical sciences is the major focus leading to the Doctor of Philosophy degree. Other graduate courses and programs are listed under departmental headings. For further information, visit <http://idp.med.ufl.edu>.

Departments and Programs within the College of Medicine

College of Medicine Courses

## **Genetics and Genomics (Medicine)**

### **College**

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Medicine

### **Genetics and Genomics Program Information**

*Program Co-Directors:* Connie Mulligan and John M. Davis

*Complete faculty listing:* Follow this link

The University of Florida Genetics Institute is a multi-college, multi-faceted research center which offers the a degree program leading to the Ph.D. in Genetics and Genomics. Minimum requirements for this degree are available in the Graduate Degrees section of this catalog.

What defines the Genetics & Genomics Graduate Program is the philosophy that good geneticists are integrative geneticists, who incorporate many different subfields of genetics into their work. Accordingly, faculty interests and graduate research opportunities include a wide range of areas: advances in gene therapy, understanding the maintenance of genetic variation, understanding plant immune responses, developing improved algorithms for identifying regulatory motifs in DNA sequences, and the challenges of bioethics to strategies for controlling malaria. Due to the fundamental nature of genetics in the life sciences, our training program is distributed across several colleges at UF, including but not limited to the College of Medicine, the College of Liberal Arts and Sciences, and the College of Agricultural and the Life Sciences.

### **Graduate Program Overview**

#### **First Year:**

- Advanced Genetics (PCB 5065)
- Genomics & Bioinformatics (GMS 6231)
- Statistical Methods Research II (STA 6167)
- Advanced Molecular & Cellular Biology (BCH 6415)



- Ethics in Genetics (GMS 6221)
- Seminar in Genetics (GMS 6290) begins in the first semester and continues throughout students' graduate careers

The first year core training is the research rotation program, in which students "rotate" through three labs in a minimum of two colleges. Rotations are critical to selecting a graduate advisor: they provide a hands-on opportunity to participate in the research being conducted in a lab, and a mutual opportunity to evaluate fit between advisor and prospective student.

### **Second Year:**

- Individual program of courses and requirements is developed in consultation with major professor and dissertation committee

Admission Standards: Prospective students should have strong backgrounds in biology and other hard sciences. Exceptional students with other backgrounds will also be considered. The research statement required as part of the application has a particularly important part in the admissions decision. Each applicant must describe his/her research interests, so that Graduate Faculty can evaluate knowledge of the discipline, fit to the program, and ability to articulate and motivate an interesting research problem. The required Letters of Recommendation are also extremely important in helping identify applicants with exceptional aptitude for genetics, and with research experience and promise.

Contact the Genetics and Genomics Graduate Program by email, [UFGI-Info@uad.ufl.edu](mailto:UFGI-Info@uad.ufl.edu) or by phone, 352-273-8100.

For more information, visit our website: <http://www.ufgi.ufl.edu>.

### **Degrees Offered with a Major in Genetics and Genomics**

Doctor of Philosophy

Doctor of Philosophy - Clinical and Translational Science

### **Courses**

- AGR 6322: Advanced Plant Breeding
- ANG 6532: Molecular Genetics of Disease
- ANG 7979: Advanced Research
- ANG 7980: Research for Doctoral Dissertation
- BCH 6415: Advanced Molecular and Cell Biology
- BCH 7410: Advanced Gene Regulation
- CAP 5510: Bioinformatics
- CAP 5515: Computational Molecular Biology
- CAP 5805: Computer Simulation Concepts
- CIS 6930: Special Topics in CIS
- COT 5405: Analysis of Algorithms
- FOR 6310: Forest Genetics and Tree Improvement
- FOR 6934: Topics in Forest Resources and Conservation
- FOR 7979: Advanced Research
- FOR 7980: Research for Doctoral Dissertation
- GMS 6011: Mouse Genetics

- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6920: Genetics Journal Colloquy
- GMS 7979: Advanced Research
- GMS 7980: Research for Doctoral Dissertation
- HOS 6201: Breeding Perennial Cultivars
- PCB 5065: Advanced Genetics
- PCB 5235L: Experiments in Immunology
- PCB 5615: Molecular Evolution and Systematics
- PCB 6528: Plant Cell and Developmental Biology
- PCB 7979: Advanced Research
- PCB 7980: Research for Doctoral Dissertation
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6178: Genetic Data Analysis
- STA 6208: Basic Design and Analysis of Experiments
- STA 6329: Matrix Algebra and Statistical Computing
- STA 6934: Special Topics in Statistics
- STA 7979: Advanced Research
- STA 7980: Research for Doctoral Dissertation
- ZOO 6927: Special Topics in Zoology
- ZOO 7979: Advanced Research
- ZOO 7980: Research for Doctoral Dissertation

## **College of Medicine Courses**

- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6657: Diagnostic Radiological Physics
- GEY 5935: Topics in Gerontology
- GEY 6220: Overview of Geriatric Care Management
- GEY 6646: Issues and Concepts in Gerontology
- GEY 6905: Independent Study in Gerontology
- GEY 6936: Professional Development in Gerontology/Geriatrics
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology
- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6010: Yeast Genetics

- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System
- GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience
- GMS 6024: Principles of Neuroscience IV: Neural Integration & Control
- GMS 6029: Brain Journal Club
- GMS 6031: Molecular Immunology
- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions
- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6070: Sensory and Motor Systems
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology
- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6078: Synaptic Function and Plasticity
- GMS 6079: Computers in Biology
- GMS 6080: Basic Magnetic Resonance Imaging
- GMS 6090: Research in Medical Sciences
- GMS 6096: Introduction to NIH Grant Writing for Biomedical Sciences
- GMS 6099: Foundations in Aging and Geriatric Research
- GMS 6121: Infectious Diseases
- GMS 6140: Principles of Immunology
- GMS 6145: Immunology of Gene Transfer
- GMS 6151: Genetic Analysis Using Model Systems
- GMS 6153: Advanced Bacterial Genetics
- GMS 6155: DNA Microarray Data Analysis
- GMS 6160: Introduction to Oral Biology I
- GMS 6161: Introduction to Oral Biology II
- GMS 6169: Antimicrobial Strategies

- GMS 6173: Stomatognathic System: Form and Function
- GMS 6181: Special Topics in Microbiology
- GMS 6190: Seminar
- GMS 6191: HIV Journal Club
- GMS 6193: Research Conference in Oral Biology
- GMS 6195: Epigenetics Journal Club
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
- GMS 6221: Ethics in Genetics
- GMS 6223: Drosophila Neurogenetics: from Development to Function
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics
- GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine
- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology
- GMS 6382: Special Topics in Immunology
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6412: Human Physiology for Biomedical Engineering
- GMS 6413: Advances in Hypertension Research
- GMS 6414: Advanced Renal Physiology
- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6416: Human Endocrinology and Anatomy of Reproduction
- GMS 6471: Fundamentals of Physiology and Functional Genomics I
- GMS 6472: Fundamentals of Physiology and Functional Genomics II
- GMS 6473: Fundamentals of Physiology and Functional Genomics III
- GMS 6483: Theories of Aging
- GMS 6485: Population Based Research on Aging
- GMS 6486: Fundamentals of Biological Aging
- GMS 6490C: Research Methods in Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6495: Seminar in Physiology
- GMS 6496: Recent Advances in Physiology
- GMS 6497: Seminar on Vision
- GMS 6506: Biologic Drug Development
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes

- GMS 6609: Advanced Gross Anatomy
- GMS 6621: Vision
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6642: Morphogenesis: Organ Systems I
- GMS 6643: Morphogenesis: Organ Systems II
- GMS 6644: Apoptosis
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes
- GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects
- GMS 6771: Clinical Neuroscience of Aging
- GMS 6876: Law & Ethics of Aging
- GMS 6845: Clinical & Translational Research Practicum
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6895: CTS Journal Club
- GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists
- GMS 6970: Individual Study
- GMS 6383: Current Topics in Immunotherapy
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 5604: Medical Human Embryology
- GMS 5605: Medical Anatomy
- GMS 5606L: Medical Anatomy Lab
- GMS 5613: Medical Human Anatomy by Diagnostic Imaging
- GMS 5630: Medical Histology
- GMS 6081: Biological Imaging Techniques
- GMS 6082: Introduction to Functional Magnetic Resonance Imaging
- GMS 6143: Cells of the Innate Immune System
- GMS 6394: Seminar in Mammalian Genetics
- GMS 6403: Advanced Endocrinology
- GMS 6484: Geriatric and Age Related Diseases
- GMS 6500: Introduction to Pharmacology
- GMS 6607C: Musculoskeletal Systems
- GMS 6719: Fundamentals of Computational Neuroscience
- GMS 6780: Addiction: Neuroscience and Trends
- GMS 6786: Medical Writing in Addiction
- GMS 6787: Food Addiction, Overeating and Obesity
- GMS 6800: Fundamentals of Epidemiology
- GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases
- GMS 6810: Intermediate Epidemiology Methods
- GMS 6813: Clinical Trials
- GMS 6814: Molecular and Genetic Epidemiology
- GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1
- GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2
- GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3
- GMS 6855: Medical Writing in Psychiatry
- GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data
- GMS 6873: Introduction to Medical Bioethics
- GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research
- GMS 7887: Health Outcomes & Policy PhD Research Seminar

## **Medical Sciences**

### **College**

College of Medicine

### **Interdisciplinary Program in Biomedical Sciences**

Dean: M. L. Good.

Associate Dean for Graduate Education: P. A. Gulig

Complete faculty listing: Follow this link.

The College of Medicine offers training opportunities leading to either the Doctor of Philosophy or Master of Science degree in medical sciences. Minimum requirements for these degrees are given in the General Information section of this catalog. The interdisciplinary program (IDP) in biomedical sciences is the major focus leading to the Doctor of Philosophy degree. Other graduate courses and programs are listed under departmental headings.

### **Interdisciplinary Program (IDP) in Biomedical Sciences**

The goal of the IDP is to prepare students for a diversity of careers in research and teaching in academic and commercial settings, after completion of the Ph.D. in Medical Sciences. The program provides a modern, comprehensive graduate education in biomedical sciences while providing both maximum program flexibility and appropriate specialization for advanced training. The IDP represents a cooperative effort of six interdisciplinary advanced concentrations with participation of over 250 faculty members.

During the first semester of study, students undertake a common, comprehensive interdisciplinary core curriculum of classroom study and a responsible conduct of research course. During the second semester, students begin to focus their coursework in one or two concentrations. Throughout the first two semesters, students participate in at least three laboratory rotations in any of the laboratories of the IDP faculty members. The advanced concentration and the supervisory committee chair are chosen no later than the end of the spring semester to maximize flexibility and facilitate an informed decision. Students entering the advanced concentrations take more specialized courses that strengthen their knowledge of these disciplines. The advanced concentration curricula are flexible enough to allow students to integrate course work offered in other advanced concentrations. In addition, journal clubs and seminars associated with their research interests allow students to further augment their scientific development.

Prospective students should have strong backgrounds in biology including genetics, chemistry (organic, quantitative, and biochemistry), physics, and calculus. Demonstrated high motivation and a serious intention to pursue research-related careers are also important considerations. This is best accomplished by performing independent study in a research laboratory for at least a semester, with a year or more being preferred. For more information, write IDP, P.O. Box 100229, College of Medicine, Gainesville, FL 32610-0229. For expanded information about the IDP, visit <http://idp.med.ufl.edu>.

### **Advanced Concentration in Biochemistry and Molecular Biology**

Directors: Robert McKenna and Kevin Brown

The Graduate Faculty of the biochemistry and molecular biology advanced concentration share an interest in the relationships between the structure of a biological macromolecule and the function of that molecule in the cell. The structure (encoded ultimately by the genome) sets the phenotype of the organism. The uniting theme among the

Graduate Faculty is their approach to research: Each uses the techniques of biochemistry and molecular biology/genetics to characterize the function of a macromolecule and show how function (and the process it is part of) is determined by the structure of that molecule and its interactions with other macromolecules. Specific research directions range from physical determination of the molecular structure of proteins to regulation of cellular processes to the genetic mapping of disease loci.

For information about other programs and courses in this field, see the Department of Biochemistry and Molecular Biology listing.

### **Advanced Concentration in Biochemistry and Molecular Biology Courses**

- BCH 6040: Research Discussion in Biochemistry and Molecular Biology
- BCH 6107: Biophysical Techniques in Proteomics and Protein Science
- BCH 6206: Advanced Metabolism
- BCH 6207: Advanced Metabolism: Role of Membranes in Signal Transduction and Metabolic Control
- BCH 6208: Advanced Metabolism: Regulation of Key Reactions in Carbohydrate and Lipid Metabolism
- BCH 6209: Advanced Metabolism: Regulation of Key Reactions in Amino Acid and Nucleotide Metabolism
- BCH 6415: Advanced Molecular and Cell Biology
- BCH 6740: Physical Biochemistry/Structural Biology
- BCH 6741C: Magnetic Resonance Imaging and Spectroscopy in Living Systems
- BCH 6744: Molecular Structure Determination by X-ray Crystallography
- BCH 6745: Molecular Structure and Dynamics of NMR Spectroscopy
- BCH 6746: Structural Biology: Macromolecular Structure Determination
- BCH 6747: Structural Biology/Advanced Physical Biochemistry: Spectroscopy and Hydrodynamics
- BCH 6749C: Numerical Methods in Structural Biology
- BCH 6876: Recent Advances in Membrane Biology
- BCH 6877: Recent Advances in Structural Biology
- BCH 6878: Recent Advances in Cytoskeletal Processes
- BCH 6936: Biochemistry Seminar
- BCH 7410: Advanced Gene Regulation
- BCH 7412: Epigenetics of Human Disease and Development
- BCH 7515: Structural Biology/Advanced Physical Biochemistry: Kinetics and Thermodynamics
- GMS 6195: Epigenetics Journal Club

### **Advanced Concentration in Cancer Biology**

Directors: Dietmar Siemann and Maria Zajac-Kaye

The Cancer Biology Concentration (CBC) provides training opportunities in cancer research ranging from basic to translational. The program spans many disciplines, including molecular and cell biology, genetics and epigenetics, biochemistry, microbiology, pharmacology, anatomy, pathology, epidemiology, bioinformatics, immunology and many others involved in the understanding of the development, progression, dissemination, and treatment of cancer.

Students in the will have opportunities to work with outstanding cancer investigators in state of the art facilities. Through combinations of courses, seminars, small group discussions, and an interdisciplinary approach to research, the program allows students to gain a unique understanding of cancer and to build a firm foundation upon which they can build careers in academia, government, and biotech and pharmaceutical industry.

For more information please see our website: <http://idp.med.ufl.edu/about/cancer-biology-concentration>

## **Advanced Concentration in Cancer Biology Courses**

- BCH 5413: Mammalian Molecular Biology and Genetics
- BCH 7410: Advanced Gene Regulation
- BCH 7412: Epigenetics of Human Disease and Development
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6009: Principles of Drug Action
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6090: Research in Medical Sciences
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6338: Recent Advances in Cancer Metastasis
- GMS 6421: Cell Biology
- GMS 6644: Apoptosis
- GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 6691: Special Topics in Cell Biology and Anatomy
- GMS 6812: Cancer Health Outcomes Assessment
- GMS 6818: Design and Conduct Clinical Trials I
- PHC 6937: Special Topics in Public Health

## **Advanced Concentration in Genetics**

Director: M. R. Wallace

The concentration in genetics offers graduate training in all facets of modern molecular genetics including bacterial, viral, lower eukaryotic, mouse, developmental, and human genetics. The courses listed are taught in a 5-week modular format.

## **Advanced Concentration in Genetics Courses**

- BCH 7410: Advanced Gene Regulation
- GMS 6010: Yeast Genetics
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6151: Genetic Analysis Using Model Systems
- GMS 6153: Advanced Bacterial Genetics
- GMS 6155: DNA Microarray Data Analysis



- GMS 6181: Special Topics in Microbiology
- GMS 6195: Epigenetics Journal Club
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6506: Biologic Drug Development
- GMS 6920: Genetics Journal Colloquy
- GMS 7192: Journal Colloquy

## **Advanced Concentration in Health Outcomes and Policy**

The University of Florida's Master of Science in Medical Sciences, with a concentration in Health Outcomes and Policy, is a specialized degree designed to put its graduates at the forefront of innovative research to develop, implement, and evaluate clinical and community-based programs that promote health and health outcomes. Throughout the curriculum, special emphasis is placed on health disparities and vulnerable populations. In addition to traditional graduate students, our program is available to medical students, post-doctoral researchers, fellows, residents, Ph.D. students, and junior faculty.

We also offer a 16-credit graduate certificate designed to complement other concurrent courses of study and to provide continuing education opportunities for faculty. The certificate can be completed in one year on a part-time basis.

## **Advanced Concentration in Health Outcomes and Policy Courses**

- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6802: Examining Health Outcomes for Chronic Diseases in Clinical and Community-based Research
- GMS 6803: Data Management for Clinical Research
- GMS 6804: Medical Informatics
- GMS 6811: Grant Writing Skills for Clinical Research
- GMS 6812: Cancer Health Outcomes Assessment
- GMS 6816: Pediatric Child Health Outcomes Assessment for Clinical and Community-Based Research
- GMS 6821: Measuring and Analyzing Health Outcomes I
- GMS 6822: Measuring and Analyzing Health Outcomes II
- GMS 6826: Advanced Design and Methodology for Case-Control Studies in Clinical Research
- GMS 6829: Longitudinal Research Design
- GMS 6830: Health Outcomes Research and Policy Development
- GMS 6832: Economic Methods for Evaluating Value in Health
- GMS 6833: Health Care Policy and Vulnerable Populations
- GMS 6834: Health Policy and Formulation of Payment Mechanisms for Health Care
- GMS 6835: Health Policy Issues in Children's Health
- GMS 6842: Translational Research Methods
- GMS 6844: Experimental and Quasi-Experimental Research Designs for Community Settings
- GMS 6846: Meta-Analysis in Clinical, Health Services Research and Public Health
- GMS 6851: Health Outcomes Research
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6853: Applied Topics in Dissemination and Implementation Science
- GMS 6854: Applied Topics in Clinical Effectiveness Research
- GMS 6881: Special Studies in Epidemiology and Health Policy Research
- GMS 6882: Directed Readings in Epidemiology and Health Policy

- GMS 6883: Practicum Experience in Epidemiology and Health Policy
- GMS 6884: Research in Epidemiology and Health Policy
- GMS 6885: Research Designs in Health Outcomes and Policy
- GMS 6893: Clinical and Translational Science Seminar Series
- GMS 6896: Health Outcomes and Policy Seminar

## **Advanced Concentration in Immunology and Microbiology**

Directors: R. C. Condit and C. E. Mathews

The concentration in immunology and microbiology offers graduate training in cellular and molecular immunology (including immunopathology, immunogenetics, and autoimmunity) and in microbiology (including virology, bacteriology, microbial genetics, and microbial pathogenesis). The courses listed are taught in a 5-week modular format.

## **Advanced Concentration in Immunology and Microbiology Courses**

- VME 6505: Autoimmunity
- GMS 6031: Molecular Immunology
- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions
- GMS 6121: Infectious Diseases
- GMS 6140: Principles of Immunology
- GMS 6145: Immunology of Gene Transfer
- GMS 6193: Research Conference in Oral Biology
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology
- GMS 6382: Special Topics in Immunology
- GMS 6921: Immunology/Microbiology Journal Colloquy
- GMS 7192: Journal Colloquy
- VME 6934: Topics in Veterinary Medical Sciences

## **Advanced Concentration in Molecular Cell Biology**

Director: Alexander Ishov

Co-Director: Maria Zajac-Kaye

The advanced concentration in molecular cell biology (MCB) prepares investigators for careers in biomedical research in academic or industrial settings. This multidisciplinary specialization has more than 50 participating faculty members and offers an extraordinary range of opportunities for advanced study of life at the molecular and cellular levels. The Graduate Faculty share common interests in the molecular interactions that account for functionally integrated subcellular, cellular, and tissue organization found in living organisms. The model systems in use range from yeast and cellular slime molds through *Drosophila* to birds and mammals. These systems are manipulated and analyzed using a wide range of powerful molecular, genetic, protein chemical, immunological, pharmacological, nuclear magnetic resonance (NMR), and microscopic imaging strategies. Students who select MCB take advanced course work and initiate independent research during the second year. This approach provides broad-based vision early in the program and the appropriate degree of specialization later on.

### **Advanced Concentration in Molecular Cell Biology Courses**

- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6013: Developmental Genetics
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine
- GMS 6381: Special Topics in Pathology
- GMS 6417: Integrative Aging Physiology
- GMS 6421: Cell Biology
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6644: Apoptosis
- GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6691: Special Topics in Cell Biology and Anatomy
- GMS 6692: Research Conference in Anatomy and Cell Biology

### **Advanced Concentration in Neuroscience**

Directors: W. J. Streit and J. L. Bizon

The Graduate Faculty associated with the neuroscience advanced concentration have expertise in neuroanatomy, molecular and cellular neurobiology, neurodevelopment and aging, neurotransmitter chemistry and pharmacology, neuroendocrinology and neuroimmunology, cellular and molecular neuro-oncology, cellular and membrane neurophysiology, somatosensory and motor systems, transplantation neurobiology, injury and repair of the CNS, and neurobehavioral sciences. Study in marine vertebrate and invertebrate neurobiology is available through Graduate Faculty at the Whitney Laboratory.

### **Advanced Concentration in Neuroscience Courses**

- GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System
- GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience
- GMS 6023: Principles of Neuroscience III – Molecular Neuropharmacology and its Clinical Application
- GMS 6024: Principles of Neuroscience IV: Neural Integration & Control
- GMS 6029: Brain Journal Club
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology
- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6078: Synaptic Function and Plasticity
- GMS 6079: Computers in Biology
- GMS 6080: Basic Magnetic Resonance Imaging
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6705: Functional Human Neuroanatomy
- GMS 6709: Current Topics in Vision
- GMS 6711: Neurobiology of Pain
- GMS 6750: Molecular Pathobiology of Neural Disease
- GMS 6760: Comparative Biology of Cell Signaling
- GMS 6791: Visual Neuroscience Journal Club
- GMS 6792: Neuroscience Graduate Research Seminar
- GMS 7794: Neuroscience Seminar
- GMS 7795: Special Topics in Neuroscience

## **Advanced Concentration in Oral Biology**

*Chair:* R. A. Burne

*Graduate Coordinator:* J. Brady

The Department of Oral Biology, a unit of the College of Dentistry, offers graduate study leading to the degree of Doctor of Philosophy as part of the College of Medicine's Interdisciplinary Program (IDP) in Biomedical Sciences. The work is designed to provide the degree candidate with a strong background in basic biological principles relevant to the various subspecialties of oral biology, as well as specialized training in various aspects of the diseases and disorders of the oral cavity.

Areas of emphasis include application of microbiological, immunological, cellular, and molecular biological concepts and technologies to answer questions about host-pathogen interactions in oral disease; vaccine development; oral microbial physiology; oral bacterial biofilm biology; saliva and salivary gland biology; microbial antibiotic resistance; and autoimmune diseases. More information is available at <http://dental.ufl.edu/departments/oral-biology/>.

Prerequisites for admission in addition to those of the Graduate School include a broad base of courses in mathematics, physics, organic and analytic chemistry, advanced biology, biochemistry, molecular biology, and statistical methods. Specific requirements can be obtained from the Graduate Coordinator or the IDP office.

## **Oral Biology Departmental Courses**

- GMS 6160: Introduction to Oral Biology I
- GMS 6161: Introduction to Oral Biology II
- GMS 6173: Stomatognathic System: Form and Function

- GMS 6176: Biology of Tooth Supporting Structures I
- GMS 6177: Biology of Tooth Supporting Structures II
- DEN 6680: Principles and Craniofacial Biology and Emerging Therapies
- DEN 6681: Craniofacial Pathobiology
- GMS 7179: Journal Colloquy

## **Advanced Concentration in Physiology and Pharmacology**

Directors: J. K. Harrison and H. Kasahara

The Graduate Faculty associated with this advanced concentration have expertise in a variety of disciplines, including molecular and cellular biology, pharmacology, physiology, neuroscience, and biochemistry. These faculty bring together unique strengths to provide the students with diverse training. Students may train in laboratories involved in cardiovascular, neuro, endocrine, and developmental physiology; pharmacology; and toxicology. Students conduct research at the molecular, cellular, and integrative levels. Many of the faculty are involved in multidisciplinary, collaborative research efforts that aim to understand basic physiological mechanisms and pathophysiological processes (e.g., cardiovascular, neurodegenerative, and neoplastic diseases).

## **Advanced Concentration in Physiology and Pharmacology Courses**

- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

## **Core Courses--IDP**

- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology

- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6090: Research in Medical Sciences
- GMS 6901: Seminar in Biology of Disease
- GMS 7003: Responsible Conduct of Biomedical Research
- GMS 7593: Topics in Pharmacology and Toxicology

## **General and Advanced Courses**

- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6090: Research in Medical Sciences
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6872: Science and Ethics of in Vitro Fertilization
- GMS 6905: Independent Studies in Medical Sciences
- GMS 6910: Supervised Research
- GMS 6931: Ethical and Policy Issues in Clinical Research
- GMS 6940: Supervised Teaching
- GMS 6971: Research for Master's Thesis
- GMS 7001: Fundamentals of Biomedical Science Education
- GMS 7002: Practicum in Biomedical Science Education
- GMS 7003: Responsible Conduct of Biomedical Research
- GMS 7979: Advanced Research
- GMS 7980: Research for Doctoral Dissertation

## **Other Interdisciplinary Doctoral Concentrations Offered**

The interdisciplinary emphasis on vision sciences is also discussed in the Interdisciplinary Graduate Studies section. The program director is Dr. W. Clay Simith, P.O. Box 100284 College of Medicine, Gainesville, FL 32610 or (352) 392-0476.

Interdisciplinary study in toxicology is coordinated by the Center for Environmental and Human Toxicology and is concerned with the effects of chemicals on human and animal health. Additional information is given in the Interdisciplinary Graduate Studies section of this catalog or may be obtained from the codirector, Dr. Colin Sumners , P.O. Box 100215, College of Medicine, Gainesville, FL 32610 or (352) 392-0740.

## **Degrees Offered with a Major in Medical Sciences**

Doctor of Philosophy

without a concentration

concentration in Biochemistry and Molecular Biology

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Cancer Biology

concentration in Clinical and Translational Science

*optional second concentration in Health Outcomes and Policy*

concentration in Genetics

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Health Outcomes and Policy

*optional second concentration in Clinical and Translational Science*

concentration in Imaging Science and Technology

concentration in Immunology and Microbiology

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Molecular Cell Biology

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Neuroscience

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Physiology and Pharmacology

*optional second concentration in Clinical and Translational Science*

*optional second concentration in Health Outcomes and Policy*

concentration in Toxicology

Master of Science

without a concentration

concentration in Clinical and Translational Science

concentration in Health Outcomes and Policy

concentration in Translational Biotechnology

## **College of Medicine Courses**

- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6657: Diagnostic Radiological Physics
- GEY 5935: Topics in Gerontology
- GEY 6220: Overview of Geriatric Care Management
- GEY 6646: Issues and Concepts in Gerontology
- GEY 6905: Independent Study in Gerontology
- GEY 6936: Professional Development in Gerontology/Geriatrics
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology
- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6010: Yeast Genetics
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System
- GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience
- GMS 6024: Principles of Neuroscience IV: Neural Integration & Control
- GMS 6029: Brain Journal Club
- GMS 6031: Molecular Immunology
- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions
- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes



- GMS 6053: Cancer Biology and Therapeutics
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6070: Sensory and Motor Systems
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology
- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6078: Synaptic Function and Plasticity
- GMS 6079: Computers in Biology
- GMS 6080: Basic Magnetic Resonance Imaging
- GMS 6090: Research in Medical Sciences
- GMS 6096: Introduction to NIH Grant Writing for Biomedical Sciences
- GMS 6099: Foundations in Aging and Geriatric Research
- GMS 6121: Infectious Diseases
- GMS 6140: Principles of Immunology
- GMS 6145: Immunology of Gene Transfer
- GMS 6151: Genetic Analysis Using Model Systems
- GMS 6153: Advanced Bacterial Genetics
- GMS 6155: DNA Microarray Data Analysis
- GMS 6160: Introduction to Oral Biology I
- GMS 6161: Introduction to Oral Biology II
- GMS 6169: Antimicrobial Strategies
- GMS 6173: Stomatognathic System: Form and Function
- GMS 6181: Special Topics in Microbiology
- GMS 6190: Seminar
- GMS 6191: HIV Journal Club
- GMS 6193: Research Conference in Oral Biology
- GMS 6195: Epigenetics Journal Club
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
- GMS 6221: Ethics in Genetics
- GMS 6223: Drosophila Neurogenetics: from Development to Function
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics
- GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine
- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology

- GMS 6382: Special Topics in Immunology
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6412: Human Physiology for Biomedical Engineering
- GMS 6413: Advances in Hypertension Research
- GMS 6414: Advanced Renal Physiology
- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6416: Human Endocrinology and Anatomy of Reproduction
- GMS 6471: Fundamentals of Physiology and Functional Genomics I
- GMS 6472: Fundamentals of Physiology and Functional Genomics II
- GMS 6473: Fundamentals of Physiology and Functional Genomics III
- GMS 6483: Theories of Aging
- GMS 6485: Population Based Research on Aging
- GMS 6486: Fundamentals of Biological Aging
- GMS 6490C: Research Methods in Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6495: Seminar in Physiology
- GMS 6496: Recent Advances in Physiology
- GMS 6497: Seminar on Vision
- GMS 6506: Biologic Drug Development
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6609: Advanced Gross Anatomy
- GMS 6621: Vision
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6642: Morphogenesis: Organ Systems I
- GMS 6643: Morphogenesis: Organ Systems II
- GMS 6644: Apoptosis
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes
- GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects
- GMS 6771: Clinical Neuroscience of Aging
- GMS 6876: Law & Ethics of Aging
- GMS 6845: Clinical & Translational Research Practicum
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6895: CTS Journal Club
- GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists
- GMS 6970: Individual Study
- GMS 6383: Current Topics in Immunotherapy
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 5604: Medical Human Embryology
- GMS 5605: Medical Anatomy
- GMS 5606L: Medical Anatomy Lab

- GMS 5613: Medical Human Anatomy by Diagnostic Imaging
- GMS 5630: Medical Histology
- GMS 6081: Biological Imaging Techniques
- GMS 6082: Introduction to Functional Magnetic Resonance Imaging
- GMS 6143: Cells of the Innate Immune System
- GMS 6394: Seminar in Mammalian Genetics
- GMS 6403: Advanced Endocrinology
- GMS 6484: Geriatric and Age Related Diseases
- GMS 6500: Introduction to Pharmacology
- GMS 6607C: Musculoskeletal Systems
- GMS 6719: Fundamentals of Computational Neuroscience
- GMS 6780: Addiction: Neuroscience and Trends
- GMS 6786: Medical Writing in Addiction
- GMS 6787: Food Addiction, Overeating and Obesity
- GMS 6800: Fundamentals of Epidemiology
- GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases
- GMS 6810: Intermediate Epidemiology Methods
- GMS 6813: Clinical Trials
- GMS 6814: Molecular and Genetic Epidemiology
- GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1
- GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2
- GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3
- GMS 6855: Medical Writing in Psychiatry
- GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data
- GMS 6873: Introduction to Medical Bioethics
- GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research
- GMS 7887: Health Outcomes & Policy PhD Research Seminar

## Biochemistry and Molecular Biology Department

*Chair:* James B. Flanagan.

*Graduate Coordinator:* Kevin Brown

*Complete faculty listing by department:* Follow this link.

Biochemistry and Molecular Biology Department faculty mentor Ph.D. students in the College of Medicine interdisciplinary program (IDP) in medical sciences. Students interested in pursuing a doctoral degree can view specific features of the biochemistry and molecular biology concentration at <http://biochem.med.ufl.edu/> and <http://idp.med.ufl.edu>. For admission information, visit the IDP website. Department faculty also mentor Ph.D. students in other college programs and participate actively in the research and teaching functions of various centers such as the Center for Epigenetics and the Center for Structural Biology. The Department offers a wide variety of courses for graduate students studying in the life sciences. The research expertise of the faculty spans the areas from cell biology, metabolism, and molecular biology to physical biochemistry/structural biology. Current research interests include viral protease inhibitors, viral RNA replication, bioenergetics and proton translocation, X-chromosome structure and function, cytoskeletal assembly and dynamics, enzyme mechanism and control, chromatin structure, gene expression and regulation, mitochondrial biogenesis and evolution, the genetics of inherited disease, nutrient membrane transporters, protein site-directed mutagenesis, ribosome structure and function, signal transduction, structural biology and dynamics of macromolecules, protein-nucleic acid interactions, transgenic animal models, and virus crystal structure. Prospective graduate students should have adequate training in chemistry and biology. Minor deficiencies may be made up immediately after entering graduate school. Previous

undergraduate experience in a research laboratory is highly recommended. Doctoral students are required to take a core IDP course in fall term of their first year; and beginning in spring term, students take advanced classes in areas of interest. Specific advanced-level courses may be recommended by the student's supervisory chair and committee. The following courses are open to all graduate students and advanced undergraduates. Additional courses are listed in the Advanced Concentration in Biochemistry and Molecular Biology section under Medical Sciences.

## **Biochemistry and Molecular Biology**

### **College**

College of Medicine

### **Department/School**

Biochemistry and Molecular Biology Department

### **Degrees Offered with a Major in Biochemistry and Molecular Biology**

Master of Science

### **Courses**

- BCH 5413: Mammalian Molecular Biology and Genetics
- BCH 6040: Research Discussion in Biochemistry and Molecular Biology
- BCH 6107: Biophysical Techniques in Proteomics and Protein Science
- BCH 6206: Advanced Metabolism
- BCH 6207: Advanced Metabolism: Role of Membranes in Signal Transduction and Metabolic Control
- BCH 6208: Advanced Metabolism: Regulation of Key Reactions in Carbohydrate and Lipid Metabolism
- BCH 6209: Advanced Metabolism: Regulation of Key Reactions in Amino Acid and Nucleotide Metabolism
- BCH 6415: Advanced Molecular and Cell Biology
- BCH 6740: Physical Biochemistry/Structural Biology
- BCH 6741C: Magnetic Resonance Imaging and Spectroscopy in Living Systems
- BCH 6744: Molecular Structure Determination by X-ray Crystallography
- BCH 6744L: Molecular Structure Determination by X-Ray Crystallography Laboratory
- BCH 6745: Molecular Structure and Dynamics of NMR Spectroscopy
- BCH 6745L: Molecular Structure and Dynamics by NMR Spectroscopy Laboratory
- BCH 6746: Structural Biology: Macromolecular Structure Determination
- BCH 6747: Structural Biology/Advanced Physical Biochemistry: Spectroscopy and Hydrodynamics
- BCH 6749C: Numerical Methods in Structural Biology
- BCH 6876: Recent Advances in Membrane Biology
- BCH 6875: Crystallography and Cryo-Electron Microscopy
- BCH 6877: Recent Advances in Structural Biology
- BCH 6878: Recent Advances in Cytoskeletal Processes
- BCH 6905: Independent Studies in Biochemistry and Molecular Biology
- BCH 6910: Supervised Research

- BCH 6936: Biochemistry Seminar
- BCH 6971: Research for Master's Thesis
- BCH 7410: Advanced Gene Regulation
- BCH 7412: Epigenetics of Human Disease and Development
- BCH 7414: Advanced Chromatin Structure
- BCH 7515: Structural Biology/Advanced Physical Biochemistry: Kinetics and Thermodynamics
- BCH 7979: Advanced Research
- BCH 7980: BioChem Doctoral Research

## **College of Medicine Courses**

- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6657: Diagnostic Radiological Physics
- GEY 5935: Topics in Gerontology
- GEY 6220: Overview of Geriatric Care Management
- GEY 6646: Issues and Concepts in Gerontology
- GEY 6905: Independent Study in Gerontology
- GEY 6936: Professional Development in Gerontology/Geriatrics
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology
- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6010: Yeast Genetics
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
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- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
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- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions

- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6070: Sensory and Motor Systems
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology
- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6078: Synaptic Function and Plasticity
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- GMS 6145: Immunology of Gene Transfer
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- GMS 6191: HIV Journal Club
- GMS 6193: Research Conference in Oral Biology
- GMS 6195: Epigenetics Journal Club
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
- GMS 6221: Ethics in Genetics
- GMS 6223: Drosophila Neurogenetics: from Development to Function
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics
- GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine

- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology
- GMS 6382: Special Topics in Immunology
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6412: Human Physiology for Biomedical Engineering
- GMS 6413: Advances in Hypertension Research
- GMS 6414: Advanced Renal Physiology
- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6416: Human Endocrinology and Anatomy of Reproduction
- GMS 6471: Fundamentals of Physiology and Functional Genomics I
- GMS 6472: Fundamentals of Physiology and Functional Genomics II
- GMS 6473: Fundamentals of Physiology and Functional Genomics III
- GMS 6483: Theories of Aging
- GMS 6485: Population Based Research on Aging
- GMS 6486: Fundamentals of Biological Aging
- GMS 6490C: Research Methods in Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6495: Seminar in Physiology
- GMS 6496: Recent Advances in Physiology
- GMS 6497: Seminar on Vision
- GMS 6506: Biologic Drug Development
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6609: Advanced Gross Anatomy
- GMS 6621: Vision
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6642: Morphogenesis: Organ Systems I
- GMS 6643: Morphogenesis: Organ Systems II
- GMS 6644: Apoptosis
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes
- GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects
- GMS 6771: Clinical Neuroscience of Aging
- GMS 6876: Law & Ethics of Aging
- GMS 6845: Clinical & Translational Research Practicum
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6895: CTS Journal Club
- GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists
- GMS 6970: Individual Study
- GMS 6383: Current Topics in Immunotherapy
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 5604: Medical Human Embryology

- GMS 5605: Medical Anatomy
- GMS 5606L: Medical Anatomy Lab
- GMS 5613: Medical Human Anatomy by Diagnostic Imaging
- GMS 5630: Medical Histology
- GMS 6081: Biological Imaging Techniques
- GMS 6082: Introduction to Functional Magnetic Resonance Imaging
- GMS 6143: Cells of the Innate Immune System
- GMS 6394: Seminar in Mammalian Genetics
- GMS 6403: Advanced Endocrinology
- GMS 6484: Geriatric and Age Related Diseases
- GMS 6500: Introduction to Pharmacology
- GMS 6607C: Musculoskeletal Systems
- GMS 6719: Fundamentals of Computational Neuroscience
- GMS 6780: Addiction: Neuroscience and Trends
- GMS 6786: Medical Writing in Addiction
- GMS 6787: Food Addiction, Overeating and Obesity
- GMS 6800: Fundamentals of Epidemiology
- GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases
- GMS 6810: Intermediate Epidemiology Methods
- GMS 6813: Clinical Trials
- GMS 6814: Molecular and Genetic Epidemiology
- GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1
- GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2
- GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3
- GMS 6855: Medical Writing in Psychiatry
- GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data
- GMS 6873: Introduction to Medical Bioethics
- GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research
- GMS 7887: Health Outcomes & Policy PhD Research Seminar

## Biostatistics Department

College of Public Health and Health Professions  
College of Medicine

*Chair:* Peihua Qiu

*Associate Chair for Education:* Babette Brumback

*Graduate Coordinator:* Kristen Cason

*Complete faculty listing by department:* [Follow this link.](#)

The Department of Biostatistics offers the Doctor of Philosophy degree in biostatistics, the Master of Science degree in biostatistics, and the Master of Public Health degree with concentration biostatistics, which is described in detail in the Public Health section of the catalog. These programs in the Department are designed to prepare students for research and faculty positions; careers in health agencies and health-related institutions; and for consultation, especially in the biomedical fields. Although each graduate program has a set of required courses, there is ample flexibility in the programs to allow each student to develop strengths and interests through elective courses, seminars, and tutorials.

### Doctor of Philosophy



The biostatistics doctoral program requires a minimum of 90 semester credits beyond the bachelor's degree. Students must have a directly related master's degree (i.e. Master of Science in statistics or biostatistics). All students must complete a minimum of 54 credits of biostatistics/statistics course work (30 credits will typically be transferred from a Master of Science program), 6 credits of public health course work, 3 credits of a consulting requirement, 6 credits of the cognate requirement, and 21 credits of dissertation work.

All graduates of the program are expected to be able to

- Conduct independent research in the development of new biostatistical methodology
- Engage in successful collaborations with investigators in new quantitative fields
- Write statistical methodology papers for peer-reviewed statistical and biostatistical journals
- Write collaborative papers for peer-reviewed subject matter journals
- Compete successfully for research and teaching positions in academic institutions, federal and state agencies, or private institutions

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/phd-in-biostatistics/curriculum-overview/>.

### **Master of Science**

The biostatistics masters degree (MS) requires a minimum of 36 semester credits beyond the bachelor's degree. The program is designed to facilitate students' development of a strong theoretical foundation in biostatistics, broad-based understanding of biostatistical methods, and expertise in a cognate field. A typical student will be enrolled full-time for two years. Upon successful completion of the program, graduates will be awarded an M.S. degree in biostatistics.

The principal goal of the M.S. program is to prepare highly qualified individuals for future Ph.D. training and for careers in biostatistics practice. This training is conducted in the innovative and interdisciplinary public health culture of the college of public health and health professions and the college of medicine. We expect our graduates to be highly competitive in three primary settings: academic university-based settings, industry, and federal agencies that involve research and/or public health practice.

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/ms-in-biostatistics/ms-curriculum-overview/>.

## **Biostatistics (Medicine)**

### **College**

College of Public Health and Health Professions

College of Medicine

### **Department**

Biostatistics Department

### **Degrees**

Doctor of Philosophy

Master of Science

## **Biostatistics Departmental Courses**

- GMS 6818: Design and Conduct Clinical Trials I
- GMS 6819: Design and Conduct Clinical Trials II
- GMS 6827: Advanced Clinical Trial Methods
- GMS 6841: Design and Analysis of Translational Research in Biomedical Sciences
- GMS 6861: Applied Biostatistics I
- GMS 6862: Applied Biostatistics II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6020: Clinical Trial Methods
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6050C: Biostatistical Methods I
- PHC 6051: Biostatistical Methods II
- PHC 6052: Introduction to Biostatistical Methods
- PHC 6053: Regression Methods for the Health and Life Sciences
- PHC 6055: Biostatistical Computing Using R
- PHC 6063: Biostatistical Consulting
- PHC 6068: Biostatistical Computing
- PHC 6080: SAS for Public Health - Data
- PHC 6081: SAS for Public Health - Analysis
- PHC 6517: Public Health Concepts in Infectious Diseases
- PHC 6937: Special Topics in Public Health
- PHC 6946: Public Health Internship
- PHC 7090: Advanced Biostatistical Methods I
- PHC 7091: Advanced Biostatistical Methods II
- PHC 7013: Bias in Observational Research
- PHC 7056: Analysis of Longitudinal Data
- PHC 7066: Large Sample Theory
- PHC 7925: Biostatistics Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- STA 5223: Applied Sample Survey Methods
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 5503: Categorical Data Methods
- STA 5701: Applied Multivariate Methods
- STA 5715: Applied Survival Analysis
- STA 6092: Applied Statistical Practice
- STA 6166: Statistical Methods in Research I
- STA 7249: Generalized Linear Models
- STA 7346: Statistical Inference

## **College of Medicine Courses**

- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6657: Diagnostic Radiological Physics
- GEY 5935: Topics in Gerontology
- GEY 6220: Overview of Geriatric Care Management

- GEY 6646: Issues and Concepts in Gerontology
- GEY 6905: Independent Study in Gerontology
- GEY 6936: Professional Development in Gerontology/Geriatrics
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology
- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6010: Yeast Genetics
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System
- GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience
- GMS 6024: Principles of Neuroscience IV: Neural Integration & Control
- GMS 6029: Brain Journal Club
- GMS 6031: Molecular Immunology
- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions
- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6070: Sensory and Motor Systems
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology
- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6078: Synaptic Function and Plasticity
- GMS 6079: Computers in Biology

- GMS 6080: Basic Magnetic Resonance Imaging
- GMS 6090: Research in Medical Sciences
- GMS 6096: Introduction to NIH Grant Writing for Biomedical Sciences
- GMS 6099: Foundations in Aging and Geriatric Research
- GMS 6121: Infectious Diseases
- GMS 6140: Principles of Immunology
- GMS 6145: Immunology of Gene Transfer
- GMS 6151: Genetic Analysis Using Model Systems
- GMS 6153: Advanced Bacterial Genetics
- GMS 6155: DNA Microarray Data Analysis
- GMS 6160: Introduction to Oral Biology I
- GMS 6161: Introduction to Oral Biology II
- GMS 6169: Antimicrobial Strategies
- GMS 6173: Stomatognathic System: Form and Function
- GMS 6181: Special Topics in Microbiology
- GMS 6190: Seminar
- GMS 6191: HIV Journal Club
- GMS 6193: Research Conference in Oral Biology
- GMS 6195: Epigenetics Journal Club
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
- GMS 6221: Ethics in Genetics
- GMS 6223: Drosophila Neurogenetics: from Development to Function
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics
- GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine
- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology
- GMS 6382: Special Topics in Immunology
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6412: Human Physiology for Biomedical Engineering
- GMS 6413: Advances in Hypertension Research
- GMS 6414: Advanced Renal Physiology
- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6416: Human Endocrinology and Anatomy of Reproduction
- GMS 6471: Fundamentals of Physiology and Functional Genomics I
- GMS 6472: Fundamentals of Physiology and Functional Genomics II

- GMS 6473: Fundamentals of Physiology and Functional Genomics III
- GMS 6483: Theories of Aging
- GMS 6485: Population Based Research on Aging
- GMS 6486: Fundamentals of Biological Aging
- GMS 6490C: Research Methods in Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6495: Seminar in Physiology
- GMS 6496: Recent Advances in Physiology
- GMS 6497: Seminar on Vision
- GMS 6506: Biologic Drug Development
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6609: Advanced Gross Anatomy
- GMS 6621: Vision
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6642: Morphogenesis: Organ Systems I
- GMS 6643: Morphogenesis: Organ Systems II
- GMS 6644: Apoptosis
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes
- GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects
- GMS 6771: Clinical Neuroscience of Aging
- GMS 6876: Law & Ethics of Aging
- GMS 6845: Clinical & Translational Research Practicum
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6895: CTS Journal Club
- GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists
- GMS 6970: Individual Study
- GMS 6383: Current Topics in Immunotherapy
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 5604: Medical Human Embryology
- GMS 5605: Medical Anatomy
- GMS 5606L: Medical Anatomy Lab
- GMS 5613: Medical Human Anatomy by Diagnostic Imaging
- GMS 5630: Medical Histology
- GMS 6081: Biological Imaging Techniques
- GMS 6082: Introduction to Functional Magnetic Resonance Imaging
- GMS 6143: Cells of the Innate Immune System
- GMS 6394: Seminar in Mammalian Genetics
- GMS 6403: Advanced Endocrinology
- GMS 6484: Geriatric and Age Related Diseases
- GMS 6500: Introduction to Pharmacology
- GMS 6607C: Musculoskeletal Systems
- GMS 6719: Fundamentals of Computational Neuroscience
- GMS 6780: Addiction: Neuroscience and Trends
- GMS 6786: Medical Writing in Addiction
- GMS 6787: Food Addiction, Overeating and Obesity

- GMS 6800: Fundamentals of Epidemiology
- GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases
- GMS 6810: Intermediate Epidemiology Methods
- GMS 6813: Clinical Trials
- GMS 6814: Molecular and Genetic Epidemiology
- GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1
- GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2
- GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3
- GMS 6855: Medical Writing in Psychiatry
- GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data
- GMS 6873: Introduction to Medical Bioethics
- GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research
- GMS 7887: Health Outcomes & Policy PhD Research Seminar

## **Epidemiology Department**

College of Public Health and Health Professions  
College of Medicine

*Chair:* Linda Cottler

*Ph.D. Program Director:* Cindy Prins

*M.S. Program Director:* Catherine Woodstock Striley

*Complete faculty listing by department:* Follow this link.

The Department of Epidemiology – jointly governed by both the College of Public Health and Health Professions and the College of Medicine – offers the Doctor of Philosophy degree in epidemiology, Masters of Science in epidemiology, as well as the Master of Public Health degree with a concentration in epidemiology (described here). Minimum requirements for these degrees are described in the Graduate Degrees section of this catalog. The programs in the Department are designed to prepare students for careers in academic research environments, careers in public health agencies and health-related institutions, and for consultation, especially in the biomedical fields.

More information on these programs is available at the program page below and at the department website: <http://epidemiology.php.ufl.edu>.

## **Epidemiology (Medicine)**

### **College**

College of Medicine

### **Department**

Epidemiology Department

### **Epidemiology Program Information**

The **Ph.D. in Epidemiology program** is in the Department of Epidemiology, which is jointly governed by both the College of Public Health and Health Professions and the College of Medicine. The program requires a minimum of 90 semester credits beyond the bachelor's degree. All students must complete a minimum of 9 credits in Epidemiology foundation course work, at least 36 credits of epidemiology core courses, 6 credits of statistics electives, 18 credits of epidemiology electives, 15 credits of general electives, and 12 credits of dissertation research. All entering students who do not hold MPH or equivalent degrees are also required by the College of Public Health and Health Professions to complete an Introduction to Public Health course.

Students in the Ph.D. program in Epidemiology are admitted to work with a research mentor on that mentor's project, and that research mentor funds the student. Other funding sources are available such as the Graduate School and the Department.

The core course work is designed to incorporate competencies recommended in the report of the 2002 workshop on doctoral education in epidemiology from the American College of Epidemiology and the Association of Schools and Programs of Public Health, and criteria for applied epidemiology competencies. The overall outcomes expected of all graduates are as follows:

1. Apply epidemiological methods to address critical and/or emerging public health issues through the use of:
  - Appropriate epidemiological research designs
  - Advanced statistical analysis methods for health studies
  - Data structures and measurement methods for health research
  - Biological, behavioral and social theory applied to the understanding and prevention of contemporary threats to health and well-being
  - Depth of knowledge in an area of specialization
2. Assimilate the history, philosophy, and ethical principles of epidemiology into current research
3. Develop grant proposals and manage research projects
4. Write scientific papers for publication in peer-reviewed journals, and communicate research results to scientists, policy makers, and the public
5. Compete successfully for research and teaching positions in academic institutions, federal or state agencies, or private institutions.

Details of the Ph.D. in Epidemiology program and application information are available at our website:  
<http://epidemiology.php.ufl.edu/about/ph-d-in-epidemiology-2>.

The **Master of Science in Epidemiology** degree is offered by the Department of Epidemiology, which is jointly governed by both the College of Public Health and Health Professions and the College of Medicine. The 36 credit program prepares students for careers in the public health arena that are focused on the surveillance and prevention of illnesses among diverse populations around the world. Students are trained in the foundational aspects of epidemiology including person, place and time, risk and protective factors, and the social determinants of health. Areas of focus include: chronic disease, infectious disease, geriatric, environmental, psychiatric, social, cancer and maternal and child health epidemiology.

Graduates of the M.S. in Epidemiology program are trained to:

- Apply surveillance, assessment, evaluation, and other foundational epidemiological research designs to areas of interest,
- Choose appropriate measurement and analytic methods to study health and disease in a population,
- Utilize biological, behavioral and social theory to understand how to prevent and intervene to promote the public health.

The program consists of required coursework and the successful completion of a thesis. The thesis is required to demonstrate skill in independent inquiry and investigation, under the tutelage of a mentor. Students may complete the course in three semesters with 36 credits.

More program information, including specific course requirements and elective options, is described at the program website: <http://epidemiology.phhp.ufl.edu/about/masters-of-science-in-epidemiology/mse-curriculum-2>.

## **Degrees Offered with a Major in Epidemiology**

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

Master of Science

## **Epidemiology (PHHP/COM) Departmental Courses**

- GMS 6820: Advanced Epidemiology Methods
- PHC 6008: Cardiovascular Epidemiology
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6014: Epidemiology, Prevention, and Control of Chronic Diseases II
- PHC 6034: Epidemic Investigation
- PHC 6070: Epidemiology of Aging
- PHC 6517: Public Health Concepts in Infectious Diseases
- PHC 6711: Measurement in Epidemiology and Outcomes Research
- PHC 6937: Special Topics in Public Health
- PHC 6938: Oral and Craniofacial Epidemiology
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7007: Cancer Epidemiology
- PHC 7038: Psychiatric Epidemiology
- PHC 7065: Critical Skills in Epidemiological Data Management
- PHC 7427: Ethics in Population Science
- PHC 7595: Introduction to Molecular Epidemiology
- PHC 7727: Grant Writing for Population Health Research
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7902: Epidemiology Supervised Research Writing Circle
- PHC 7910: International Field Epidemiology
- PHC 7916: National Field Epidemiology
- PHC 7934: Seminar I: Epidemiology Past, Present, and Future
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation

## **College of Medicine Courses**



- ENU 6652: Clinical Rotation in Diagnostic Radiology
- ENU 6657: Diagnostic Radiological Physics
- GEY 5935: Topics in Gerontology
- GEY 6220: Overview of Geriatric Care Management
- GEY 6646: Issues and Concepts in Gerontology
- GEY 6905: Independent Study in Gerontology
- GEY 6936: Professional Development in Gerontology/Geriatrics
- GMS 5905: Special Topics in Biomedical Sciences
- GMS 6001: Fundamentals of Biomedical Sciences I
- GMS 6003: Fundamentals of Graduate Research and Professional Development
- GMS 6004: IDP Practical Laboratory
- GMS 6005: Fundamentals of Developmental Biology
- GMS 6006: Fundamentals of Immunology and Microbiology
- GMS 6007: Fundamentals of Neuroscience
- GMS 6008: Fundamentals of Physiology and Functional Genomics
- GMS 6009: Principles of Drug Action
- GMS 6010: Yeast Genetics
- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6015: Human Genetics II
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System
- GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience
- GMS 6024: Principles of Neuroscience IV: Neural Integration & Control
- GMS 6029: Brain Journal Club
- GMS 6031: Molecular Immunology
- GMS 6032: Mechanisms of Host Defense
- GMS 6033: Immunity in Health and Disease
- GMS 6034: Advanced Virology I: Genetics and RNA
- GMS 6035: Advanced Virology II: RNA Viruses
- GMS 6036: Molecular Virology III: DNA Viruses
- GMS 6038: Bacterial Genetics and Physiology
- GMS 6039: Bacterial Pathogenesis
- GMS 6040: Host-Pathogen Interactions
- GMS 6051: Signal Transduction
- GMS 6052: Ion Channels of Excitable Membranes
- GMS 6053: Cancer Biology and Therapeutics
- GMS 6059: Gene Therapy from Bench to Bedside
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6063: Mechanisms of Aging
- GMS 6064: Tumor Biology
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6070: Sensory and Motor Systems
- GMS 6072: Neuroendocrinology and Neuroimmunology
- GMS 6073: Developmental Neurobiology

- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6078: Synaptic Function and Plasticity
- GMS 6079: Computers in Biology
- GMS 6080: Basic Magnetic Resonance Imaging
- GMS 6090: Research in Medical Sciences
- GMS 6096: Introduction to NIH Grant Writing for Biomedical Sciences
- GMS 6099: Foundations in Aging and Geriatric Research
- GMS 6121: Infectious Diseases
- GMS 6140: Principles of Immunology
- GMS 6145: Immunology of Gene Transfer
- GMS 6151: Genetic Analysis Using Model Systems
- GMS 6153: Advanced Bacterial Genetics
- GMS 6155: DNA Microarray Data Analysis
- GMS 6160: Introduction to Oral Biology I
- GMS 6161: Introduction to Oral Biology II
- GMS 6169: Antimicrobial Strategies
- GMS 6173: Stomatognathic System: Form and Function
- GMS 6181: Special Topics in Microbiology
- GMS 6190: Seminar
- GMS 6191: HIV Journal Club
- GMS 6193: Research Conference in Oral Biology
- GMS 6195: Epigenetics Journal Club
- GMS 6196: Virology Journal Club
- GMS 6198: Bacterial Pathogenesis Journal Club
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- GMS 6223: Drosophila Neurogenetics: from Development to Function
- GMS 6231: Genomics and Bioinformatics
- GMS 6232: Advanced Applications of Bioinformatics in Genetics
- GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics
- GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens
- GMS 6290: Genetics/Genomics Program Graduate Seminar
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6331: Stem Cell Biology
- GMS 6335: Advanced Stem Cell Biology: Tissue Engineering
- GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine
- GMS 6337: B Cell Development in Health and Disease
- GMS 6381: Special Topics in Pathology
- GMS 6382: Special Topics in Immunology
- GMS 6400C: Principles of Physiology
- GMS 6405: Fundamentals of Endocrine Physiology
- GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology
- GMS 6408: Fundamentals of Renal Physiology
- GMS 6410: Physiology of the Circulation of Blood
- GMS 6411: Fundamentals of Cardiovascular Physiology
- GMS 6412: Human Physiology for Biomedical Engineering
- GMS 6413: Advances in Hypertension Research
- GMS 6414: Advanced Renal Physiology

- GMS 6415: Fundamentals of Gastrointestinal Physiology
- GMS 6416: Human Endocrinology and Anatomy of Reproduction
- GMS 6471: Fundamentals of Physiology and Functional Genomics I
- GMS 6472: Fundamentals of Physiology and Functional Genomics II
- GMS 6473: Fundamentals of Physiology and Functional Genomics III
- GMS 6483: Theories of Aging
- GMS 6485: Population Based Research on Aging
- GMS 6486: Fundamentals of Biological Aging
- GMS 6490C: Research Methods in Physiology
- GMS 6491: Journal Club in Physiology
- GMS 6495: Seminar in Physiology
- GMS 6496: Recent Advances in Physiology
- GMS 6497: Seminar on Vision
- GMS 6506: Biologic Drug Development
- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6609: Advanced Gross Anatomy
- GMS 6621: Vision
- GMS 6622: Mitochondrial Biology in Aging and Disease
- GMS 6635: Organization of Cells and Tissues
- GMS 6642: Morphogenesis: Organ Systems I
- GMS 6643: Morphogenesis: Organ Systems II
- GMS 6644: Apoptosis
- GMS 6690: Molecular Cell Biology Journal Club
- GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes
- GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects
- GMS 6771: Clinical Neuroscience of Aging
- GMS 6876: Law & Ethics of Aging
- GMS 6845: Clinical & Translational Research Practicum
- GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies
- GMS 6895: CTS Journal Club
- GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists
- GMS 6970: Individual Study
- GMS 6383: Current Topics in Immunotherapy
- GMS 6683: Fundamentals of Vascular Physiology and Pathology
- GMS 5604: Medical Human Embryology
- GMS 5605: Medical Anatomy
- GMS 5606L: Medical Anatomy Lab
- GMS 5613: Medical Human Anatomy by Diagnostic Imaging
- GMS 5630: Medical Histology
- GMS 6081: Biological Imaging Techniques
- GMS 6082: Introduction to Functional Magnetic Resonance Imaging
- GMS 6143: Cells of the Innate Immune System
- GMS 6394: Seminar in Mammalian Genetics
- GMS 6403: Advanced Endocrinology
- GMS 6484: Geriatric and Age Related Diseases
- GMS 6500: Introduction to Pharmacology
- GMS 6607C: Musculoskeletal Systems

- GMS 6719: Fundamentals of Computational Neuroscience
- GMS 6780: Addiction: Neuroscience and Trends
- GMS 6786: Medical Writing in Addiction
- GMS 6787: Food Addiction, Overeating and Obesity
- GMS 6800: Fundamentals of Epidemiology
- GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases
- GMS 6810: Intermediate Epidemiology Methods
- GMS 6813: Clinical Trials
- GMS 6814: Molecular and Genetic Epidemiology
- GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1
- GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2
- GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3
- GMS 6855: Medical Writing in Psychiatry
- GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data
- GMS 6873: Introduction to Medical Bioethics
- GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research
- GMS 7887: Health Outcomes & Policy PhD Research Seminar

## Health Outcomes and Policy Department

College of Medicine

*Chair:* Betsy Shenkman

*Graduate Coordinator:* Jill Herndon

*Complete faculty listing by department:* [Follow this link.](#)

Students can pursue either a Master of Science degree or a Graduate Certificate.

There is increasing emphasis on assessing health outcomes throughout the lifespan in a variety of health care and community settings. Nationally, the National Institute of Health and other federal and state agencies focus on the development of evidence-based programs to promote health, improve health care delivery, and enhance health outcomes.

Outcomes research generates evidence that informs health care program design in clinical and community settings, the promotion of effective clinical and community interventions, quality of care, cost-effective and clinically appropriate choices for patients in allocation of health care resources (clinical effectiveness), and incorporation of best practice models into health-related programs and policies. Outcomes research also provides mechanisms to understand how to translate research into practice and policy, how to improve the quality and efficiency of health programs, and how to achieve equitable and appropriate delivery of health programs and clinical care, particularly for underserved and vulnerable populations.

Our graduate programs are designed to train professionals in the health care and health research fields about the science that supports the development and evaluation of evidence-based clinical and community-based programs focused on improving health outcomes. Further, our programs emphasize methods for translating research into practice and policy. The unique combination of courses offered through these graduate programs will give trainees the tools needed to examine health outcomes and policies in a variety of settings across different age spans and to examine the individual, social, health system, and health policy factors that influence health outcomes.

In addition to traditional graduate students, both programs are available to medical students, post-doctoral students, fellows, residents, Ph.D. students, and junior faculty.

## Molecular Genetics and Microbiology Department

*Chair:* H. V. Baker.

*Graduate Coordinator:* A. S. Lewin.

*Complete faculty listing by department:* Follow this link.

The Graduate Faculty of the Department of Molecular Genetics and Microbiology participate in the interdisciplinary program (IDP) in medical sciences, leading to the Doctor of Philosophy degree, with specialization in one of the six advanced concentration areas of the IDP (see *Medical Sciences*). Departmental areas of research associated with the IDP focus on topical problems in molecular genetics, viral genetics, and viral and bacterial pathogenesis. Faculty in the Department of Molecular Genetics and Microbiology also participate in the M.S. programs (see *Medical Sciences*). In addition to courses associated with the IDP, the Department of Molecular Genetics and Microbiology maintains the courses listed below.

**Biotechnology:** This Master of Science program is for students seeking careers in the biomedical industry as research or managerial associates; students seeking careers as teachers or educators at any level, but primarily high school or junior college; or students seeking an in-depth understanding of modern biology and scientific research as an end in itself or in preparation for further graduate study. The foundation of the M.S. program is a basic understanding of molecular and cell biology and the performance of a high-quality research project, culminating in a thesis, under the direction of a skilled mentor, with supervision by a committee composed of members of the Graduate Faculty. Specialization may be in any of the fields of research being pursued at the College of Medicine including but not limited to molecular genetics, gene therapy, bacterial or viral pathogenesis, protein structure, toxicology, mammalian genetics, wound healing, and congenital eye diseases.

For more information contact the Master's Program Coordinator, Molecular Genetics and Microbiology, P.O. Box 100266, College of Medicine, Gainesville, FL 32610, Telephone (352)392-3314.

## College of Nursing

Dean: A.M. McDaniel

Complete faculty listings: Follow this link.

The nationally ranked College of Nursing offers the graduate degrees of Master of Science in Nursing and Doctor of Philosophy in Nursing Sciences. Requirements for these degrees are given in the Graduate Degrees section of this catalog. Students may request special review by the College of Nursing Admissions Committee if they believe they are strong candidates for graduate study but do not fully meet all criteria.

The College also offers the professional degree of Doctor of Nursing Practice. The degree is a practice-focused doctorate designed to prepare expert nurses in specialized advanced practice. The DNP is an advanced educational credential for those who desire advanced practice knowledge but do not need or want a research focus. The focus of DNP program is on innovative and evidence-based practice. The DNP prepares advanced practice nurses with the knowledge, skills and abilities needed in today's and tomorrow's complex health care environment, and to provide advanced practice nurses with educational backgrounds comparable to health care practitioners in other fields. As a professional degree, the rules and regulations as well as the courses for the DNP are not covered under this Catalog; please see the College of Nursing website for more information: <http://admissions.nursing.ufl.edu/degrees/doctor-of-nursing-practice-degree>.

For additional information about the Nursing programs, please see the programs listed below and our website: <http://www.nursing.ufl.edu> or call (352) 273-6331.

College of Nursing Courses

## **Nursing**

### **College**

College of Nursing

### **Nursing Program Information**

The College of Nursing is phasing out the Master of Science in Nursing degree, and is not currently accepting applicants to the program.

For more information about other College of Nursing Graduate degrees, please see our website:  
<http://admissions.nursing.ufl.edu/degrees/graduate>.

### **Degrees**

Master of Science in Nursing

without a concentration

### **College of Nursing Courses**

- NGR 6002C: Advanced Health Assessment
- NGR 6006: Principles of Clinical Outcomes Management
- NGR 6054C: Advanced Neonatal Health Assessment and Diagnostic Reasoning
- NGR 6052C: Adult Nursing: Diagnostics and Procedures
- NGR 6101: Theory and Research for Nursing
- NGR 6140: Physiology and Pathophysiology for Advanced Nursing Practice
- NGR 6172: Pharmacotherapeutics for Advanced Practice Nursing
- NGR 6230C: Acute Care Nurse Practitioner: Diagnostics and Procedures for the Critically Ill
- NGR 6241: Adult Nursing: Common Health Problems
- NGR 6241L: Adult Nurse Practitioner: Common Health Problems Laboratory
- NGR 6243: Acute Care Nurse Practitioner: Critically Ill Adult
- NGR 6243L: Acute Care Nurse Practitioner: Critically Ill Adult Laboratory
- NGR 6244: Adult Nursing: Chronic Health Problems
- NGR 6244L: Adult Nurse Practitioner: Chronic Health Problems Laboratory
- NGR 6247: Complex High Prevalence Illnesses Of Adults
- NGR 6247L: Complex High Prevalence Illnesses Of Adults
- NGR 6248: Adult Acute Care Nurse Practitioner 3
- NGR 6248L: Adult Acute Care Nurse Practitioner 3
- NGR 6255: Advanced Nursing Care of Older Adult
- NGR 6301: Advanced Child Health Nursing I
- NGR 6301L: Advanced Child Health Nursing I
- NGR 6302: Advanced Child Health Nursing II
- NGR 6302L: Advanced Child Health Nursing II
- NGR 6307: Advanced Child Health Nursing III

- NGR 6307L: Advanced Child Health Nursing III
- NGR 6350: Family Nurse Practitioner: Women, Adolescents, And Children
- NGR 6350L: Family Nurse Practitioner: Women, Adolescents, And Children
- NGR 6364: Seminar: The Nurse Midwife
- NGR 6371: Pharmacotherapeutics for Advanced Neonatal Nursing
- NGR 6372C: Advanced Pediatric Procedures and Diagnostics
- NGR 6538: Psychopharmacology for Psychiatric Nursing
- NGR 6612: Family Nurse Practitioner: Complex Family Health Care (Focus On Gerontology)
- NGR 6612L: Family Nurse Practitioner: Complex Family Health Care (Focus On Gerontology)
- NGR 6636: Wellness Promotion and Disease Prevention
- NGR 6726: Management of the Care Environment II
- NGR 6727: Management of the Care Environment I
- NGR 6740: Role Transition: Issues in Advanced Practice Nursing
- NGR 6770: Leadership/Role of Clinical Nurse Leader
- NGR 6771: Clinical Nurse Leader Role Seminar
- NGR 6773: Clinical Nurse Leader Residency/Internship
- NGR 6815: Foundations of Qualitative Research in Nursing
- NGR 6840: Applied Statistical Analysis I
- NGR 6845: Applied Statistical Analysis II
- NGR 6850: Research Methods and Utilization for Nursing
- NGR 6905: Individual Study
- NGR 6941: Practicum in Nursing
- NGR 6930: Special Topics in Nursing
- NGR 6944: Individual Clinical Practice
- NGR 6970: Research for Master's Project
- NGR 6971: Research for Master's Thesis
- NGR 7176: Advanced Topics in Pharmacotherapeutics in Nursing
- NGR 7816: Quantitative Research Design and Measurement in Nursing
- NGR 7003: Advanced Diagnostic Reasoning
- NGR 7115: Philosophy of Nursing Science
- NGR 7124: Theory Development in Nursing
- NGR 7700: Leadership and Role Development in Advanced Nursing Practice
- NGR 7709: Nurse Scientist and Scholar I
- NGR 7814: Field Methods for Health Related Research
- NGR 7827: Outcomes Research and Evaluation
- NGR 7831: Quality Indicators in Nursing Systems
- NGR 7835: Nurse Scientist and Scholar II
- NGR 7871: Nursing Informatics and Data
- NGR 7882: Ethical Theories and Rational Decision Making in Health
- NGR 7891: Health Policy and Finance in Advanced Nursing Practice
- NGR 7940L: Residency in Advanced Nursing Practice
- NGR 7970L: Advanced Nursing Project
- NGR 7979: Advanced Research
- NGR 7980: Research for Doctoral Dissertation

## Nursing Sciences

## College

College of Nursing

### Nursing Sciences Program

*Ph.D. Program Director:* Jennifer Harrison Elder

*Complete faculty listing by department:* Follow this link.

The College of Nursing's Ph.D. program prepares scientists, scholars, advanced practitioners, and leaders in nursing. Comprehensive research and practice preparation is achieved by pairing students with faculty. Students have access to an array of faculty members for interdisciplinary study, clinical practice, and research. Individually directed dissertation research is a major aspect of the Ph.D. program. Research in the College includes aging and health, women's health, bio-behavioral interventions, and health policy.

Progression in the program depends on the student's ability to meet academic standards and clinical competencies as defined by College policy.

To be considered for admission to the Ph.D. program, students must meet the following minimum requirements:

- A BSN or master's degree in nursing from a CCNE/NLN AC accredited program.
- A master's program GPA of 3.5 on a 4.0 scale and a score of 500 or higher on each of the verbal and quantitative sections in the prior version of the Graduate Record Examination (GRE) General Test. In the current version of the GRE a minimum score of 153 in the verbal section and 144 in the quantitative section. OR
- A master's program GPA of 3.2 on a 4.0 scale and a score of 600 or higher on each of the verbal and quantitative sections in the prior version of the Graduate Record Examination General Test. In the current version of the GRE a score a minimum score of 160 in the verbal section and 148 in the quantitative section
- Completion of the GRE Analytic or the Analytical Writing Measure.
- International students or students whose native language is not English are required to pass one of the following tests with a satisfactory score of:
  - Test of English as a Foreign Language (TOEFL):
    - Computer-based: 213
    - Paper-based: 550
    - Web-based: 80
    - iBT Speaking Component: 26
  - International English Language Testing System (IELTS):
    - Overall score: 6.5
    - Speaking Component: 7
  - Michigan English Language Assessment Battery (MELAB):
    - Overall score: 79
  - Successful completion of the University of Florida English Language Institute Program.
- International students or students whose native language is not English with unsatisfactory scores on the TOEFL, and TOEFL iBT Speaking Component, IELTS, or MELAB; unsuccessful completion of the UF English Language Institute Program; or an unacceptable score on the verbal part of the GRE must achieve an acceptable score on an essay administered by the Academic Written English Program at UF.
- Current licensure (or eligibility) as a Registered Nurse in the State of Florida.
- Availability of a primary mentor who is a College of Nursing faculty member with expertise consistent with the students' research focus area.
- Students must be either a U.S. citizen, legal U.S. resident or hold a valid visa.



Please see our website for more information: <http://admissions.nursing.ufl.edu/degrees/phd>.

## Degrees

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

## College of Nursing Courses

- NGR 6002C: Advanced Health Assessment
- NGR 6006: Principles of Clinical Outcomes Management
- NGR 6054C: Advanced Neonatal Health Assessment and Diagnostic Reasoning
- NGR 6052C: Adult Nursing: Diagnostics and Procedures
- NGR 6101: Theory and Research for Nursing
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- NGR 6241L: Adult Nurse Practitioner: Common Health Problems Laboratory
- NGR 6243: Acute Care Nurse Practitioner: Critically Ill Adult
- NGR 6243L: Acute Care Nurse Practitioner: Critically Ill Adult Laboratory
- NGR 6244: Adult Nursing: Chronic Health Problems
- NGR 6244L: Adult Nurse Practitioner: Chronic Health Problems Laboratory
- NGR 6247: Complex High Prevalence Illnesses Of Adults
- NGR 6247L: Complex High Prevalence Illnesses Of Adults
- NGR 6248: Adult Acute Care Nurse Practitioner 3
- NGR 6248L: Adult Acute Care Nurse Practitioner 3
- NGR 6255: Advanced Nursing Care of Older Adult
- NGR 6301: Advanced Child Health Nursing I
- NGR 6301L: Advanced Child Health Nursing I
- NGR 6302: Advanced Child Health Nursing II
- NGR 6302L: Advanced Child Health Nursing II
- NGR 6307: Advanced Child Health Nursing III
- NGR 6307L: Advanced Child Health Nursing III
- NGR 6350: Family Nurse Practitioner: Women, Adolescents, And Children
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- NGR 6364: Seminar: The Nurse Midwife
- NGR 6371: Pharmacotherapeutics for Advanced Neonatal Nursing
- NGR 6372C: Advanced Pediatric Procedures and Diagnostics
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- NGR 6840: Applied Statistical Analysis I
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- NGR 6850: Research Methods and Utilization for Nursing
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- NGR 7003: Advanced Diagnostic Reasoning
- NGR 7115: Philosophy of Nursing Science
- NGR 7124: Theory Development in Nursing
- NGR 7700: Leadership and Role Development in Advanced Nursing Practice
- NGR 7709: Nurse Scientist and Scholar I
- NGR 7814: Field Methods for Health Related Research
- NGR 7827: Outcomes Research and Evaluation
- NGR 7831: Quality Indicators in Nursing Systems
- NGR 7835: Nurse Scientist and Scholar II
- NGR 7871: Nursing Informatics and Data
- NGR 7882: Ethical Theories and Rational Decision Making in Health
- NGR 7891: Health Policy and Finance in Advanced Nursing Practice
- NGR 7940L: Residency in Advanced Nursing Practice
- NGR 7970L: Advanced Nursing Project
- NGR 7979: Advanced Research
- NGR 7980: Research for Doctoral Dissertation

## College of Pharmacy

Dean: J. Johnson

Complete faculty listings: [Follow this link.](#)

The College of Pharmacy offers the Doctor of Philosophy and the Master of Science in Pharmacy degrees in the pharmaceutical sciences, with concentrations in medicinal chemistry, pharmacodynamics, pharmaceutical outcomes and policy, and pharmacy which includes pharmaceuticals. There are additional concentrations in the Master of Science in Pharmacy program in pharmaceutical sciences offered in a distance-learning, nonthesis format: forensic science, forensic drug chemistry, forensic serology and DNA, clinical toxicology, pharmaceutical chemistry, medication therapy management and clinical pharmacy. Complete descriptions of the minimum requirements for the M.S.P. and Ph.D. degrees are provided in the Graduate Degrees section of this catalog.

The Graduate Faculty and courses offered are listed under department headings in this catalog. The courses listed below consist of seminar, supervised teaching and research, and research for thesis or doctoral dissertation. These courses are offered in each of the departments.

Students who wish to pursue graduate studies in the College of Pharmacy must have an undergraduate degree in pharmacy, chemistry, biology, or related sciences.

Satisfactory completion of a thesis or dissertation based on research is a requirement for a graduate degree in the pharmaceutical sciences.

Inquiries regarding applications and general information about the graduate programs are processed through the College of Pharmacy Graduate Programs Office at [graduateprograms@cop.ufl.edu](mailto:graduateprograms@cop.ufl.edu).

For more information, please see the program pages listed below and our website: <http://pharmacy.ufl.edu>.

Departments and Programs within the College of Pharmacy

College of Pharmacy Courses

## Medicinal Chemistry Department

College of Pharmacy

*Chair:* M. O. James.

*Graduate Coordinator:* Hendrik Luesch

*Complete faculty listing by department:* Follow this link.

The mission of the department of Medicinal Chemistry is to conduct basic research in chemistry and biochemistry as it relates to drug discovery, to teach these principles in the professional and graduate programs, and to provide service to the scientific community.

The Department of Medicinal Chemistry is located in the College of Pharmacy, and is an integral part of the University of Florida's Health Science Center. Medicinal Chemistry is a unique blend of the physical and biological sciences. The scope of the field is sufficiently broad to give students with many different science backgrounds a rewarding and challenging program of study. Areas of active interest include drug discovery, organic synthesis of medicinal agents, natural products chemistry, prodrugs, topical drug delivery, peptide chemistry, molecular modeling, drug metabolism and molecular toxicology. The department has excellent facilities for research in the major areas of Medicinal Chemistry and faculty have been highly successful in attracting extramural research support for the past several years. The Department faculty members are involved in teaching, research and service.

Medicinal Chemistry areas of research in drug design, marine natural products and toxicology are a unique blend of the physical and biological sciences. The scope of the field is sufficiently broad to give students with many different science backgrounds a rewarding and challenging program of study. Areas of active interest include drug discovery, organic synthesis of medicinal agents, natural products chemistry, prodrugs, topical drug delivery, peptide chemistry, molecular modeling, drug metabolism and molecular toxicology.

The Department participates in the interdisciplinary concentration in toxicology. For more information, see the *Interdisciplinary Graduate Studies* section of this catalog.

For more information, please visit our website: <http://pharmacy.ufl.edu/mc>.

## Pharmaceutical Sciences (Medicinal Chemistry)

## **College**

College of Pharmacy

## **Department/School**

Medicinal Chemistry Department

## **Medicinal Chemistry Program Information**

The College of Pharmacy offers the Doctor of Philosophy degree in Pharmaceutical Sciences with a concentration in Medicinal Chemistry. Medicinal chemistry is a unique blend of the physical and biological sciences. The scope of the field is sufficiently broad to give students with many different science backgrounds a rewarding and challenging program of study. Areas of active research include organic synthesis of medicinal agents, metal chelate design, prodrugs and topical drug delivery, drug metabolism, molecular toxicology, molecular biology, combinatorial chemistry, neurochemistry, analytical chemistry, molecular modeling, natural products, and drug discovery.

The College also offers the Master of Science in Pharmacy degree in Pharmaceutical Sciences (nonthesis option) with concentrations in both forensic drug chemistry and forensic serology and DNA in a distance learning format. Minimum requirements for the M.S.P. and Ph.D. degrees are described in the Graduate Degrees section of this catalog.

The applicant should have an undergraduate degree in pharmacy, chemistry, biology, or premedical sciences. A background in calculus and physical and organic chemistry is required. In addition to graduate medicinal chemistry courses in the College of Pharmacy, graduate courses in chemistry and biochemistry are required for the program.

For more information, please see our websites: <http://pharmacy.ufl.edu/education/graduate-programs> and <http://pharmacy.ufl.edu/mc>

## **Degrees Offered With a Major in Pharmaceutical Sciences**

Doctor of Philosophy

concentration in Medicinal Chemistry

*optional second concentration in Clinical and Translational Science*

concentration in Toxicology

Master of Science in Pharmacy

concentration in Pharmaceutical Chemistry

concentration in Medicinal Chemistry

concentration in Forensic Serology and DNA

concentration in Forensic Science

concentration in Forensic Drug Chemistry

concentration in Clinical Toxicology

### **Medicinal Chemistry Courses**

- PHA 5475: Synthesis of Prodrugs
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs
- PHA 6354: Natural Medicinal Products
- PHA 6356: Structure Determination of Complex Natural Products
- PHA 6357: Herbal & Dietary Supplements
- PHA 6417: Pharmaceutical Analysis II
- PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity
- PHA 6432: Fundamentals of Pharmaceutical Chemistry
- PHA 6444: Pharmaceutical Chemistry I
- PHA 6447: Drug Design
- PHA 6448: High Throughput Drug Discovery
- PHA 6471: Synthetic Medicinal Chemistry
- PHA 6534: Toxicology of Chemical Weapons
- PHA 6535: Principles of Nucleotide Activity
- PHA 6543: Pharmaceutical Chemistry II
- PHA 6556: Introduction to Clinical Toxicology
- PHA 6557: Clinical Toxicology 1
- PHA 6840: Medicinal Chemistry of Drugs of Abuse
- PHA 6850: Principles of Forensic Science
- PHA 6851: Forensic Analysis of DNA
- PHA 6853: Biological Evidence and Serology
- PHA 6854: Forensic Immunology
- PHA 6855: Forensic Genetics
- PHA 6856: Blood Spatter and Distribution
- PHA 6905C: Research Procedures in Medicinal Chemistry
- PHA 6934: Seminar in Medicinal Chemistry
- PHA 6852: Mammalian Molecular Biology
- VME 6602: General Toxicology
- VME 6605: Toxic Substances
- VME 6613: Forensic Toxicology I
- VME 6614: Forensic Toxicology II
- VME 6650: Principles of Mammalian Pharmacology
- VME 6766: Laboratory Quality Assurance/Quality Control

### **Pharmaceutical Outcomes and Policy Courses**

- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6227: Institutional Pharmacy Leadership I
- PHA 6228: Institutional Pharmacy Leadership II
- PHA 6235: Advanced Pharmaceutical Law

- PHA 6236: Health Sciences Liability Law
- PHA 6250: Patient Responsibility in Health Care
- PHA 6264: Pharmacoeconomics and Health Technology Assessment
- PHA 6265: Introduction to Pharmaceutical Outcomes and Policy I
- PHA 6266: Introduction to Pharmaceutical Outcomes and Policy II
- PHA 6268: Pharmacoepidemiology and Patient Safety
- PHA 6269: Pharmaceutical Products and Public Policy
- PHA 6273: Structure, Process, and Outcomes of Regulation
- PHA 6274: Federal Regulations of Drugs and Pharmacy
- PHA 6275: Federal Regulations of Controlled Substances
- PHA 6276: Regulating Pharmaceutical Access and Costs
- PHA 6277: Ethics in Drug Development Production and Use
- PHA 6278: State Regulation of Drugs and Pharmacy
- PHA 6279: Pharmaceutical Outcomes and Policy Seminar
- PHA 6280: Medicare and Medicaid
- PHA 6281: Practices and Procedures of Administrative Agencies
- PHA 6286: Pharmaceutical Microeconomics
- PHA 6287: Pharmaceutical Health Economics
- PHA 6288: Critical Review of Research Methods
- PHA 6289: Regulating Clinical Research
- PHA 6290: Pharmaceutical Fraud and Abuse
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6717: Measurement in Pharmacy Administration Research
- PHA 6793: Evidentiary Basis of Pharmaceutical Use
- PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research
- PHA 6798: The Use and Abuse of Statistics in Drug Regulation
- PHA 6799: Patient Safety Program Evaluation
- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy
- PHA 6860: Prevention of Pharmaceutical Crimes
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB
- PHA 6893: Research Ethics
- PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology
- PHA 6937: Topics in Pharmaceutical Administration
- PHA 6206: Introduction to Pharmaceutical Microeconomics
- PHA 6282: Pharmaceutical Policy Process
- PHA 6283: Commercial Applications of Pharmacoeconomics

## **Pharmaceutics Departmental Courses**

- PHA 6116: In Vivo and In Vitro Stability of Drugs
- PHA 6118: Molecular Diversity
- PHA 6125: Pharmacokinetics and Biopharmaceutics
- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
- PHA 6185: Pharmaceutical Drug Development
- PHA 6416: Pharmaceutical Analysis I
- PHA 6427: Pharmacogenetics of Drug Metabolism

- PHA 6440: Seminar in Drug Discovery
- PHA 6449: Pharmacogenomics
- PHA 6630: Medication Therapy Management: A Hematologic Focus
- PHA 6631: Foundations of Medication Therapy Management I
- PHA 6632: Foundations of Medication Therapy Management II
- PHA 6633: Medication Therapy Management: A Cardiovascular Focus
- PHA 6634: Medication Therapy Management: An Endocrine Focus
- PHA 6635: Medication Therapy Management: A Renal Focus
- PHA 6636: Medication Therapy Management: A Gastrointestinal Focus
- PHA 6637: Medication Therapy Management: A Psychiatric Focus
- PHA 6638: Medication Therapy Management: A Neurologic Focus
- PHA 6639: Medication Therapy Management: A Respiratory Focus
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation

### **Pharmacodynamics Courses**

- PHA 5531: Neurotoxicology
- PHA 6508: Systems Physiology and Pathophysiology I
- PHA 6509: Systems Physiology and Pathophysiology II
- PHA 6512L: Experiential Research Training in Pharmacodynamics
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6522L: ICBR Molecular Techniques Laboratory
- PHA 6540: Neurochemical Foundation of Pharmacodynamics
- PHA 7939: Journal Colloquy in Pharmacodynamics

### **Pharmacology Courses**

- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

### **College of Pharmacy Courses**

- PHA 5171: Pharmaceutical Biotechnology
- PHA 6131: Pharmacometrics and Systems Pharmacology
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6806: Pharmacoeconomic Modeling
- PHA 6910: Supervised Research
- PHA 6935: Selected Topics in Pharmacy
- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis

- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

## Pharmaceutics Department

College of Pharmacy

*Chair:* H. C. Derendorf

*Graduate Coordinator:* S. Song

*Complete faculty listing by department:* Follow this link.

The focus of the Department of Pharmaceutics, which houses the Center for Drug Discovery, differs sufficiently from that of other College of Pharmacy departments as to justify a specialization. The uniqueness of the department is evident in present research activities which encompass basic, applied and clinical investigations in the areas of Biopharmaceutics and Pharmacokinetics, Pharmaceutical Biotechnology, Pharmaceutical Analysis, Drug Delivery, and Drug Discovery.

In addition to teaching, faculty members in the Department of Pharmaceutics are involved in collaborative research projects with clinical and other basic scientists within the Health Center or on campus. Many maintain collaborative ties with scientists in other universities and the pharmaceutical industry worldwide.

Currently, the Department of Pharmaceutics offers a Ph.D. in Pharmaceutical Sciences with a concentration in Pharmacy. A foundation in physical chemistry, chemistry, mathematics, and in the life sciences is required for applicants to be successful in the program. Many graduates of the Ph.D. program have built international careers in drug discovery and in the pharmaceutical industry. *Please note that all students enter directly into the Ph.D. program as the department does not accept student applications for an M.S. degree.*

The Department of Pharmaceutics is located in the University of Florida J. Hillis Miller Health Science Center complex, which includes colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health and Health Professions, and Veterinary Medicine. The UF&Shands system also encompasses six research institutes: the Clinical and Translational Science Institute, the McKnight Brain Institute, the Genetics Institute, the UF&Shands Cancer Center, the Institute on Aging and the Emerging Pathogens Institute. The location of the College of Pharmacy in this complex offers a broad variety of opportunities for learning and research collaboration.

For more information, please visit our website: <http://pharmacy.ufl.edu/pc>.

## Pharmaceutical Sciences (Pharmaceutics)

### College

College of Pharmacy

### Department/School

Pharmaceutics Department

## Pharmaceutical Sciences (Pharmaceutics) Program Information



The College of Pharmacy offers the Doctor of Philosophy degree in Pharmaceutical Sciences with / without a concentration in Pharmacy, and the Master of Science in Pharmacy (M.S.P) in Pharmaceutical Sciences with / without a concentration in Pharmacy. The minimum requirements for these degrees are listed in the Graduate Degrees section of this Catalog.

Pharmaceutics is the scientific endeavor concerned with the design, formulation, evaluation, and use of drug delivery systems. Its domain extends from studies of the physiochemical properties of drugs and related molecules to investigations of the mechanisms of physiological processes affecting drug delivery and therapeutic effectiveness.

The Department's general focus involves studying the design and evaluation of traditional and novel dosage forms for delivering drug molecules and macromolecules. The design involves physical chemical studies and development of analytical techniques involving spectroscopy and chromatography. Evaluation includes development of sensitive analytical techniques for the drug in biological fluids and subsequent biopharmaceutical and clinical pharmacokinetic studies.

Applicants are required to have a foundation in physical chemistry, chemistry, mathematics, and in the life sciences. *Please note that all students enter directly into the Ph.D. program as the department does not accept student applications for an M.S. degree.*

For more information, please see our websites: <http://pharmacy.ufl.edu/pc/education/phd> and <http://pharmacy.ufl.edu/pc>.

## **Degrees Offered With a Major in Pharmaceutical Sciences**

### **Doctor of Philosophy**

without a concentration

concentration in Clinical and Translational Science

concentration in Pharmacy

*optional second concentration in Clinical and Translational Science*

### **Master of Science in Pharmacy**

without a concentration

concentration in Pharmacy

## **Pharmaceutics Departmental Courses**

- PHA 6116: In Vivo and In Vitro Stability of Drugs
- PHA 6118: Molecular Diversity
- PHA 6125: Pharmacokinetics and Biopharmaceutics
- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
- PHA 6185: Pharmaceutical Drug Development
- PHA 6416: Pharmaceutical Analysis I
- PHA 6427: Pharmacogenetics of Drug Metabolism

- PHA 6440: Seminar in Drug Discovery
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- PHA 6633: Medication Therapy Management: A Cardiovascular Focus
- PHA 6634: Medication Therapy Management: An Endocrine Focus
- PHA 6635: Medication Therapy Management: A Renal Focus
- PHA 6636: Medication Therapy Management: A Gastrointestinal Focus
- PHA 6637: Medication Therapy Management: A Psychiatric Focus
- PHA 6638: Medication Therapy Management: A Neurologic Focus
- PHA 6639: Medication Therapy Management: A Respiratory Focus
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation

## **Medicinal Chemistry Courses**

- PHA 5475: Synthesis of Prodrugs
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs
- PHA 6354: Natural Medicinal Products
- PHA 6356: Structure Determination of Complex Natural Products
- PHA 6357: Herbal & Dietary Supplements
- PHA 6417: Pharmaceutical Analysis II
- PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity
- PHA 6432: Fundamentals of Pharmaceutical Chemistry
- PHA 6444: Pharmaceutical Chemistry I
- PHA 6447: Drug Design
- PHA 6448: High Throughput Drug Discovery
- PHA 6471: Synthetic Medicinal Chemistry
- PHA 6534: Toxicology of Chemical Weapons
- PHA 6535: Principles of Nucleotide Activity
- PHA 6543: Pharmaceutical Chemistry II
- PHA 6556: Introduction to Clinical Toxicology
- PHA 6557: Clinical Toxicology 1
- PHA 6840: Medicinal Chemistry of Drugs of Abuse
- PHA 6850: Principles of Forensic Science
- PHA 6851: Forensic Analysis of DNA
- PHA 6853: Biological Evidence and Serology
- PHA 6854: Forensic Immunology
- PHA 6855: Forensic Genetics
- PHA 6856: Blood Spatter and Distribution
- PHA 6905C: Research Procedures in Medicinal Chemistry
- PHA 6934: Seminar in Medicinal Chemistry
- PHA 6852: Mammalian Molecular Biology
- VME 6602: General Toxicology
- VME 6605: Toxic Substances
- VME 6613: Forensic Toxicology I
- VME 6614: Forensic Toxicology II

- VME 6650: Principles of Mammalian Pharmacology
- VME 6766: Laboratory Quality Assurance/Quality Control

## **Pharmaceutical Outcomes and Policy Courses**

- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6227: Institutional Pharmacy Leadership I
- PHA 6228: Institutional Pharmacy Leadership II
- PHA 6235: Advanced Pharmaceutical Law
- PHA 6236: Health Sciences Liability Law
- PHA 6250: Patient Responsibility in Health Care
- PHA 6264: Pharmacoeconomics and Health Technology Assessment
- PHA 6265: Introduction to Pharmaceutical Outcomes and Policy I
- PHA 6266: Introduction to Pharmaceutical Outcomes and Policy II
- PHA 6268: Pharmacoepidemiology and Patient Safety
- PHA 6269: Pharmaceutical Products and Public Policy
- PHA 6273: Structure, Process, and Outcomes of Regulation
- PHA 6274: Federal Regulations of Drugs and Pharmacy
- PHA 6275: Federal Regulations of Controlled Substances
- PHA 6276: Regulating Pharmaceutical Access and Costs
- PHA 6277: Ethics in Drug Development Production and Use
- PHA 6278: State Regulation of Drugs and Pharmacy
- PHA 6279: Pharmaceutical Outcomes and Policy Seminar
- PHA 6280: Medicare and Medicaid
- PHA 6281: Practices and Procedures of Administrative Agencies
- PHA 6286: Pharmaceutical Microeconomics
- PHA 6287: Pharmaceutical Health Economics
- PHA 6288: Critical Review of Research Methods
- PHA 6289: Regulating Clinical Research
- PHA 6290: Pharmaceutical Fraud and Abuse
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6717: Measurement in Pharmacy Administration Research
- PHA 6793: Evidentiary Basis of Pharmaceutical Use
- PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research
- PHA 6798: The Use and Abuse of Statistics in Drug Regulation
- PHA 6799: Patient Safety Program Evaluation
- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy
- PHA 6860: Prevention of Pharmaceutical Crimes
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB
- PHA 6893: Research Ethics
- PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology
- PHA 6937: Topics in Pharmaceutical Administration
- PHA 6206: Introduction to Pharmaceutical Microeconomics
- PHA 6282: Pharmaceutical Policy Process
- PHA 6283: Commercial Applications of Pharmacoeconomics

## Pharmacodynamics Courses

- PHA 5531: Neurotoxicology
- PHA 6508: Systems Physiology and Pathophysiology I
- PHA 6509: Systems Physiology and Pathophysiology II
- PHA 6512L: Experiential Research Training in Pharmacodynamics
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6522L: ICBR Molecular Techniques Laboratory
- PHA 6540: Neurochemical Foundation of Pharmacodynamics
- PHA 7939: Journal Colloquy in Pharmacodynamics

## Pharmacology Courses

- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

## College of Pharmacy Courses

- PHA 5171: Pharmaceutical Biotechnology
- PHA 6131: Pharmacometrics and Systems Pharmacology
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6806: Pharmacoeconomic Modeling
- PHA 6910: Supervised Research
- PHA 6935: Selected Topics in Pharmacy
- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis
- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

## Pharmacodynamics Department

*Chair:* M. Keller-Wood.

*Graduate Coordinator:* C. Frazier

*Complete faculty listing by department:* [Follow this link.](#)

The Department of Pharmacodynamics offers a Doctor of Philosophy degree in Pharmaceutical Sciences with a concentration in Pharmacodynamics, and the Master of Science in Pharmacy (M.S.P) in Pharmaceutical Sciences with a concentration in Pharmacodynamics. The minimum requirements for these degrees are listed in the Graduate Degrees section of this Catalog. The department also participates in the Interdisciplinary Toxicology concentration.

*Please note that all students enter directly into the Ph.D. program as the department does not accept student applications for an M.S. degree.*

Pharmacodynamics is an integrated field of study involving pharmacology, physiology, and toxicology in a holistic approach to drug action in living systems. The Department of Pharmacodynamics focuses on neuroendocrinology, cardiovascular pharmacology, and neuropharmacology with diverse research interests in aging, hypertension, reproduction, glaucoma, neurotoxicity, and environmental physiology. Students graduating with a Ph.D. in Pharmacodynamics can compete for jobs in the areas of academia, industry, research institutes, and government laboratories/regulatory agencies.

An undergraduate degree in pharmacy, chemistry, biology, or related sciences is required for students to be successful in the program. In addition to graduate courses in pharmacy, courses are taken in the College of Medicine and in statistics in the College of Liberal Arts and Sciences.

The Department of Pharmacodynamics is located in the University of Florida J. Hillis Miller Health Science Center complex, which includes colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health and Health Professions, and Veterinary Medicine. The UF&Shands system also encompasses six research institutes: the Clinical and Translational Science Institute, the McKnight Brain Institute, the Genetics Institute, the UF&Shands Cancer Center, the Institute on Aging and the Emerging Pathogens Institute. The location of the College of Pharmacy in this complex offers a broad variety of opportunities for learning and research collaboration.

For more information, please see the program page below and visit our website: <http://pharmacy.ufl.edu/pd>.

## **Pharmaceutical Sciences (Pharmacodynamics)**

### **College**

College of Pharmacy

### **Department/School**

Pharmacodynamics Department

## **Pharmaceutical Sciences (Pharmacodynamics) Program Information**

The College of Pharmacy offers the Doctor of Philosophy in Pharmaceutical Sciences with a concentration in Pharmacodynamics, and the Master of Science in Pharmacy (M.S.P) in Pharmaceutical Sciences with a concentration in Pharmacodynamics. The minimum requirements for these degrees are listed in the Graduate Degrees section of this Catalog. The department also participates in the Interdisciplinary Toxicology concentration.

Pharmacodynamics is an integrated field of study involving pharmacology, physiology, and toxicology in a holistic approach to drug action in living systems. The department focuses on neuroendocrinology, cardiovascular pharmacology, and neuropharmacology with diverse research interests in aging, hypertension, reproduction, glaucoma, neurotoxicity, and environmental physiology.

The program is designed for students committed to pursuing a career in the basic and health related sciences. In addition to graduate courses in pharmacy, courses are taken in the College of Medicine and in statistics in the College of Liberal Arts and Sciences. *Please note that all students enter directly into the Ph.D. program, as the department does not accept students who wish to receive only the M.S. degree.* An undergraduate degree in pharmacy, chemistry, biology, or related sciences is required of applicants.

For more information, please visit our websites: <http://pharmacy.ufl.edu/pd/education/phd/prospective-students-3> and <http://pharmacy.ufl.edu/pd>.

## **Degrees Offered With a Major in Pharmaceutical Sciences**

### **Doctor of Philosophy**

concentration in Pharmacodynamics

optional second concentration in Clinical and Translational Science

### **Master of Science in Pharmacy**

concentration in Pharmacodynamics

## **Pharmacodynamics Courses**

- PHA 5531: Neurotoxicology
- PHA 6508: Systems Physiology and Pathophysiology I
- PHA 6509: Systems Physiology and Pathophysiology II
- PHA 6512L: Experiential Research Training in Pharmacodynamics
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6522L: ICBR Molecular Techniques Laboratory
- PHA 6540: Neurochemical Foundation of Pharmacodynamics
- PHA 7939: Journal Colloquy in Pharmacodynamics

## **Medicinal Chemistry Courses**

- PHA 5475: Synthesis of Prodrugs
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs
- PHA 6354: Natural Medicinal Products
- PHA 6356: Structure Determination of Complex Natural Products
- PHA 6357: Herbal & Dietary Supplements
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- PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity
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- PHA 6448: High Throughput Drug Discovery
- PHA 6471: Synthetic Medicinal Chemistry
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- PHA 6543: Pharmaceutical Chemistry II
- PHA 6556: Introduction to Clinical Toxicology
- PHA 6557: Clinical Toxicology 1
- PHA 6840: Medicinal Chemistry of Drugs of Abuse
- PHA 6850: Principles of Forensic Science
- PHA 6851: Forensic Analysis of DNA

- PHA 6853: Biological Evidence and Serology
- PHA 6854: Forensic Immunology
- PHA 6855: Forensic Genetics
- PHA 6856: Blood Spatter and Distribution
- PHA 6905C: Research Procedures in Medicinal Chemistry
- PHA 6934: Seminar in Medicinal Chemistry
- PHA 6852: Mammalian Molecular Biology
- VME 6602: General Toxicology
- VME 6605: Toxic Substances
- VME 6613: Forensic Toxicology I
- VME 6614: Forensic Toxicology II
- VME 6650: Principles of Mammalian Pharmacology
- VME 6766: Laboratory Quality Assurance/Quality Control

## **Pharmaceutical Outcomes and Policy Courses**

- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6227: Institutional Pharmacy Leadership I
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- PHA 6235: Advanced Pharmaceutical Law
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- PHA 6250: Patient Responsibility in Health Care
- PHA 6264: Pharmacoeconomics and Health Technology Assessment
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- PHA 6277: Ethics in Drug Development Production and Use
- PHA 6278: State Regulation of Drugs and Pharmacy
- PHA 6279: Pharmaceutical Outcomes and Policy Seminar
- PHA 6280: Medicare and Medicaid
- PHA 6281: Practices and Procedures of Administrative Agencies
- PHA 6286: Pharmaceutical Microeconomics
- PHA 6287: Pharmaceutical Health Economics
- PHA 6288: Critical Review of Research Methods
- PHA 6289: Regulating Clinical Research
- PHA 6290: Pharmaceutical Fraud and Abuse
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6717: Measurement in Pharmacy Administration Research
- PHA 6793: Evidentiary Basis of Pharmaceutical Use
- PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research
- PHA 6798: The Use and Abuse of Statistics in Drug Regulation

- PHA 6799: Patient Safety Program Evaluation
- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy
- PHA 6860: Prevention of Pharmaceutical Crimes
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB
- PHA 6893: Research Ethics
- PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology
- PHA 6937: Topics in Pharmaceutical Administration
- PHA 6206: Introduction to Pharmaceutical Microeconomics
- PHA 6282: Pharmaceutical Policy Process
- PHA 6283: Commercial Applications of Pharmacoeconomics

### **Pharmaceutics Departmental Courses**

- PHA 6116: In Vivo and In Vitro Stability of Drugs
- PHA 6118: Molecular Diversity
- PHA 6125: Pharmacokinetics and Biopharmaceutics
- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
- PHA 6185: Pharmaceutical Drug Development
- PHA 6416: Pharmaceutical Analysis I
- PHA 6427: Pharmacogenetics of Drug Metabolism
- PHA 6440: Seminar in Drug Discovery
- PHA 6449: Pharmacogenomics
- PHA 6630: Medication Therapy Management: A Hematologic Focus
- PHA 6631: Foundations of Medication Therapy Management I
- PHA 6632: Foundations of Medication Therapy Management II
- PHA 6633: Medication Therapy Management: A Cardiovascular Focus
- PHA 6634: Medication Therapy Management: An Endocrine Focus
- PHA 6635: Medication Therapy Management: A Renal Focus
- PHA 6636: Medication Therapy Management: A Gastrointestinal Focus
- PHA 6637: Medication Therapy Management: A Psychiatric Focus
- PHA 6638: Medication Therapy Management: A Neurologic Focus
- PHA 6639: Medication Therapy Management: A Respiratory Focus
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation

### **Pharmacology Courses**

- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

### **College of Pharmacy Courses**



- PHA 5171: Pharmaceutical Biotechnology
- PHA 6131: Pharmacometrics and Systems Pharmacology
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6806: Pharmacoeconomic Modeling
- PHA 6910: Supervised Research
- PHA 6935: Selected Topics in Pharmacy
- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis
- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

## Pharmaceutical Outcomes and Policy Department

*Interim Chair:* A. Winterstein

*Interim Graduate Coordinator:* R. Segal

*Complete faculty listing by department:* Follow this link.

Integral to the University of Florida's Health Science Center, the Department of Pharmaceutical Outcomes and Policy offers a unique blend of research and training in patient safety, pharmacoepidemiology, pharmacoeconomics, and social-behavioral issues surrounding medication use.

Pharmaceutical Outcomes and Policy offers a broad spectrum of opportunities for training, including a residential PhD and a residential MS program, for students in the health and related sciences. Students can choose between several specialty areas and have the opportunity to immerse themselves in research early in their training with ongoing faculty research programs.

The Ph.D. degree provides individuals with the credentials to develop and direct clinical research units in universities, pharmaceutical companies and contract research organizations, and government organizations. Successful graduates have a range of technical and disciplinary competencies in research design, measurement, inferential statistics, the communication and evaluation of research, research ethics, healthcare delivery and the medication use system, the drug product, and behavioral and policy issues surrounding medication use. Those successful graduates of the residential MS degree who have a desire to continue their studies can apply for the Ph.D. program, with MS course work and other scholastic requirements applicable.

The Department has excellent facilities for quantitative and qualitative research, and faculty have been highly successful in attracting extramural research support. Qualitative research infrastructure includes conference facilities with state-of-the art equipment for focus groups or patient interviews. Quantitative research facilities include computer labs for students, a department-owned secure research server that houses various population-based datasets, and a variety of software packages.

For more information, please see the program page below and visit our website: <http://pop.pharmacy.ufl.edu>.

## Pharmaceutical Sciences (Pharmaceutical Outcomes and Policy)

### College

College of Pharmacy

## **Department/School**

Pharmaceutical Outcomes and Policy Department

## **Pharmaceutical Sciences (Pharmaceutical Outcomes and Policy) Program Information**

The College of Pharmacy offers the Master of Science in Pharmacy and Doctor of Philosophy degrees in Pharmaceutical Sciences with a concentration in Pharmaceutical Outcomes and Policy, and an additional concentration in Medication Therapy Management in the M.S.P. Minimum requirements for these degrees are provided in the *Graduate Degrees* section of this catalog.

Research in the department emphasizes the epidemiological, socio-behavioral, administrative, regulatory, and economic aspects of drug therapy and pharmaceutical services, including assessment of safety, effectiveness, efficiency and quality aspects of patient-oriented pharmaceutical services and medication use.

The department offers both a research-oriented residential M.S.P. and Ph.D. degree programs as well as an online M.S.P. program. For the research oriented degree programs, graduate studies include core curricula and four specializations in patient safety and program evaluation, pharmacoeconomics, pharmacoepidemiology and social-behavioral research in medication use. Electives and required courses draw from the resources of the entire University. Graduates are prepared for leadership positions in academia, public service, pharmaceutical industry, and health service industry with a focus on the evaluation of drugs and related services.

The online non-thesis M.S.P. program is designed for working professionals, and focuses on pharmaceutical regulation and outcomes. Prior pharmacy experience/knowledge is not required and the program is available to persons located in the United States only. Coursework is delivered in both asynchronous and live, synchronous sessions. Students may choose among six specialty tracks including Pharmacy Regulation & Policy, Applied Pharmacoeconomics, Drug Regulatory Affairs, Clinical Research Regulation in Pharmacy, Patient Safety & Medication Risk Management, and Institutional Pharmacy Leadership.

For more information, please visit our websites: <http://pop.pharmacy.ufl.edu/education/prospective-students> and <http://pop.pharmacy.ufl.edu>.

## **Degrees Offered With a Major in Pharmaceutical Sciences**

Doctor of Philosophy

concentration in Pharmaceutical Outcomes and Policy

*optional second concentration in Clinical and Translational Science*

Master of Science in Pharmacy

concentration in Medication Therapy Management

concentration in Pharmaceutical Outcomes and Policy

## **Pharmaceutical Outcomes and Policy Courses**

- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6227: Institutional Pharmacy Leadership I
- PHA 6228: Institutional Pharmacy Leadership II
- PHA 6235: Advanced Pharmaceutical Law
- PHA 6236: Health Sciences Liability Law
- PHA 6250: Patient Responsibility in Health Care
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- PHA 6268: Pharmacoepidemiology and Patient Safety
- PHA 6269: Pharmaceutical Products and Public Policy
- PHA 6273: Structure, Process, and Outcomes of Regulation
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- PHA 6276: Regulating Pharmaceutical Access and Costs
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- PHA 6288: Critical Review of Research Methods
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- PHA 6290: Pharmaceutical Fraud and Abuse
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6717: Measurement in Pharmacy Administration Research
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- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy
- PHA 6860: Prevention of Pharmaceutical Crimes
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB
- PHA 6893: Research Ethics
- PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology
- PHA 6937: Topics in Pharmaceutical Administration
- PHA 6206: Introduction to Pharmaceutical Microeconomics
- PHA 6282: Pharmaceutical Policy Process
- PHA 6283: Commercial Applications of Pharmacoeconomics

## **Medicinal Chemistry Courses**

- PHA 5475: Synthesis of Prodrugs
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs

- PHA 6354: Natural Medicinal Products
- PHA 6356: Structure Determination of Complex Natural Products
- PHA 6357: Herbal & Dietary Supplements
- PHA 6417: Pharmaceutical Analysis II
- PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity
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- PHA 6444: Pharmaceutical Chemistry I
- PHA 6447: Drug Design
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- PHA 6471: Synthetic Medicinal Chemistry
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- PHA 6556: Introduction to Clinical Toxicology
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- PHA 6850: Principles of Forensic Science
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- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
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- PHA 6638: Medication Therapy Management: A Neurologic Focus
- PHA 6639: Medication Therapy Management: A Respiratory Focus
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation

### **Pharmacodynamics Courses**

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- PHA 6522L: ICBR Molecular Techniques Laboratory
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- PHA 7939: Journal Colloquy in Pharmacodynamics

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- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

### **College of Pharmacy Courses**

- PHA 5171: Pharmaceutical Biotechnology
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- PHA 6910: Supervised Research
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- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis
- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

### **Pharmacotherapy and Translational Research Department**

College of Pharmacy

*Chair:* R. Frye

*Graduate Coordinator:* J. Lamba

*Complete faculty listing by department:* Follow this link.

The Department of Pharmacotherapy and Translational Research provides classroom and clinical instruction for pharmacy students and trains graduate students in clinical translational research. The department is proud of its national reputation as a leader in the areas of pharmacy practice, education and clinical translational research. Faculty members in the department are successful in obtaining research funding from numerous sources, including the National Institutes of Health.

The Department of Pharmacotherapy and Translational Research offers a variety of excellent clinical residencies and research fellowships, and offers a PhD program in Clinical Pharmaceutical Science. The goal of the Clinical Pharmaceutical Sciences training program is to prepare motivated individuals to pursue independent research careers in academia, industry, or government. The current research focus of the program is on understanding genetic and non-genetic factors that contribute to variability in drug response.

The Department of Pharmacotherapy and Translational Research is located in the University of Florida J. Hillis Miller Health Science Center complex, which includes colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health and Health Professions, and Veterinary Medicine. The UF&Shands system also encompasses six research institutes: the Clinical and Translational Science Institute, the McKnight Brain Institute, the Genetics Institute, the UF&Shands Cancer Center, the Institute on Aging and the Emerging Pathogens Institute. The location of the College of Pharmacy in this complex offers a broad variety of opportunities for learning and research collaboration.

For more information, please see the program page below and visit our website: <http://ptr.pharmacy.ufl.edu>.

## **Pharmaceutical Sciences (Pharmacotherapy and Translational Research)**

### **College**

College of Pharmacy

### **Department/School**

Pharmacotherapy and Translational Research Department

### **Pharmaceutical Sciences (Pharmacotherapy and Translational Research) Program Information**

The College of Pharmacy offers the Doctor of Philosophy degree in Pharmaceutical Sciences with a concentration in Clinical Pharmaceutical Sciences and the Master of Science in Pharmacy (M.S.P.) in Pharmaceutical Sciences with a concentration in Clinical Pharmacy. The minimum requirements for these degrees are listed in the Graduate Degrees section of this Catalog.

The Clinical Pharmaceutical Sciences training program is a collaborative effort between the Departments of Pharmacotherapy and Translational Research and Pharmaceutics with the goal of preparing motivated individuals to pursue independent research careers in academia, industry, or government. The current research focus of the program is on understanding genetic and non-genetic factors that contribute to variability in drug response.

Students in the program conduct hypothesis-driven clinical research that includes a strong laboratory component. Excellent research facilities are available including state-of-the art bioanalytical and pharmacogenomics laboratories, and an NIH-funded Clinical Translational Science Institute (CTSI) and Clinical Research Center (UF CRC) for clinical study conduction. Upon completion of the core/elective curriculum and dissertation, the Doctor of Philosophy (Ph.D.) Degree is awarded.

Graduate students in the Clinical Pharmaceutical Sciences program are expected to actively participate in clinical practice experiences and are required to spend 200 hours (minimum) to 600 hours (recommended) in a clinical practice setting. These experiences strengthen clinical background and foster development of the student as a translational research scientist. Preference will be given to candidates who have earned a PharmD degree from an accredited school of pharmacy.

For more information, please see our websites: <http://ptr.pharmacy.ufl.edu/education/clinical-pharmaceutical-sciences> and <http://ptr.pharmacy.ufl.edu>.

## **Degrees Offered With a Major in Pharmaceutical Sciences**

Doctor of Philosophy

concentration in Clinical Pharmaceutical Sciences

Master of Science in Pharmacy

concentration in Clinical Pharmacy

## **Medicinal Chemistry Courses**

- PHA 5475: Synthesis of Prodrugs
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs
- PHA 6354: Natural Medicinal Products
- PHA 6356: Structure Determination of Complex Natural Products
- PHA 6357: Herbal & Dietary Supplements
- PHA 6417: Pharmaceutical Analysis II
- PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity
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- PHA 6543: Pharmaceutical Chemistry II
- PHA 6556: Introduction to Clinical Toxicology
- PHA 6557: Clinical Toxicology 1
- PHA 6840: Medicinal Chemistry of Drugs of Abuse
- PHA 6850: Principles of Forensic Science
- PHA 6851: Forensic Analysis of DNA
- PHA 6853: Biological Evidence and Serology
- PHA 6854: Forensic Immunology

- PHA 6855: Forensic Genetics
- PHA 6856: Blood Spatter and Distribution
- PHA 6905C: Research Procedures in Medicinal Chemistry
- PHA 6934: Seminar in Medicinal Chemistry
- PHA 6852: Mammalian Molecular Biology
- VME 6602: General Toxicology
- VME 6605: Toxic Substances
- VME 6613: Forensic Toxicology I
- VME 6614: Forensic Toxicology II
- VME 6650: Principles of Mammalian Pharmacology
- VME 6766: Laboratory Quality Assurance/Quality Control

## **Pharmaceutical Outcomes and Policy Courses**

- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6227: Institutional Pharmacy Leadership I
- PHA 6228: Institutional Pharmacy Leadership II
- PHA 6235: Advanced Pharmaceutical Law
- PHA 6236: Health Sciences Liability Law
- PHA 6250: Patient Responsibility in Health Care
- PHA 6264: Pharmacoeconomics and Health Technology Assessment
- PHA 6265: Introduction to Pharmaceutical Outcomes and Policy I
- PHA 6266: Introduction to Pharmaceutical Outcomes and Policy II
- PHA 6268: Pharmacoepidemiology and Patient Safety
- PHA 6269: Pharmaceutical Products and Public Policy
- PHA 6273: Structure, Process, and Outcomes of Regulation
- PHA 6274: Federal Regulations of Drugs and Pharmacy
- PHA 6275: Federal Regulations of Controlled Substances
- PHA 6276: Regulating Pharmaceutical Access and Costs
- PHA 6277: Ethics in Drug Development Production and Use
- PHA 6278: State Regulation of Drugs and Pharmacy
- PHA 6279: Pharmaceutical Outcomes and Policy Seminar
- PHA 6280: Medicare and Medicaid
- PHA 6281: Practices and Procedures of Administrative Agencies
- PHA 6286: Pharmaceutical Microeconomics
- PHA 6287: Pharmaceutical Health Economics
- PHA 6288: Critical Review of Research Methods
- PHA 6289: Regulating Clinical Research
- PHA 6290: Pharmaceutical Fraud and Abuse
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6717: Measurement in Pharmacy Administration Research
- PHA 6793: Evidentiary Basis of Pharmaceutical Use
- PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research
- PHA 6798: The Use and Abuse of Statistics in Drug Regulation
- PHA 6799: Patient Safety Program Evaluation
- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy



- PHA 6860: Prevention of Pharmaceutical Crimes
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB
- PHA 6893: Research Ethics
- PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology
- PHA 6937: Topics in Pharmaceutical Administration
- PHA 6206: Introduction to Pharmaceutical Microeconomics
- PHA 6282: Pharmaceutical Policy Process
- PHA 6283: Commercial Applications of Pharmacoeconomics

## **Pharmaceutics Departmental Courses**

- PHA 6116: In Vivo and In Vitro Stability of Drugs
- PHA 6118: Molecular Diversity
- PHA 6125: Pharmacokinetics and Biopharmaceutics
- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
- PHA 6185: Pharmaceutical Drug Development
- PHA 6416: Pharmaceutical Analysis I
- PHA 6427: Pharmacogenetics of Drug Metabolism
- PHA 6440: Seminar in Drug Discovery
- PHA 6449: Pharmacogenomics
- PHA 6630: Medication Therapy Management: A Hematologic Focus
- PHA 6631: Foundations of Medication Therapy Management I
- PHA 6632: Foundations of Medication Therapy Management II
- PHA 6633: Medication Therapy Management: A Cardiovascular Focus
- PHA 6634: Medication Therapy Management: An Endocrine Focus
- PHA 6635: Medication Therapy Management: A Renal Focus
- PHA 6636: Medication Therapy Management: A Gastrointestinal Focus
- PHA 6637: Medication Therapy Management: A Psychiatric Focus
- PHA 6638: Medication Therapy Management: A Neurologic Focus
- PHA 6639: Medication Therapy Management: A Respiratory Focus
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation

## **Pharmacodynamics Courses**

- PHA 5531: Neurotoxicology
- PHA 6508: Systems Physiology and Pathophysiology I
- PHA 6509: Systems Physiology and Pathophysiology II
- PHA 6512L: Experiential Research Training in Pharmacodynamics
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6522L: ICBR Molecular Techniques Laboratory
- PHA 6540: Neurochemical Foundation of Pharmacodynamics
- PHA 7939: Journal Colloquy in Pharmacodynamics

## **Pharmacology Courses**

- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

## **College of Pharmacy Courses**

- PHA 5171: Pharmaceutical Biotechnology
- PHA 6131: Pharmacometrics and Systems Pharmacology
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6806: Pharmacoeconomic Modeling
- PHA 6910: Supervised Research
- PHA 6935: Selected Topics in Pharmacy
- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis
- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

## **College of Public Health and Health Professions**

Dean: Michael G. Perri

Executive Associate Dean: Stephanie L. Hanson

Complete faculty listings: [Follow this link.](#)

The University of Florida College of Public Health and Health Professions has established a new educational model that focuses on the integration of public health problem-solving and individual patient care. The college's mission is to preserve, promote and improve the health and well-being of populations, communities and individuals. To fulfill this mission, we foster collaborations among public health and the health professions in education, research and service.

For more information, please see our website: <http://phhp.ufl.edu>

Departments and Programs within the College of Public Health and Health Professions

College of Public Health and Health Professions Courses

## **Public Health (M.P.H.)**

### **College**

## Master of Public Health Program Information

*Director and Graduate Coordinator:* Sarah L. McKune

*Complete faculty listing:* Follow this link.

The College of Public Health and Health Professions offers the Master of Public Health degree program through five departments in the college: Behavioral Science and Community Health, Biostatistics, Epidemiology, Environmental and Global Health, and Health Services Research, Management, and Policy Department. This non-thesis program is designed to prepare students to become effective public health practitioners, scientists, and educators.

Students select one of six concentration areas:

- Biostatistics
- Environmental health
- Epidemiology
- Public health management and policy
- Public health practice
- Social and behavioral sciences

Both a 48-credit program for students without terminal health science degrees and a 42-credit program for students with terminal degrees are offered. A combined bachelor's/master of public health program is available, as well as a 15-credit college certificate program. Students interested in collaborative programs may pursue joint M.P.H. and D.V.M., M.D., J.D., Pharm.D., D.P.T., or DMD degrees, or concurrent master's and Ph.D programs. The MPH degree program and the Public Health certificate are available on campus and online. For program descriptions and information on applying, visit the website: [www.mph.ufl.edu](http://www.mph.ufl.edu).

**48-credit Master of Public Health:** Students who do not hold a terminal degree in a health science discipline are eligible to apply for the 48-credit program. The program provides comprehensive coverage of core public health content and allows selection of a concentration. Students must complete 16 credits of core public health course work, 15-21 credits of concentration core courses, up to 12 credits of elective courses, and 5-8 credits of internship. The course work representing these requirements is described below.

**42-credit accelerated Master of Public Health:** Students who hold a terminal degree (usually a doctoral degree) in a health science discipline may be eligible for the 42-credit accelerated program. This program requires completion of 16 credits of core public health course work, 21 credits of concentration and elective course work, and a 5-credit internship.

**Combined degree program:** The College offers a combined degree program to allow qualified undergraduates to earn both a bachelor's degree and the Master of Public Health degree efficiently. Seniors with any undergraduate major are eligible for the combined degree program as long as they have an undergraduate GPA of at least 3.2 and competitive scores on the verbal and quantitative portions of the GRE, and their career interests match the M.P.H. program. Students accepted into the combined degree program complete 15 credits of public health course work while still undergraduates, leaving only 33 credits after admission to graduate school. Students must achieve a B or better in public health courses taken as an undergraduate and be accepted to graduate school to complete the program.

**Core Courses:** All M.P.H. students take five public health core courses. The core courses in environmental health, epidemiology, public health management and policy, and social and behavioral sciences are taken by all students. The core biostatistics course varies across concentration areas. Students in the biostatistics, environmental health, and epidemiology concentrations must take PHC 6052: Introduction to Biostatistical Methods. All other M.P.H.

students must take PHC 6050: Statistical Methods for Health Sciences Research I . In addition, all students must take a 1-credit seminar in contemporary public health issues and 5 to 8 credits of PHC 6946: Public Health Internship.

**Internship, major paper, and oral presentation:** Each student completes an internship, which provides an opportunity to apply knowledge acquired in the classroom to a real public health problem in a practice setting. The internship is usually completed in the student's final term in the program. Students may engage in many activities during an internship, but each student must have one special project which serves as the basis for a major paper and an oral presentation. The written and oral presentations represent the culmination of the academic experience in the M.P.H. program. Presentations, which are scheduled on Public Health Day near the end of each semester, provide each student with an opportunity to organize and present the details of the special project to faculty, students, and invited guests. Students are expected to display their understanding of their projects in the larger context of public health as a cross-disciplinary field, and in relation to the competencies expected of all M.P.H. graduates. Three faculty members, including the supervisory committee chair, attend each presentation and are responsible for assessing whether the student has successfully demonstrated a broad knowledge of the field of public health and depth in his or her concentration area.

### **Master of Public Health with a Concentration in Biostatistics**

The contribution of biostatisticians is far reaching and includes both core public health research and consultation with other health professionals. The biostatistics concentration is designed primarily for students with a previous graduate degree (particularly in the health sciences) who want to obtain a solid background in quantitative and analytical methods for public health research. The course work exposes students to methodology typically used to analyze different types of public health data and gives them opportunities to apply these methodologies themselves.

Graduates of the M.P.H. program with a concentration in biostatistics return to their careers with an improved understanding of quantitative methods for public health research. This increased knowledge will facilitate their own research programs and will enhance their ability to critically read the literature in their field. The biostatistics concentration requires completion of 6 concentration core courses: PHC 6053 Regression Methods for the Health and Life Sciences, PHC 6000 Epidemiology Research Methods I, PHC 6080 SAS for Public Health Data, PHC 6081 SAS for Public Health Analysis, and PHC 6055 Biostatistical Computing Using R. Remaining courses include the public health internship (PHC 6946) and electives in statistics and public health. Visit the biostatistics concentration website for the most up-to-date information about course options: <http://mph.ufl.edu/programs/master-of-public-health/biostatistics>.

See the department Biostatistics website for information about other programs offered by the department: <http://biostat.ufl.edu/>.

### **Master of Public Health with a Concentration in Environmental Health**

Professionals trained in environmental health study the impact of our surroundings on our health. They understand how environmental risk factors can cause diseases like asthma, cancer, and food poisoning. Environmental health professionals make up approximately half of public health personnel and the field accounts for about half of public health expenditures. Students interested in environmental health typically have a background in biological or physical sciences, engineering, nursing, medicine, and veterinary medicine. Prior experience in chemistry, biology, statistics, and Microsoft Excel software is desirable. Please note the prerequisites for Environmental Health courses and speak with the instructor if you have not successfully completed the prerequisites. The following courses are required for all students pursuing the environmental health concentration: VME 6602, VME 6607, PHC 6702, and PHC 6316. Students may also choose from elective course work listed on the department website below. Environmental health students complete their programs with an internship (PHC 6946) and electives on a wide variety of environmental health and public health topics.

Visit the environmental health concentration website for the most up-to-date information about course options: <http://mph.ufl.edu/programs/master-of-public-health/environmental-health>. And visit the Website of the Department of Environmental and Global Health for information about other academic programs and activities in the department: <http://egh.phhp.ufl.edu>.

### **Master of Public Health with a Concentration in Epidemiology**

Epidemiology focuses on the study of the distribution and determinants of health in populations and communities. It is the scientific foundation of public health research that seeks to reduce risk factors and improve health. The discipline also contributes to public health practice and policy, and research in other health-related fields such as medicine and pharmacy. This concentration area is designed to train professionals to apply the principles and methods of epidemiological investigation in a broad range of settings. The required concentration core courses in epidemiology are PHC 6000, PHC 6002, PHC 6003, PHC 6011, and PHC 6053. Epidemiology concentration students complete their programs with an internship (PHC 6946) and electives in epidemiology and public health.

Additional detail and options for epidemiology elective course work is at the website: <http://mph.ufl.edu/programs/master-of-public-health/epidemiology>. Please also visit the website of the Department of Epidemiology for up-to-date information about other epidemiology programs and activities: <http://epidemiology.phhp.ufl.edu>.

### **Master of Public Health with a Concentration in Public Health Management and Policy (PHMP)**

This concentration focuses on the structure and administration of health organizations and the policies that impact health programs and reimbursement of health services. The concentration encompasses two of the major roles of leaders in public health. Essential skills for managing a health agency or organization include accounting, financial management, human resource management, strategic and program planning, operations research, economics, and monitoring outcome measures. Development, analysis, interpretation, and evaluation of government policies require analytical skills and social skills, as well as a deep understanding of politics.

The PHMP concentration requires six core courses: HSA 5174, HSA 6115, HSA 6152, PHC 6104, PHC 6421, and PHC 6103. In addition, students take two elective courses in one of three areas of specialization:

- Public health management
- Public policy
- Pharmaceutical use and policy.

The PHMP students complete their programs with an internship (PHC 6946) and public health elective courses.

Visit the public health management and policy concentration website for the most up-to-date information about course options: <http://mph.ufl.edu/programs/oncampusprograms/concentrations-2/managementpolicy>.

The website of Department of Health Services Research, Management, and Policy provides additional information about activities and other academic programs in the department: <http://hsrmp.phhp.ufl.edu>.

### **Master of Public Health with a Concentration in Public Health Practice**

This concentration provides the opportunity to develop breadth in public health by taking coursework in two, three, or four of the core public health concentrations. Such breadth is often required of professionals who assume positions of leadership in public health. It is available to students in joint and concurrent degree programs, medical and other health scientists, and working professionals. Public Health Practice is the only M.P.H. concentration available online.

The campus curriculum for this concentration follows the same model as the other concentrations. Students pursuing public health practice begin their programs with the 5 core courses required of all MPH students. Instead of a

specified set of concentration core courses, however, these students may choose 2 or more courses from advanced course options in two to four of the other concentrations. Students complete their degree with a 5 to 8 credit internship. All students in this concentration must hold a prior health professional degree or be enrolled in a joint or concurrent graduate program. To be eligible for the accelerated option, applicants must hold a terminal degree in a health or health-related field.

The online Public Health Practice curriculum begins with the 5 core courses and then offers two or more courses in epidemiology, environmental health, public health management and policy and social and behavioral sciences. Students complete their degree with a 5 to 8 credit internship. Online students are not available to pursue the MPH on campus in Gainesville, either due to employment or geographic distance.

## **Master of Public Health with a Concentration in Social and Behavioral Sciences**

The social and behavioral sciences concentration is based on the assumption that health and health behavior are influenced by multiple psychological, behavioral, social, and cultural factors. Central to addressing health problems and eliminating health disparities and inequalities, these factors must be understood and addressed using a framework that explores multiple levels (individual, interpersonal, organizational, community, and population) and the interactions among them. Through classroom instruction, research, and field practice, MPH students who concentrate in social and behavioral sciences explore the unique issues faced by diverse groups and populations and acquire skills to achieve social and behavioral change. Students in the social and behavioral sciences concentration are required to take five courses: PHC 6251 (Assessment and Surveillance in Public Health), PHC 6146 (Public Health Program Planning and Evaluation), PHC 6700 (Social and Behavioral Research Methods), PHC 6195 (Public Health Information for Diverse Populations), and PHC 6405 (Theoretical Foundations of Public Health). In addition, they may choose two courses from ten concentration electives (e.g., PHC 6762, PHC 6441). Social and behavioral science students complete their programs with an internship (PHC 6946) and elective courses in public health or related fields.

Visit the social and behavioral science concentration website for the most up-to-date information about course options: <http://mph.ufl.edu/programs/master-of-public-health/socialbehavioralsciences>.

The website of Department of Behavioral Science and Community Health provides additional information about activities and other academic programs in the department: <http://bsch.phhp.ufl.edu>.

## **Degrees Offered with a Major of Public Health**

Master of Public Health

without a concentration

with a concentration in Biostatistics

with a concentration in Environmental Health

with a concentration in Epidemiology

with a concentration in Health Management and Policy

with a concentration in Public Health Practice

with a concentration in Social and Behavioral Sciences

## Public Health Courses

- HMG 6747: Marketing in Hospitality/Tourism
- HSA 6114: U.S. Health Care System
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6010: Data Management and Statistical Computing for Epidemiology
- PHC 6014: Epidemiology, Prevention, and Control of Chronic Diseases II
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6052: Introduction to Biostatistical Methods
- PHC 6053: Regression Methods for the Health and Life Sciences
- PHC 6055: Biostatistical Computing Using R
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6370: Public Health Biology
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6711: Measurement in Epidemiology and Outcomes Research
- PHC 6716: Survey Research Methods
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 6905: Independent Study
- PHC 6913: Biostatistics Project
- PHC 6930: Integrated Public Health Seminar
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7056: Analysis of Longitudinal Data
- PHC 7066: Large Sample Theory
- PHC 7980: Research for Doctoral Dissertation
- STA 6177: Applied Survival Analysis
- STA 6208: Basic Design and Analysis of Experiments

## Environmental Health Courses

- EES 5245: Water Quality Analysis
- ENV 5105: Foundations of Air Pollution
- FOS 5205: Current Issues in Food Safety and Sanitation
- PHC 6702: Exposure Measurement and Assessment
- SWS 5551: Soils, Water, and Public Health
- VME 6602: General Toxicology
- VME 6603: Advanced Toxicology
- VME 6605: Toxic Substances
- VME 6607: Human Health Risk Assessment

## Epidemiology Courses

- PHC 6000: Epidemiology Methods I
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6011: Epidemiology Methods II
- PHC 6053: Regression Methods for the Health and Life Sciences
- PHC 6405: Theoretical Foundations of Public Health
- PHC 6912: Special Project: Independent Research
- PHC 6938: Oral and Craniofacial Epidemiology
- PHC 6946: Public Health Internship

### **Public Health Management and Policy Courses**

- HSA 5174: Fundamentals of Health Care Finance
- HSA 6115: Introduction to Management of Health Services Organizations
- HSA 6152: Overview of U.S. Health Policy
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6421: Public Health Law and Ethics

### **Social and Behavioral Sciences Courses**

- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6441: Health Disparities in the United States
- PHC 6700: Social and Behavioral Research Methods
- PHC 6762: International Public Health
- PHC 6937: Special Topics in Public Health

### **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs



- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship

- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics

- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Public Health (Ph.D.)**

### **College**

College of Public Health and Health Professions

### **Public Health (Ph.D.) Program Information**

The College of Public Health and Health Professions does not offer the Ph.D. in Public Health without a concentration. All students accepted into the program must choose one of three concentrations: Environmental Health, One Health, or Social and Behavioral Sciences. Please see those program pages for more information.

### **Degrees Offered with a Major in Public Health**

Doctor of Philosophy

### **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care

- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
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- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research

- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Rehabilitation Science**

## College

College of Public Health and Health Professions

## Rehabilitation Science Program Information

*Director:* David D. Fuller

*Graduate Coordinator:* Ellen Esparolini

*Admissions Coordinator:* Amy Ladendorf

*Complete faculty listing by department:* Follow this link.

The interdisciplinary Ph.D. program in rehabilitation science is offered through the College of Public Health and Health Professions. It is designed to prepare rehabilitation scholars. Students are given the opportunity to develop skills in teaching, research, service leadership, and interdisciplinary teamwork. Students work closely with their faculty mentor within the broad categories of Movement Science, Disability Science, and Communication and Swallowing Science. On successful completion of the program, graduates typically take positions in research universities and research centers. Requirements for the Ph.D. degree are provided elsewhere in this catalog.

Admissions decisions are determined by an interdisciplinary admissions committee. The program is a minimum of 90 credit hours of study beyond the Bachelor's degree. The curriculum includes 25 graduate credits in core rehabilitation courses (rehabilitation science theory, research, and teaching) required of all students; 50 credits in specialty areas; and 15 credits of dissertation research. The 50 credits of specialty courses includes 18 credits from one (or a combination) of the three major emphases in rehabilitation mentioned above. The remaining 32 credit hours may be electives, or 30 credits may be transferred in from a master's degree program (with the approval of the supervisory committee. Specialty course work must be chosen by the student with supervisory committee input and approval.

For more information, please see our website: <http://rehabsci.phhp.ufl.edu>.

## Degrees Offered with a Major in Rehabilitation Science

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

## Rehabilitation Sciences Courses

- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom

- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- SPA 5401: Speech Pathology Language Disorder
- SPA 6008: Medical Aspects of Speech-Language Pathology
- SPA 6117: Science of Singing
- SPA 6217: Vocal Health and Habilitation
- SPA 6311: Medical Audiology
- SPA 6312: Advanced Audiology and Neuro-Otology
- SPA 6340: Amplification I
- SPA 6341: Amplification II
- SPA 6342: Amplification III
- SPA 6436: Issues in Autism Spectrum Disorders
- SPA 6568: Clinical Evaluation in Medical Speech-Language Pathology
- SPA 6581: Special Clinical
- SPA 6830: Communication Disorders in Medically Complex Pediatric Populations
- SPA 7132C: Clinical Instrumentation for Evaluating Upper Aerodigestive Tract Functions
- SPA 7306: Audiologic Assessment in a Medical Setting
- SPA 7391: Business and Professional Issues in Audiology
- SPA 7415: Neurolinguistics of Adult Language Disorders
- SPA 7540: Diagnosis and Treatment of Language and Language-Based Literacy Disorders
- SPA 7833: Audiology Research Project
- SPA 7937: Seminar in Advanced Studies of Language and Literacy Development and Disabilities
- SPA 7945: Graduate Practicum in Audiology
- SPA 7946: Clinical I: Practicum in Medical Speech and Language Pathology
- SPA 7947: Clinical II: Practicum in Advanced Medical Speech-Language Pathology
- SPA 7958: Clinical Externship

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II

- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
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- PHC 6519: Zoonotic Diseases in Humans and Animals
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- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study



- PHC 6917: Supervised Research Project
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- PHC 6945: Public Health Practicum
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- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
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- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
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- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
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- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research

- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Behavioral Science and Community Health Department**

College of Public Health and Health Professions

*Interim Chair:* Amy Blue

*Graduate Coordinator:* Amanda Glynn

*Complete faculty listing by department:* Follow this link.

The Department of Behavioral Science & Community Health (BSCH) is one of nine academic departments housed in the School of Public Health and Health Professions at the University of Florida. The department offers programs leading to the Master of Public Health (M.P.H.) with a concentration in Social and Behavioral Sciences, as well as the Doctor of Philosophy (Ph.D.) in Public Health with a concentration in Social and Behavioral Sciences. The official minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.

For more information, please see the program pages below and our website: <http://bsch.phhp.ufl.edu>.

## **Public Health (Ph.D. - Social and Behavioral Sciences)**

### **College**

College of Public Health and Health Professions

### **Department/School**

Behavioral Science and Community Health Department

## **Behavioral Science and Community Health Program Information**

### **Social & Behavioral Sciences**

The PhD in Public Health -Social and Behavioral Sciences (SBS) Track is targeted to individuals who wish to develop advanced knowledge and skills in the social and behavioral sciences theories and methods used in public health. Training is designed for those who desire public health careers in research, academics, government, or related health organizations. A prior graduate degree in public health or a related field is strongly preferred.

The program is focused upon the assumption that health and health behavior are impacted by multiple psychological, behavioral, social, and cultural factors. Central to addressing health problems and eliminating health disparities and

inequalities, these factors must be understood and addressed at multiple social-ecological levels (individual, interpersonal, organizational, community, and population).

PhD students who concentrate in social and behavioral sciences explore the unique issues faced by diverse groups and populations and acquire skills to achieve social and behavioral change.

### **Contact**

Dr. Giselle Carnaby (nee Mann), Program Director

gmann@phhp.ufl.edu

Phone: 352-273-6745 ext. 36497; ext. 36164 (lab)

Office: HPNP 4172; DG-140 (lab)

For more information, please visit <http://sbs.phhp.ufl.edu/>

### **Degrees Offered with a Major in Public Health**

Doctor of Philosophy

concentration in Social and Behavioral Sciences

### **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
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- PHC 6103: Systems Thinking for Public Health
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- PHC 6120: Community Assessment and Partnerships
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- PHC 6301: Aquatic Systems and Environmental Health

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- PHC 6312: Water Quality and Human Health
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- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
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- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
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- PHC 6447: Ecology of HIV/Aids in the Rural South
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- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
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- RSD 6940: Supervised Teaching
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- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
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- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Biostatistics Department**

College of Public Health and Health Professions  
College of Medicine

*Chair:* Peihua Qiu

*Associate Chair for Education:* Babette Brumback

*Graduate Coordinator:* Kristen Cason

*Complete faculty listing by department:* Follow this link.

The Department of Biostatistics offers the Doctor of Philosophy degree in biostatistics, the Master of Science degree in biostatistics, and the Master of Public Health degree with concentration biostatistics, which is described in detail in the Public Health section of the catalog. These programs in the Department are designed to prepare students for research and faculty positions; careers in health agencies and health-related institutions; and for consultation, especially in the biomedical fields. Although each graduate program has a set of required courses, there is ample flexibility in the programs to allow each student to develop strengths and interests through elective courses, seminars, and tutorials.

### **Doctor of Philosophy**

The biostatistics doctoral program requires a minimum of 90 semester credits beyond the bachelor's degree. Students must have a directly related master's degree (i.e. Master of Science in statistics or biostatistics). All students must complete a minimum of 54 credits of biostatistics/statistics course work (30 credits will typically be transferred from a Master of Science program), 6 credits of public health course work, 3 credits of a consulting requirement, 6 credits of the cognate requirement, and 21 credits of dissertation work.

All graduates of the program are expected to be able to

- Conduct independent research in the development of new biostatistical methodology
- Engage in successful collaborations with investigators in new quantitative fields
- Write statistical methodology papers for peer-reviewed statistical and biostatistical journals
- Write collaborative papers for peer-reviewed subject matter journals
- Compete successfully for research and teaching positions in academic institutions, federal and state agencies, or private institutions

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/phd-in-biostatistics/curriculum-overview/>.

### **Master of Science**

The biostatistics masters degree (MS) requires a minimum of 36 semester credits beyond the bachelor's degree. The program is designed to facilitate students' development of a strong theoretical foundation in biostatistics, broad-based understanding of biostatistical methods, and expertise in a cognate field. A typical student will be enrolled full-time for two years. Upon successful completion of the program, graduates will be awarded an M.S. degree in biostatistics.

The principal goal of the M.S. program is to prepare highly qualified individuals for future Ph.D. training and for careers in biostatistics practice. This training is conducted in the innovative and interdisciplinary public health culture of the college of public health and health professions and the college of medicine. We expect our graduates to be highly competitive in three primary settings: academic university-based settings, industry, and federal agencies that involve research and/or public health practice.

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/ms-in-biostatistics/ms-curriculum-overview/>.

### **Biostatistics (PHEP)**

### **College**

College of Public Health and Health Professions

College of Medicine

## **Department**

Biostatistics Department

## **Biostatistics Program**

### **Doctor of Philosophy**

The biostatistics doctoral program requires a minimum of 90 semester credits beyond the bachelor's degree. Students must have a directly related master's degree (i.e. Master of Science in statistics or biostatistics). All students must complete a minimum of 54 credits of biostatistics/statistics course work (30 credits will typically be transferred from a Master of Science program), 6 credits of public health course work, 3 credits of a consulting requirement, 6 credits of the cognate requirement, and 21 credits of dissertation work.

All graduates of the program are expected to be able to

- Conduct independent research in the development of new biostatistical methodology
- Engage in successful collaborations with investigators in new quantitative fields
- Write statistical methodology papers for peer-reviewed statistical and biostatistical journals
- Write collaborative papers for peer-reviewed subject matter journals
- Compete successfully for research and teaching positions in academic institutions, federal and state agencies, or private institutions

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/phd-in-biostatistics/>.

### **Master of Science**

The biostatistics masters degree (MS) requires a minimum of 36 semester credits beyond the bachelor's degree. The program is designed to facilitate students' development of a strong theoretical foundation in biostatistics, broad-based understanding of biostatistical methods, and expertise in a cognate field. A typical student will be enrolled full-time for two years. Upon successful completion of the program, graduates will be awarded an M.S. degree in biostatistics.

The principal goal of the M.S. program is to prepare highly qualified individuals for future Ph.D. training and for careers in biostatistics practice. This training is conducted in the innovative and interdisciplinary public health culture of the college of public health and health professions and the college of medicine. We expect our graduates to be highly competitive in three primary settings: academic university-based settings, industry, and federal agencies that involve research and/or public health practice.

Specific course requirements are described at the program website <http://biostat.ufl.edu/education/ms-in-biostatistics/>.

## **Degrees**

Doctor of Philosophy

Master of Science

## **Biostatistics Departmental Courses**

- GMS 6818: Design and Conduct Clinical Trials I
- GMS 6819: Design and Conduct Clinical Trials II
- GMS 6827: Advanced Clinical Trial Methods
- GMS 6841: Design and Analysis of Translational Research in Biomedical Sciences
- GMS 6861: Applied Biostatistics I
- GMS 6862: Applied Biostatistics II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6020: Clinical Trial Methods
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6050C: Biostatistical Methods I
- PHC 6051: Biostatistical Methods II
- PHC 6052: Introduction to Biostatistical Methods
- PHC 6053: Regression Methods for the Health and Life Sciences
- PHC 6055: Biostatistical Computing Using R
- PHC 6063: Biostatistical Consulting
- PHC 6068: Biostatistical Computing
- PHC 6080: SAS for Public Health - Data
- PHC 6081: SAS for Public Health - Analysis
- PHC 6517: Public Health Concepts in Infectious Diseases
- PHC 6937: Special Topics in Public Health
- PHC 6946: Public Health Internship
- PHC 7090: Advanced Biostatistical Methods I
- PHC 7091: Advanced Biostatistical Methods II
- PHC 7013: Bias in Observational Research
- PHC 7056: Analysis of Longitudinal Data
- PHC 7066: Large Sample Theory
- PHC 7925: Biostatistics Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- STA 5223: Applied Sample Survey Methods
- STA 5325: Fundamentals of Probability
- STA 5328: Fundamentals of Statistical Theory
- STA 5503: Categorical Data Methods
- STA 5701: Applied Multivariate Methods
- STA 5715: Applied Survival Analysis
- STA 6092: Applied Statistical Practice
- STA 6166: Statistical Methods in Research I
- STA 7249: Generalized Linear Models
- STA 7346: Statistical Inference

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health



- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
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- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
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- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods

- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I

- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## Clinical and Health Psychology Department

College of Public Health and Health Professions

*Department Chair:* David Janicke

*Program Director and Graduate Coordinator:* Russell Bauer

*Academic Coordinator:* Milan Savic

*Complete faculty listing:* Follow this link.

The Department of Clinical and Health Psychology is a unit of the College of Public Health and Health Professions. The department's programs are its doctoral clinical psychology studies leading to the Ph.D. degree in psychology; an American Psychological Association accredited doctoral internship program; and postdoctoral studies and research. Requirements for the M.S. and Ph.D. degrees are given in the Graduate Degrees section of this catalog.

The clinical psychology doctoral curriculum adheres to the scientist-practitioner model of education and training. Program strengths include research, education, and professional training in health care psychology, with organized areas of concentration in clinical health psychology, clinical child/pediatric psychology, neuropsychology, neurorehabilitation and clinical neuroscience, and emotion neuroscience/psychopathology. Education and training experiences are also available in rural psychology. Interested students can apply for acceptance into the Public Health Program and obtain dual M.P.H./Ph.D. degrees.

Progress in the program is determined by departmental policies which are consistent with American Psychological Association accreditation standards. The curriculum has been continuously accredited by the American Psychological Association since 1953.

Admission to the Department is through appropriate application to the Department's admission committee. A bachelor's degree is generally adequate preparation for graduate admission. It should include undergraduate courses in both experimental psychology and statistics, along with at least three courses from the following psychology areas: developmental, learning, perception, personality, physiological, and social.

For more information, please see the program page below and our website: <http://chp.phhp.ufl.edu>.

## Psychology (Clinical and Health Psychology - PHHP)

## College

College of Public Health and Health Professions

## Department/School

Clinical and Health Psychology Department

## Psychology (Clinical and Health Psychology) Program Information

The department of Clinical and Health Psychology is an academic and professional unit in the College of Public Health and Health Professions at the Health Science Center on the University of Florida campus in Gainesville. The doctoral program in clinical psychology has been accredited by the American Psychological Association since 1953 and adheres to the Scientist-Practitioner Model of education and training. The Clinical Psychology Doctoral program is unique in the country in that it is housed in an independent department of Clinical and Health Psychology in a major academic health science setting along with an APA accredited internship. These features foster program strengths in research, teaching and professional training in health care psychology.

To accommodate the broad range of career trajectories possible within Scientist-Practitioner education and training, the program offers a Scientist-Practitioner Emphasis and a Clinical Researcher Emphasis.

The **Scientist-Practitioner Emphasis** allows the student to obtain broad clinical, academic, and research training that readies them for careers anywhere along the science-practice continuum. The student obtains focused research mentorship in a faculty member's laboratory and obtains broad training in clinical assessment and intervention both in and outside of their designated area of concentration.

The **Clinical Researcher Emphasis** is designed to provide the interested student with more intensive mentor-based training for purposes of preparing for a research career. The Clinical Researcher Emphasis is designed for students who are clearly focused on a research career and therefore want an increased opportunity to perform mentored empirical work. This emphasis focuses on the acquisition of research skills, training in scientific methods and technologies to better understand behavior problems, psychopathology and psychological adjustment to illness and wellness, and to develop empirically validated assessment and treatment procedures. The primary goal of the Clinical Researcher emphasis is to train psychologists for academic settings and other employment venues in which research productivity and innovation is a major job expectancy. In comparison to the scientist-practitioner emphasis, more time is dedicated to research (less time is spent in supervised practicum with the general faculty), and advanced clinical training is focused on patient populations and methods in the student's area of research interest. The Clinical Researcher emphasis follows a "mentorship" model in which the faculty mentor is the student's overall guide and supervisor, and the student's primary research training is accomplished in his/her laboratory.

Students can elect the Clinical Researcher emphasis in the first or second year of study, based on their commitment to a clinical research career and the agreement of a faculty mentor. Students can apply for admission consideration to the Scientist-Practitioner emphasis, the Clinical Researcher emphasis, or both (see Application Procedures).

The Doctoral Program provides the student with training in the concepts, tools, roles, and functions of the clinical psychologist. The overall goals of the graduate program are to prepare the student to:

1. investigate meaningful, empirically testable questions in the quest for understanding a behavioral process, a patient's problem, or a professional issue;
2. function as a professional psychologist;
3. practice competently in the applied areas of psychological assessment/diagnosis, intervention/therapy, and consultation; and

4. contribute to the advancement of psychological knowledge through research or other creative scholarly activity.

Through a combination of general and specialized experiences in the classroom, laboratory, and clinic students develop knowledge and skills as scientist-practitioners. Attitudes are developed toward the practice of psychology and toward related professions which enable effective personal interaction and participation in the interdisciplinary approach to problems of research and practice. As students progress in the program, they develop professional identity through acceptance of increased responsibility for professional decisions, through the execution of significant research projects, and through their contributions to the understanding of psychological problems and processes.

For more information please see our website: <http://chp.phhp.ufl.edu>

## **Degrees**

### **Doctor of Philosophy**

concentration in Clinical and Health Psychology

*optional second concentration in Clinical and Translational Science*

concentration in Clinical and Translational Science

### **Master of Arts**

### **Master of Science**

## **Clinical and Health Psychology Departmental Courses**

- CLP 5316: Health Psychology
- CLP 5426: Introduction to Neuropsychology
- CLP 6304: Psychological Foundations of Clinical Psychology I
- CLP 6307: Human Higher Cortical Functioning
- CLP 6308: Psychological Foundations of Clinical Psychology II
- CLP 6309: Psychological Foundations of Clinical Psychology III
- CLP 6344C: Lifespan Foundations of Behavioral Health and Illness I
- CLP 6345: Lifespan Foundations of Behavioral Health and Illness II
- CLP 6375: Introduction to Clinical Psychology
- CLP 6407: Psychological Treatment I
- CLP 6417: Psychological Treatment II
- CLP 6425: Seminar in Clinical Neuropsychology
- CLP 6430: Clinical Psychological Assessment
- CLP 6434C: Clinical Psychology Assessment I
- CLP 6435C: Clinical Psychology Assessment II
- CLP 6446C: Psychological Assessment of Children
- CLP 6447C: Psychological Assessment of Adults
- CLP 6476: Lifespan Psychopathology
- CLP 6497: Psychopathological Disturbances
- CLP 6527C: Measurement, Research Design, and Statistical Analysis in Clinical Psychology I
- CLP 6528C: Measurement, Research Design, and Statistical Analysis in Clinical Psychology II
- CLP 6529: Applied Multivariate Methods in Psychology

- CLP 6905: Individual Work
- CLP 6910: Supervised Research
- CLP 6940: Supervised Teaching
- CLP 6943: Core Practicum in Clinical Psychology
- CLP 6945: Advanced Practicum in Neuropsychology
- CLP 6946: Advanced Practicum in Applied Medical Psychology
- CLP 6947: Practicum in Intervention
- CLP 6948: Advanced Practicum in Clinical Child Psychology
- CLP 6971: Research for Master's Thesis
- CLP 7317: Advanced Health Psychology and Behavior Medicine
- CLP 7404C: Special Issues, Methods, and Techniques in Psychological Treatment
- CLP 7427C: Neuropsychological Assessment of Children
- CLP 7428C: Neuropsychological Assessment of Adults
- CLP 7934: Special Topics In Clinical Psychology
- CLP 7949: Internship
- CLP 7979: Advanced Research
- CLP 7980: Research for Doctoral Dissertation
- DEP 6216: Psychological Disturbances of Children
- GEY 6306: Interpersonal Communication Within the Aging Network
- GEY 7408: Psychotherapy with Older Adults

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health

- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation

- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Environmental and Global Health Department**



*Interim Chair:* Tara Sabo-Attwood  
*Ph.D. Program Director:* Andrew Kane  
*Graduate Coordinator:* Caronne Rush

Faculty listing: Follow this link

The Department of Environmental and Global Health offers graduate work leading to the degrees of Doctor of Philosophy, Master of Health Science, and Master of Public Health. The official minimum requirements for these degrees are listed in the Graduate Degrees section of this catalog.

The Department of Environmental and Global Health focuses upon environmental factors that impact human health. Department faculty, scientists, and students employ numerous disciplines in studying these environmental factors: virology, bacteriology, parasitology, entomology, toxicology, epidemiology, water sciences, veterinary health, environmental engineering, aerosol biology, wildlife health, etc. Research work often involves international travel and collaboration. A central theme for the department is the interdisciplinary thinking called One Health which reflects the collaborations necessary to tackle public health's most difficult problems. Faculty, students and staff often perform research in the laboratories in the Emerging Pathogens Institute, the Center for Environmental and Human Toxicology, or the Aquatic Pathobiology Laboratory.

For more information, please see the program pages below and our website: <http://egh.phhp.ufl.edu>.

## **Environmental and Global Health (M.H.S. - One Health)**

### **College**

College of Public Health and Health Professions

### **Department**

Environmental and Global Health Department

### **Degrees Offered With a Major in Environmental and Global Health**

Master of Health Science

concentration in One Health

### **Environmental and Global Health Departmental Courses**

- PHC 6006: An Introduction to One Health Problem Solving
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6722: Environmental and Global Health Research Methods Rotation
- PHC 6900: Environmental and Global Health Journal Club
- PHC 6947: Occupational Health Field Research Experience
- PHC 7935: Critical Thinking in Environmental and Global Health

## College of Public Health and Health Professions Courses

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety

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- PHC 6520: Foodborne Diseases
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- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
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- PHC 6762: International Public Health
- PHC 6905: Independent Study
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- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
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- PHC 6946: Public Health Internship
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- PHC 7752: Seminar in Instrument Development for Public Health
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- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
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- RSD 6706: Scientific Writing for the Rehabilitation Professional
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- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching

- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Public Health (Ph.D. - Environmental and Global Health)**

### **College**

College of Public Health and Health Professions

### **Department/School**

Environmental and Global Health

### **Degrees Offered With a Major in Public Health**

Doctor of Philosophy

concentration in Environmental Health

### **Environmental and Global Health Departmental Courses**

- PHC 6006: An Introduction to One Health Problem Solving
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach

- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6722: Environmental and Global Health Research Methods Rotation
- PHC 6900: Environmental and Global Health Journal Club
- PHC 6947: Occupational Health Field Research Experience
- PHC 7935: Critical Thinking in Environmental and Global Health

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics

- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional

- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Public Health (Ph.D. - One Health)**

### **College**

College of Public Health and Health Professions

### **Environmental and Global Health Department**

Environmental and Global Health Department

### **Degrees Offered With a Major in Public Health**

Doctor of Philosophy

concentration in One Health

## **Environmental and Global Health Departmental Courses**

- PHC 6006: An Introduction to One Health Problem Solving
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6722: Environmental and Global Health Research Methods Rotation
- PHC 6900: Environmental and Global Health Journal Club
- PHC 6947: Occupational Health Field Research Experience
- PHC 7935: Critical Thinking in Environmental and Global Health

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health



- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I

- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## Epidemiology Department

College of Public Health and Health Professions  
College of Medicine

*Chair:* Linda Cottler

*Ph.D. Program Director:* Cindy Prins

*M.S. Program Director:* Catherine Woodstock Striley

*Complete faculty listing by department:* [Follow this link.](#)

The Department of Epidemiology – jointly governed by both the College of Public Health and Health Professions and the College of Medicine – offers the Doctor of Philosophy degree in epidemiology, Masters of Science in epidemiology, as well as the Master of Public Health degree with a concentration in epidemiology (described here).

Minimum requirements for these degrees are described in the Graduate Degrees section of this catalog. The programs in the Department are designed to prepare students for careers in academic research environments, careers in public health agencies and health-related institutions, and for consultation, especially in the biomedical fields.

More information on these programs is available at the program page below and at the department website: <http://epidemiology.phhp.ufl.edu>.

## **Epidemiology (PHHP)**

### **College**

College of Public Health and Health Professions

### **Department**

Epidemiology Department

### **Epidemiology Program Information**

The **Ph.D. in Epidemiology program** is in the Department of Epidemiology, which is jointly governed by both the College of Public Health and Health Professions and the College of Medicine. The program requires a minimum of 90 semester credits beyond the bachelor's degree. All students must complete a minimum of 9 credits in Epidemiology foundation course work, at least 36 credits of epidemiology core courses, 6 credits of statistics electives, 18 credits of epidemiology electives, 15 credits of general electives, and 12 credits of dissertation research. All entering students who do not hold MPH or equivalent degrees are also required by the College of Public Health and Health Professions to complete an Introduction to Public Health course.

Students in the Ph.D. program in Epidemiology are admitted to work with a research mentor on that mentor's project, and that research mentor funds the student. Other funding sources are available such as the Graduate School and the Department.

The core course work is designed to incorporate competencies recommended in the report of the 2002 workshop on doctoral education in epidemiology from the American College of Epidemiology and the Association of Schools and Programs of Public Health, and criteria for applied epidemiology competencies. The overall outcomes expected of all graduates are as follows:

1. Apply epidemiological methods to address critical and/or emerging public health issues through the use of:
  - Appropriate epidemiological research designs
  - Advanced statistical analysis methods for health studies
  - Data structures and measurement methods for health research
  - Biological, behavioral and social theory applied to the understanding and prevention of contemporary threats to health and well-being
  - Depth of knowledge in an area of specialization
2. Assimilate the history, philosophy, and ethical principles of epidemiology into current research
3. Develop grant proposals and manage research projects

4. Write scientific papers for publication in peer-reviewed journals, and communicate research results to scientists, policy makers, and the public
5. Compete successfully for research and teaching positions in academic institutions, federal or state agencies, or private institutions.

Details of the Ph.D. in Epidemiology program and application information are available at our website:  
<http://epidemiology.phhp.ufl.edu/about/ph-d-in-epidemiology-2>.

The **Master of Science in Epidemiology** degree is offered by the Department of Epidemiology, which is jointly governed by both the College of Public Health and Health Professions and the College of Medicine. The 36 credit program prepares students for careers in the public health arena that are focused on the surveillance and prevention of illnesses among diverse populations around the world. Students are trained in the foundational aspects of epidemiology including person, place and time, risk and protective factors, and the social determinants of health. Areas of focus include: chronic disease, infectious disease, geriatric, environmental, psychiatric, social, cancer and maternal and child health epidemiology.

Graduates of the M.S. in Epidemiology program are trained to:

- Apply surveillance, assessment, evaluation, and other foundational epidemiological research designs to areas of interest,
- Choose appropriate measurement and analytic methods to study health and disease in a population,
- Utilize biological, behavioral and social theory to understand how to prevent and intervene to promote the public health.

The program consists of required coursework and the successful completion of a thesis. The thesis is required to demonstrate skill in independent inquiry and investigation, under the tutelage of a mentor. Students may complete the course in three semesters with 36 credits.

More program information, including specific course requirements and elective options, is described at the program website: <http://epidemiology.phhp.ufl.edu/about/masters-of-science-in-epidemiology/mse-curriculum-2>.

## **Degrees Offered with a Major in Epidemiology**

Doctor of Philosophy

without a concentration

concentration in Clinical and Translational Science

Master of Science

## **Epidemiology (PHHP/COM) Departmental Courses**

- GMS 6820: Advanced Epidemiology Methods
- PHC 6008: Cardiovascular Epidemiology
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6014: Epidemiology, Prevention, and Control of Chronic Diseases II
- PHC 6034: Epidemic Investigation
- PHC 6070: Epidemiology of Aging
- PHC 6517: Public Health Concepts in Infectious Diseases

- PHC 6711: Measurement in Epidemiology and Outcomes Research
- PHC 6937: Special Topics in Public Health
- PHC 6938: Oral and Craniofacial Epidemiology
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7007: Cancer Epidemiology
- PHC 7038: Psychiatric Epidemiology
- PHC 7065: Critical Skills in Epidemiological Data Management
- PHC 7427: Ethics in Population Science
- PHC 7595: Introduction to Molecular Epidemiology
- PHC 7727: Grant Writing for Population Health Research
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7902: Epidemiology Supervised Research Writing Circle
- PHC 7910: International Field Epidemiology
- PHC 7916: National Field Epidemiology
- PHC 7934: Seminar I: Epidemiology Past, Present, and Future
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health

- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
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- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture

- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Health Services Research, Management, and Policy Department**

*Chair:* Arch G. Mainous, III

*Graduate Coordinator:* Patricia Van Wert

*Complete faculty listing:* Follow this link.

The Department of Health Services Research, Management, and Policy offers degree programs at both the master's and doctoral level. The Master of Health Administration (M.H.A.) prepares individuals for management positions in the health care field. The Department also participates in the Master of Public Health (M.P.H.) degree by offering a concentration in Public Health Management and Policy (more information available [here](#)).

At the doctoral level, the Department offers the Ph.D. degree in Health Services Research. This full-time program prepares graduates to investigate and evaluate the complexities of health care systems in the U.S. and elsewhere. Health services research is a multidisciplinary field that examines the delivery, organization, financing, and outcomes of health care services.

Minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.

For more information, please see the program pages below and our website: <http://hsrmp.php.ufl.edu>.

## **Health Administration**

### **College**

College of Public Health and Health Professions

### **Department/School**

Health Services Research, Management, and Policy Department

### **Health Administration Program Information**

The Master of Health Administration (M.H.A.) is a two-year, lock-step program with a summer internship between the first and second years. Small class size permits individual attention and guidance from faculty members. The program prepares qualified individuals motivated by a social mission and responsibility to the community for various management positions in the health services industry. Organizations seek individuals who have the ability to solve business problems and build strategic relationships in a climate of continuous change.

The UF M.H.A. program develops engaged early health care careerists to use evidence-based strategies to improve healthcare quality, affordability, and access. We provide students with fundamental knowledge using a cohort model in a campus-based setting that emphasizes experiential learning and data-driven problem solving both in the classroom and in the practice environment. Students will develop proficiency to detect, analyze, manage and respond to critical administrative issues in both provider and non-provider healthcare organizations. Our program embraces ethical conduct and professionalism, diversity and inclusion, practitioner involvement and team-based learning.

Faculty inform practice with research and service to the community.

Applicants from any undergraduate major are considered. For more information about our program and details about the MBA/MHA dual degree, please see our website:

<http://hsrmp.php.ufl.edu/academic-programs/master-of-health-administration>.

### **Degrees**

Master of Health Administration



## **Health Administration Program Courses**

- HSA 5174: Fundamentals of Health Care Finance
- HSA 6105: Professional Skills Seminar
- HSA 6114: U.S. Health Care System
- HSA 6115: Introduction to Management of Health Services Organizations
- HSA 6126: U.S. Health Insurance System
- HSA 6152: Overview of U.S. Health Policy
- HSA 6177: Advanced Health Care Finance
- HSA 6188: Strategic Management in Health Administration
- HSA 6196: Healthcare Data Analytics II
- HSA 6198: Information Management in Health Administration
- HSA 6342: Human Resource Management for Health Services Managers
- HSA 6385: Performance Management for Health Care Managers
- HSA 6427: Legal and Ethical Issues in Health Administration
- HSA 6436: Health Economics
- HSA 6855: Internship in Health Administration
- HSA 6905: Individual Study in Health Administration
- HSA 6939: Capstone Seminar in Health Administration

## **Health Services Research, Management, and Policy Departmental Courses**

- HSA 5103: Introduction to the U.S. Health Care System
- HSA 5174: Fundamentals of Health Care Finance
- HSA 6105: Professional Skills Seminar
- HSA 6114: U.S. Health Care System
- HSA 6115: Introduction to Management of Health Services Organizations
- HSA 6126: U.S. Health Insurance System
- HSA 6152: Overview of U.S. Health Policy
- HSA 6175: Health Care Financial Management
- HSA 6177: Advanced Health Care Finance
- HSA 6179: Introduction to Health Care Finance
- HSA 6188: Strategic Management in Health Administration
- HSA 6196: Healthcare Data Analytics II
- HSA 6197: Information Management in Health Administration
- HSA 6198: Information Management in Health Administration
- HSA 6342: Human Resource Management for Health Services Managers
- HSA 6385: Performance Management for Health Care Managers
- HSA 6395: Healthcare Data Analytics I
- HSA 6427: Legal and Ethical Issues in Health Administration
- HSA 6436: Health Economics
- HSA 6855: Internship in Health Administration
- HSA 6858: Internship in Health Services Research
- HSA 6878: Externship in Legal Aspects of Health Services Administration
- HSA 6905: Individual Study in Health Administration
- HSA 6910: Supervised Research
- HSA 6911: Research Seminar in Health Services Research
- HSA 6930: Special Topics in Health Services Administration

- HSA 6935: Seminar in Health Administration
- HSA 6939: Capstone Seminar in Health Administration
- HSA 6940: Supervised Teaching
- HSA 6946: Internship in Public Health Management and Policy
- HSA 7106: Seminar in Health Care Access and Utilization
- HSA 7116: Health Services Organizational Research
- HSA 7157: Research Foundations of Health Policy
- HSA 7414: Society, Health, and Medical Care
- HSA 7437: Advanced Health Economics
- HSA 7707: Health Services Research Methods I
- HSA 7708: Health Services Research Methods II
- HSA 7759: Quality and Outcomes in Health Services Research
- HSA 7905: Advanced Individual Study in Health Services Research
- HSA 7936: Seminar in Health Care Costs and Financing
- HSA 7938: Advanced Seminar in Health Services Research
- HSA 7979: Advanced Research
- HSA 7980: Research for Doctoral Dissertation
- PHC 6313: Environmental Health Concepts in Public Health

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health

- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
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- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics

- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Health Services Research**

### **College**

College of Public Health and Health Professions

## **Department/School**

Health Services Research, Management, and Policy Department

## **Health Services Research Program Information**

The Department of Health Services Research, Management and Policy offers a doctoral degree in Health Services Research. Health services research is a multidisciplinary field of inquiry, both basic and applied, that examines the use, costs, quality, accessibility, delivery, organization, financing, and outcomes of healthcare services. The objective is to increase knowledge and understanding of the structure and processes of the healthcare system, and to assess subsequent effects on individuals and populations. Health services research draws on a variety of disciplines, and integrates their conceptual frameworks and methods to provide new ways of studying and understanding the health care system.

The Ph.D. Program in Health Services Research prepares individuals to conduct inquiry that will inform government officials, corporate leaders, clinicians, health plan managers, and others making decisions about complex health-related problems and issues. Students in the Ph.D. Program in Health Services Research learn to apply research methods and scientific knowledge to the study of health services organizations and systems.

Graduates of the Ph.D. Program in Health Services Research will find career opportunities in academic, private sector, and public service settings. For example, some graduates will combine research interests with a teaching career and accept academic appointments in a wide range of health-related departments in the nation's colleges and universities. Other graduates will pursue health services research in the context of healthcare delivery and choose employment opportunities with hospitals and health systems, managed care companies, the pharmaceutical industry and consulting firms. Finally, graduates may pursue careers in government or other public service entities (such as private foundations), whose programs are increasingly dependent upon the findings and methodologies of health services research.

For more details about our program, please see our website: <http://hsrmp.phhp.ufl.edu/academic-programs/ph-d-in-health-services-research>.

## **Degrees**

Doctor of Philosophy

## **Health Services Research Program Courses**

- HSA 6910: Supervised Research
- HSA 6911: Research Seminar in Health Services Research
- HSA 6930: Special Topics in Health Services Administration
- HSA 6940: Supervised Teaching
- HSA 7106: Seminar in Health Care Access and Utilization
- HSA 7116: Health Services Organizational Research
- HSA 7157: Research Foundations of Health Policy
- HSA 7414: Society, Health, and Medical Care
- HSA 7437: Advanced Health Economics
- HSA 7707: Health Services Research Methods I
- HSA 7708: Health Services Research Methods II
- HSA 7759: Quality and Outcomes in Health Services Research

- HSA 7905: Advanced Individual Study in Health Services Research
- HSA 7936: Seminar in Health Care Costs and Financing
- HSA 7938: Advanced Seminar in Health Services Research
- HSA 7979: Advanced Research
- HSA 7980: Research for Doctoral Dissertation

## **Health Services Research, Management, and Policy Departmental Courses**

- HSA 5103: Introduction to the U.S. Health Care System
- HSA 5174: Fundamentals of Health Care Finance
- HSA 6105: Professional Skills Seminar
- HSA 6114: U.S. Health Care System
- HSA 6115: Introduction to Management of Health Services Organizations
- HSA 6126: U.S. Health Insurance System
- HSA 6152: Overview of U.S. Health Policy
- HSA 6175: Health Care Financial Management
- HSA 6177: Advanced Health Care Finance
- HSA 6179: Introduction to Health Care Finance
- HSA 6188: Strategic Management in Health Administration
- HSA 6196: Healthcare Data Analytics II
- HSA 6197: Information Management in Health Administration
- HSA 6198: Information Management in Health Administration
- HSA 6342: Human Resource Management for Health Services Managers
- HSA 6385: Performance Management for Health Care Managers
- HSA 6395: Healthcare Data Analytics I
- HSA 6427: Legal and Ethical Issues in Health Administration
- HSA 6436: Health Economics
- HSA 6855: Internship in Health Administration
- HSA 6858: Internship in Health Services Research
- HSA 6878: Externship in Legal Aspects of Health Services Administration
- HSA 6905: Individual Study in Health Administration
- HSA 6910: Supervised Research
- HSA 6911: Research Seminar in Health Services Research
- HSA 6930: Special Topics in Health Services Administration
- HSA 6935: Seminar in Health Administration
- HSA 6939: Capstone Seminar in Health Administration
- HSA 6940: Supervised Teaching
- HSA 6946: Internship in Public Health Management and Policy
- HSA 7106: Seminar in Health Care Access and Utilization
- HSA 7116: Health Services Organizational Research
- HSA 7157: Research Foundations of Health Policy
- HSA 7414: Society, Health, and Medical Care
- HSA 7437: Advanced Health Economics
- HSA 7707: Health Services Research Methods I
- HSA 7708: Health Services Research Methods II
- HSA 7759: Quality and Outcomes in Health Services Research
- HSA 7905: Advanced Individual Study in Health Services Research
- HSA 7936: Seminar in Health Care Costs and Financing

- HSA 7938: Advanced Seminar in Health Services Research
- HSA 7979: Advanced Research
- HSA 7980: Research for Doctoral Dissertation
- PHC 6313: Environmental Health Concepts in Public Health

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
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- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States

- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
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- PHC 6585: Health Promotion and Disease Prevention
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- PHC 7980: Research for Doctoral Dissertation
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- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
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- RSD 6112: Rehabilitation Science Theory and Application II
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- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
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- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
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- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## Occupational Therapy Department

*Chair:* W. C. Mann.

*Graduate Coordinator:* C. A. Velozo, J.J. Foss.

*Complete faculty listing by department:* Follow this link.

The Department of Occupational Therapy offers graduate programs in occupational therapy leading to the Master of Health Science (M.H.S.) degree (on-campus nonthesis and thesis options and distance learning nonthesis option) and the entry-level Master of Occupational Therapy (M.O.T.) degree. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

**Master of Health Science:** This program is designed for students who have earned an undergraduate degree in Occupational therapy. The thesis option requires four semesters of course work and a formal research thesis, while the nonthesis option requires three semesters of course work and a research project. The program emphasizes research and advanced theories related to occupational therapy practice. Preparation for teaching, administrative, and other occupational therapy roles is supplemented through elective courses. A coherent series of elective courses related to occupational therapy must be approved by the supervisory committee chairperson before the second semester of work.

In addition to the requirements of the Graduate School, admission requires the candidate to have completed a curriculum in occupational therapy accredited by the American Occupational Therapy Association or by the World Federation of Occupational Therapists.

The distance learning degree option for the Master of Health Science is specifically intended to meet the needs of the working professional. The nonthesis program is designed to improve the knowledge and skills of working occupational therapists for practice in a complex and challenging health care system. It provides preparation for new practice areas, leadership roles, and independent practice and is delivered through the Internet. In addition to the departmental requirements listed above, applicants to the distance learning program must have basic personal computer competency and access to a computer that meets minimal configuration requirements.

Additional information about the Master of Health Science is available at <http://www.hp.ufl.edu> or <http://gradschool.rgp.ufl.edu> or by telephone at (352)273-6817. For distance learning, see <http://otdlm.phhp.ufl.edu/> or call toll free (866)878-3297.

**Master of Occupational Therapy:** This entry-level degree program is designed for students who do not have an undergraduate degree in occupational therapy. The program provides students with a holistic perspective, including an understanding of the philosophical and theoretical bases for practice in the current health care environment. The M.O.T. program provides a strong background in theory, assessment, and therapeutic interventions. Before their professional preparation in the M.O.T. program, students receive a liberal education in their pre-professional baccalaureate studies, including several courses specifically focused for students planning to enter the M.O.T. program. Students may enroll in courses in the Bachelor of Health Science degree program at the bachelor's level, or they may complete these courses on a postbaccalaureate level before starting the M.O.T. program. Students are only admitted into the M.O.T. program in summer term and graduate at the end of the fall term after 1.33 years of full-time study (5 semesters) and 58 credits.

Admission requirements include completion of an undergraduate degree and the prerequisite course work. Three letters of reference and a letter of application are required by the Department. Additional information is available at <http://www.phhp.ufl.edu/ot/> and <http://gradschool.rgp.ufl.edu> or by telephone (352)273-6817.

This program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association. The address for ACOTE is 4720 Montgomery Lane, Box 31220, Bethesda, MD, 20814-1220. The phone number is (301) 652-2632. Graduates of the program are eligible to sit for the national certification exam administered by the National Board for Certification in Occupational Therapy (NBCOT). The website address of NBCOT is [www.nbcot.org](http://www.nbcot.org).

## **Occupational Therapy**

### **College**

College of Public Health and Health Professions

### **Department/School**

Occupational Therapy Department

### **Occupational Therapy Program Information**

The UF Department of Occupational Therapy offers a Masters in Occupational Therapy (MOT). This program prepares students to meet the demands of a highly technological and fast paced American health care system.

The Masters in Occupational Therapy Degree Program is designed for students who do not have an entry-level professional level OT degree. To prepare to enter the Masters in Occupational Therapy program, undergraduate students may complete the University of Florida Health Science (BHS) degree program and the pre-OT track.

Applicants that have earned an undergraduate degree in a program other than UF's Health Science program can enter the MOT program through our Conditional Graduate program.

By completing the Liberal Arts prerequisites for the program, students study the biological, psychological and social systems that impact on the performance of occupational roles. The MOT program provides a strong background in theory, assessment and therapeutic interventions and assists student to develop a strong professional identity.

Students selected from the Health Science/pre-OT track undergraduate program can apply the 6 pre-OT track course toward the MOT requirements for the MOT program. Students who have graduated from the other colleges or universities can be admitted to the MOT program and complete the 6 pre-OT track courses as part of their graduate program prior to initiating coursework in the Masters in Occupational Therapy Degree Program. The six Health Science prerequisite courses are offered the Fall and Spring semesters preceding the Summer start of the MOT coursework.

For more information, please see our website: <http://ot.php.ufl.edu/academics/mot/program-description>.

## **Degrees**

Master of Health Science

Master of Occupational Therapy

## **Occupational Therapy Courses**

- OTH 5002: Foundations of Occupational Therapy
- OTH 5115C: Therapeutic Skills II: Areas of Occupation
- OTH 5324: Psychosocial Intervention
- OTH 5435: Therapeutic Skills I
- OTH 5722: Professional Development in Occupational Therapy
- OTH 5726C: Service Delivery and OT Management
- OTH 5770C: Research for Occupational Therapy
- OTH 5812: Practicum I
- OTH 5816: Practicum II
- OTH 5848: Internship I
- OTH 5849: Internship II
- OTH 6008: Neuroscience of Human Occupation
- OTH 6106: Assistive Technology and Occupational Performance
- OTH 6539: Occupational Therapy Theory
- OTH 6635: Principles of Occupational Therapy Screening and Evaluation I
- OTH 6636: Principles of Occupational Therapy Screening and Evaluation II
- OTH 6641: Occupational Therapy Interventions I
- OTH 6642: Occupational Therapy Interventions II
- OTH 6707: OT Manager
- OTH 6708: Issues in Occupational Therapy Practice I
- OTH 6709: Issues in Occupational Therapy Practice II
- OTH 6720: Trends and Issues in Health Care
- OTH 6763: Evidence Based Practice

- OTH 6861: Specialty Internship
- OTH 6905: Individual Work
- OTH 6907: Professional Development Project
- OTH 6933: Special Topics in Occupational Therapy
- OTH 6971: Research for Master's Thesis

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
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- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
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- PHC 6317: Risk Communication for Public Health Practice
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- PHC 6441: Health Disparities in the United States
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- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
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- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
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- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
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- PHC 7752: Seminar in Instrument Development for Public Health
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- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional

- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## Speech, Language and Hearing Sciences Department

*Interim Chair (2014-2015):* Colleen Le Prell

*Interim Chair (2013-2014):* Scott K. Griffiths

*Graduate Coordinators:* Kenneth J. Logan and Alice Holmes

*Complete faculty listing by department:* Follow this link.

Graduate programs in the Department lead to Master of Arts and Doctor of Philosophy degrees in Communication Sciences and Disorders and to the Doctor of Audiology degree.

Requirements for these degrees are given in the Graduate Degrees section of this catalog.

Graduate specializations and programs in speech-language pathology and audiology are accredited by the Council on Academic Accreditation/American Speech-Language-Hearing Association.

The **Doctor of Audiology (Au.D.) Program** in the Department of Speech, Language, and Hearing Sciences is a four-year graduate degree. Graduate students take course work in theoretical and applied audiologic sciences and research. There are no specific undergraduate courses required for admission to the Au.D. degree program, although applicants with a strong science background are encouraged to apply. Graduates of this program are eligible for the Certificate of Clinical Competence in Audiology (CCC-A) administered by the American Speech-Language-Hearing

Association, Board Certification in Audiology administered by the American Academy of Audiology, and for state licensure in audiology. For more information, contact Alice Holmes, Ph.D. (aholmes@ufl.edu).

The **Ph.D. Program in Communication Sciences and Disorders** provides a state-of-the-art education in research practices in speech-language pathology and audiology with a strong interdisciplinary focus. Our goal is to prepare the next generation of researchers who are specialized in basic and/or applied science that relates to a range of speech, language, hearing, and swallowing functions. The program is designed to develop researchers who are skilled at independently designing and conducting original research that adds to the body of knowledge in the field. Students are individually mentored and pursue individually designed programs of study tailored to their interests and needs, which incorporate training in appropriate adjunct fields such as engineering, dentistry, gerontology, linguistics, psychology, medicine and special education. For more information, contact Lori Altmann, Ph.D. (laltmann@ufl.edu).

The **Master of Arts (M.A.) Program** offers comprehensive academic training and clinical experience for students who are interested in a career in speech-language pathology. The five-semester program culminates in the completion of either a clinical externship or a Master's thesis, and it provides graduates with a solid foundation for obtaining employment in a variety of work settings. Students have the opportunity to complete clinical practica at sites within the University of Florida's Health Science Center and at other medical, rehabilitative, and educational facilities on or near the campus. These sites allow students to gain experience with providing clinical services to a range of patient populations.

Applicants to the Master's program must demonstrate successful completion of pre-requisite coursework in both normal bases of communication and introductory concepts in communication disorders. Additional information about these pre-requisites is available on the Department website. Graduates of the program are eligible for the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) from the American Speech-Language-Hearing Association as well as state licensure in speech-language pathology. For more information, contact Kenneth J. Logan, Ph.D. (klogan@ufl.edu).

The Department of Speech, Language, and Hearing Sciences is committed to providing its students with a high-quality educational experience that will prepare them for rewarding employment in the areas of speech-language pathology and audiology, as well as an eagerness for life-long learning and professional development. The department strives to enroll a diverse group of students who possess both high ethical standards and strong academic skills. The application deadlines are January 15 for fall admission to the Ph.D. program, and February 1 for fall admission to the Master's and Au.D. programs.

For more information, please see the program pages below and our website: <http://slhs.php.ufl.edu>.

## **Audiology**

### **College**

College of Public Health and Health Professions

### **Department/School**

Speech, Language and Hearing Sciences Department

### **Audiology Program Information**

The Department of Speech, Language, and Hearing Sciences offers the Doctor of Audiology degree in Audiology. The official minimum requirements for the degree are available in the Graduate Degrees section of this catalog.

The **Doctor of Audiology degree program** is a **campus-based program** that:

- Prepares students for a professional career in audiology
- Provides a wide array of experiences in the practice of diagnostic and rehabilitative audiology
- Provides students with complex and diverse skills necessary to meet the challenges of the rapidly changing hearing health care field.

The Au.D. program is a four-year graduate degree. The clinical and academic curriculum includes course work in the basic sciences, applied audiology, clinical research, statistics, audiologic rehabilitation, medical neuroscience, neuro-otology, cochlear implants, health care administration, programmable hearing aids, counseling, and aging. Graduates of this program are eligible for the Certificate of Clinical Competence in Audiology (CCC-A) administered by the American Speech-Language-Hearing Association, Board Certification in Audiology administered by the American Academy of Audiology, and for state licensure in audiology.

The on-campus program for bachelors-level applicants is a four-year graduate degree totaling 125 semester hours. The curriculum includes 78 hours of course work in basic sciences, applied audiology, clinical research, statistics, audiologic rehabilitation, medical neuroscience, neuro-otology, cochlear implants, pharmacology, health care administration, programmable and digital hearing aids, counseling, communication and aging, and speech-language pathology.

During the remaining 47 hours of the program, students will receive clinical experience at the campus clinic. These practicum experiences utilize various resources at the University of Florida Health Science Center and affiliated hospitals in the North Florida area as well as the Veterans Administration Medical Center. The final clinical training hours will occur during the fourth year as part of an audiology externship placement.

The **Distance Learning Au.D. Degree** is a flexible program designed to provide working professional audiologists with the complex and diverse skills necessary to meet the challenges of the dynamic healthcare marketplace. The program combines the professional experience of the College of Public Health and Health Professions with the academic excellence of the College of Liberal Arts and Sciences to provide an opportunity for working professionals to enhance their clinical skills and knowledge.

For more information, please see our websites: <http://audiology.ufl.edu/programs/on-campus/on-campus-au-d> and <http://audiology.ufl.edu/programs/distance-learning/distance-learning-au-d>.

## **Degrees Offered with a Major in Audiology**

Doctor of Audiology

## **Speech, Language and Hearing Sciences Departmental Courses**

- ASL 5406: Manual Communication with the Hearing Impaired
- LAE 6505: Applied Preschool Language Disorders: Diagnosis and Treatment
- LIN 5741: Applied English Grammar
- SPA 5051: Clinical Observation in Audiology
- SPA 5102: Auditory Anatomy and Physiology
- SPA 5128: Speech Perception
- SPA 5204: Phonological Disorders
- SPA 5211: Voice Disorders
- SPA 5225: Principles of Speech Pathology: Stuttering
- SPA 5245: Communicative Disorders Related to Cleft Palate
- SPA 5254: Neurocognitive Language Disorders
- SPA 5304: Principles of Audiological Evaluation



- SPA 5315: Peripheral and Central Auditory Disorders
- SPA 5401: Speech Pathology Language Disorder
- SPA 5405: Language Disorders II
- SPA 5553: Instrumentation and Diagnosis in Speech-Language Pathology
- SPA 5563: Psychosocial Aspects of Hearing Loss
- SPA 5646: Speech and Language of the Deaf and Hard of Hearing
- SPA 6008: Medical Aspects of Speech-Language Pathology
- SPA 6010: Basic Auditory Sciences
- SPA 6117: Science of Singing
- SPA 6133L: Hearing Aid Analysis Laboratory
- SPA 6207: Applied Phonological Disorders: Diagnosis and Treatment
- SPA 6211: Applied Voice Disorders: Diagnosis and Treatment
- SPA 6217: Vocal Health and Habilitation
- SPA 6229: Applied Fluency Disorders: Diagnosis and Treatment
- SPA 6233: Speech Motor Control Disorders
- SPA 6270: Auditory Processing Disorders
- SPA 6805: Introduction to Graduate Research
- SPA 6305: Pediatric Audiology
- SPA 6311: Medical Audiology
- SPA 6312: Advanced Audiology and Neuro-Otology
- SPA 6317: Vestibular Disorders
- SPA 6323: Audiologic Rehabilitation for Adults
- SPA 6324: Audiologic Rehabilitation for Children
- SPA 6340: Amplification I
- SPA 6341: Amplification II
- SPA 6342: Amplification III
- SPA 6390: Proseminar: Speech-Language Pathology and Audiology
- SPA 6410: Adult Language Disorders
- SPA 6416: Applied Neurogenic Disorders: Diagnosis and Treatment
- SPA 6430: Applied Developmental Disorders: Diagnosis and Treatment in Speech and Language
- SPA 6436: Issues in Autism Spectrum Disorders
- SPA 6506: Clinical Clerkship in Audiology
- SPA 6507: Applied Augmentative and Alternative Communication
- SPA 6521: Practicum in Speech-Language Diagnostics: UFSHC
- SPA 6524: Practicum in Speech-Language Therapy: UFSHC
- SPA 6531: Clinical Practice in Hearing Assessment
- SPA 6533: Clinical Practice in Aural Rehabilitation
- SPA 6559: Alternative and Augmentative Communication
- SPA 6564: Communication and Aging
- SPA 6565: Seminar in Dysphagia
- SPA 6568: Clinical Evaluation in Medical Speech-Language Pathology
- SPA 6570: Seminar: Professional Aspects of Speech-Language Pathology
- SPA 6581: Special Clinical
- SPA 6830: Communication Disorders in Medically Complex Pediatric Populations
- SPA 6905: Individual Study
- SPA 6910: Supervised Research
- SPA 6930: Proseminar in Speech-Language Pathology and Audiology
- SPA 6935: Applied Reading Disabilities: Diagnosis and Treatment
- SPA 6936: Special Topics

- SPA 6940: Supervised Teaching
- SPA 6942: Externship in Speech-Language Pathology
- SPA 6971: Research for Master's Thesis
- SPA 7132C: Clinical Instrumentation for Evaluating Upper Aerodigestive Tract Functions
- SPA 7306: Audiologic Assessment in a Medical Setting
- SPA 7318: Clinical Auditory Electrophysiology
- SPA 7319: Balance Disorders: Evaluation and Treatment
- SPA 7325: Audiologic Rehabilitation
- SPA 7343: Cochlear Implants and Assistive Devices
- SPA 7348: Principles of Amplification
- SPA 7353: Environmental Hearing Conservation
- SPA 7354: Seminar in Audiology: Hearing Conservation and Noise Control
- SPA 7391: Business and Professional Issues in Audiology
- SPA 7415: Neurolinguistics of Adult Language Disorders
- SPA 7500: Public School Practicum
- SPA 7523: Practicum in Speech Pathology in a Medical/Dental Setting
- SPA 7540: Diagnosis and Treatment of Language and Language-Based Literacy Disorders
- SPA 7566: Counseling Individuals with Hearing Losses
- SPA 7833: Audiology Research Project
- SPA 7937: Seminar in Advanced Studies of Language and Literacy Development and Disabilities
- SPA 7945: Graduate Practicum in Audiology
- SPA 7946: Clinical I: Practicum in Medical Speech and Language Pathology
- SPA 7947: Clinical II: Practicum in Advanced Medical Speech-Language Pathology
- SPA 7958: Clinical Externship
- SPA 7979: Advanced Research
- SPA 7980: Research for Doctoral Dissertation

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases
- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging

- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment
- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health

- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II
- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## **Communication Sciences and Disorders**

### **College**

College of Public Health and Health Professions

### **Department/School**

Speech, Language and Hearing Sciences Department

### **Communication Sciences and Disorders Program Information**

The Department of Speech, Language, and Hearing Sciences offers programs leading to the Doctor of Philosophy and the Master of Arts in Communication Sciences and Disorders. The official minimum requirements for these degrees are available in the Graduate Degrees section of this catalog.

The primary goal of the **Ph.D. program** is to educate students as researchers with a focus on interdisciplinary studies. Doctoral students typically engage in study and research within several departments or programs, including biomedical engineering, dentistry, gerontology, linguistics, medicine, psychology, and special education. Coursework is designed to develop expertise in various aspects of research so that students can ultimately conduct independent and original research programs which add to the body of knowledge in basic and applied communication sciences and disorders. The Department of Speech, Language, and Hearing Sciences is committed to recruiting, admitting, supporting, graduating, and helping to place students with the highest ethical and academic qualities.

The **Master of Arts program** at the University of Florida offers students a comprehensive learning experience – one that combines active classroom-based learning with an assortment of innovative "hands on" learning opportunities at the many clinical sites available on or near the University of Florida campus. Graduates of our program can expect to develop the knowledge and skills that are needed to deliver evidence-based clinical services to a wide range of populations in a variety of clinical settings. The Masters program is primarily oriented toward developing students' clinical competence; however, our students also have access to a range of opportunities for developing skills in basic and applied research. Students who elect to enter the "thesis track" of the program conduct original research in laboratory and real-world settings under the mentorship of faculty who are widely recognized for their research contributions.

For more information, please see our website: <http://slhs.phhp.ufl.edu/academics>.

### **Degrees Offered with a Major in Communication Sciences and Disorders**

Doctor of Philosophy

Master of Arts

### **Speech, Language and Hearing Sciences Departmental Courses**

- ASL 5406: Manual Communication with the Hearing Impaired
- LAE 6505: Applied Preschool Language Disorders: Diagnosis and Treatment
- LIN 5741: Applied English Grammar
- SPA 5051: Clinical Observation in Audiology
- SPA 5102: Auditory Anatomy and Physiology
- SPA 5128: Speech Perception
- SPA 5204: Phonological Disorders
- SPA 5211: Voice Disorders
- SPA 5225: Principles of Speech Pathology: Stuttering
- SPA 5245: Communicative Disorders Related to Cleft Palate
- SPA 5254: Neurocognitive Language Disorders
- SPA 5304: Principles of Audiological Evaluation
- SPA 5315: Peripheral and Central Auditory Disorders
- SPA 5401: Speech Pathology Language Disorder
- SPA 5405: Language Disorders II
- SPA 5553: Instrumentation and Diagnosis in Speech-Language Pathology
- SPA 5563: Psychosocial Aspects of Hearing Loss
- SPA 5646: Speech and Language of the Deaf and Hard of Hearing
- SPA 6008: Medical Aspects of Speech-Language Pathology
- SPA 6010: Basic Auditory Sciences
- SPA 6117: Science of Singing
- SPA 6133L: Hearing Aid Analysis Laboratory
- SPA 6207: Applied Phonological Disorders: Diagnosis and Treatment
- SPA 6211: Applied Voice Disorders: Diagnosis and Treatment
- SPA 6217: Vocal Health and Habilitation
- SPA 6229: Applied Fluency Disorders: Diagnosis and Treatment
- SPA 6233: Speech Motor Control Disorders
- SPA 6270: Auditory Processing Disorders
- SPA 6805: Introduction to Graduate Research
- SPA 6305: Pediatric Audiology
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- SPA 6317: Vestibular Disorders
- SPA 6323: Audiologic Rehabilitation for Adults
- SPA 6324: Audiologic Rehabilitation for Children
- SPA 6340: Amplification I
- SPA 6341: Amplification II
- SPA 6342: Amplification III
- SPA 6390: Proseminar: Speech-Language Pathology and Audiology
- SPA 6410: Adult Language Disorders
- SPA 6416: Applied Neurogenic Disorders: Diagnosis and Treatment
- SPA 6430: Applied Developmental Disorders: Diagnosis and Treatment in Speech and Language
- SPA 6436: Issues in Autism Spectrum Disorders
- SPA 6506: Clinical Clerkship in Audiology
- SPA 6507: Applied Augmentative and Alternative Communication
- SPA 6521: Practicum in Speech-Language Diagnostics: UFSHC
- SPA 6524: Practicum in Speech-Language Therapy: UFSHC
- SPA 6531: Clinical Practice in Hearing Assessment
- SPA 6533: Clinical Practice in Aural Rehabilitation

- SPA 6559: Alternative and Augmentative Communication
- SPA 6564: Communication and Aging
- SPA 6565: Seminar in Dysphagia
- SPA 6568: Clinical Evaluation in Medical Speech-Language Pathology
- SPA 6570: Seminar: Professional Aspects of Speech-Language Pathology
- SPA 6581: Special Clinical
- SPA 6830: Communication Disorders in Medically Complex Pediatric Populations
- SPA 6905: Individual Study
- SPA 6910: Supervised Research
- SPA 6930: Proseminar in Speech-Language Pathology and Audiology
- SPA 6935: Applied Reading Disabilities: Diagnosis and Treatment
- SPA 6936: Special Topics
- SPA 6940: Supervised Teaching
- SPA 6942: Externship in Speech-Language Pathology
- SPA 6971: Research for Master's Thesis
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- SPA 7306: Audiologic Assessment in a Medical Setting
- SPA 7318: Clinical Auditory Electrophysiology
- SPA 7319: Balance Disorders: Evaluation and Treatment
- SPA 7325: Audiologic Rehabilitation
- SPA 7343: Cochlear Implants and Assistive Devices
- SPA 7348: Principles of Amplification
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- SPA 7354: Seminar in Audiology: Hearing Conservation and Noise Control
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- SPA 7566: Counseling Individuals with Hearing Losses
- SPA 7833: Audiology Research Project
- SPA 7937: Seminar in Advanced Studies of Language and Literacy Development and Disabilities
- SPA 7945: Graduate Practicum in Audiology
- SPA 7946: Clinical I: Practicum in Medical Speech and Language Pathology
- SPA 7947: Clinical II: Practicum in Advanced Medical Speech-Language Pathology
- SPA 7958: Clinical Externship
- SPA 7979: Advanced Research
- SPA 7980: Research for Doctoral Dissertation

## **College of Public Health and Health Professions Courses**

- HSC 5938: Special Topics
- HSC 6905: Independent Study
- HSC 6939: Special Topics
- HSC 6940: Supervised Teaching
- PHC 6000: Epidemiology Methods I
- PHC 6001: Principles of Epidemiology in Public Health
- PHC 6002: Epidemiology of Infectious Diseases

- PHC 6003: Epidemiology of Chronic Diseases and Disability
- PHC 6009: Biology and Epidemiology of HIV/AIDS
- PHC 6011: Epidemiology Methods II
- PHC 6016: Social Epidemiology in Public Health
- PHC 6036: Environmental Infectious Diseases: A Molecular Approach
- PHC 6050: Statistical Methods for Health Sciences Research I
- PHC 6102: Introduction to Public Health Administrative Systems
- PHC 6103: Systems Thinking for Public Health
- PHC 6104: Evidence-Based Management of Public Health Programs
- PHC 6120: Community Assessment and Partnerships
- PHC 6146: Public Health Program Planning and Evaluation
- PHC 6153: Public Policy and Aging
- PHC 6183: Disaster Preparedness and Emergency Response
- PHC 6193: Qualitative Data Analysis
- PHC 6194: Spatial Epidemiology
- PHC 6195: Health information for Diverse Populations: Theory & Methods
- PHC 6220: Overview of Long-Term Care
- PHC 6251: Assessment and Surveillance in Public Health
- PHC 6301: Aquatic Systems and Environmental Health
- PHC 6309: Environmental Justice Issues in Public Health
- PHC 6312: Water Quality and Human Health
- PHC 6313: Environmental Health Concepts in Public Health
- PHC 6316: Health, Risk, and Crisis Communication
- PHC 6317: Risk Communication for Public Health Practice
- PHC 6346: Occupational and Environmental Health Among Agriculture Workers
- PHC 6370: Public Health Biology
- PHC 6403: Adolescence, Risk Taking and Health
- PHC 6404: Gender, Sexuality, and Health
- PHC 6410: Psychological, Behavioral, and Social Issues in Public Health
- PHC 6413: Critical Incidents and Violence in Communities
- PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology
- PHC 6419: Biomedical and Psychological Aspects of Very Late Life
- PHC 6421: Public Health Law and Ethics
- PHC 6441: Health Disparities in the United States
- PHC 6445: Global Public Health and Development II
- PHC 6447: Ecology of HIV/Aids in the Rural South
- PHC 6512: Environmental Management of Vector-Borne Diseases
- PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety
- PHC 6519: Zoonotic Diseases in Humans and Animals
- PHC 6520: Foodborne Diseases
- PHC 6530: Public Health Issues of Mothers and Children
- PHC 6543: Community Practice of Behavioral Health Risk Prevention
- PHC 6544: Health Behavior Interventions in Practice
- PHC 6561: Public Health Laboratory Techniques
- PHC 6585: Health Promotion and Disease Prevention
- PHC 6586: Interventions for Public Health
- PHC 6607: Critical Issues in Public Health
- PHC 6700: Social and Behavioral Research Methods
- PHC 6702: Exposure Measurement and Assessment



- PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective
- PHC 6762: International Public Health
- PHC 6905: Independent Study
- PHC 6917: Supervised Research Project
- PHC 6601: Seminar in Contemporary Public Health Issues
- PHC 6931: Seminars in Public Health
- PHC 6937: Special Topics in Public Health
- PHC 6945: Public Health Practicum
- PHC 6946: Public Health Internship
- PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods
- PHC 7038: Psychiatric Epidemiology
- PHC 7587: Theory Development and Testing in Behavioral & Community Public Health
- PHC 7727: Grant Writing for Population Health Research
- PHC 7752: Seminar in Instrument Development for Public Health
- PHC 7901: Epidemiology Literature Review and Critique (Journal Club)
- PHC 7907: Social and Behavioral Science Journal Club
- PHC 7979: Advanced Research
- PHC 7980: Research for Doctoral Dissertation
- PHT 5156: Exercise Physiology
- PHT 6125C: Concepts in Clinical Biomechanics
- PHT 6127C: Control of Gait and Posture
- PHT 6167C: Applied Neurophysiology for Physical Therapy
- PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy
- PHT 6316: Neurological Aspects of Orthopedic Rehabilitation
- PHT 6615L: Research Instrumentation in Physical Therapy
- PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation
- RSD 6110: Rehabilitation Science Theory and Application I
- RSD 6112: Rehabilitation Science Theory and Application II
- RSD 6114: Rehabilitation in the United Kingdom
- RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science
- RSD 6700: Rasch Measurement: Introduction and Application
- RSD 6705: Research Methods in Rehabilitation
- RSD 6706: Scientific Writing for the Rehabilitation Professional
- RSD 6900: College Classroom: Teaching Process and Practice
- RSD 6905: Individual Work
- RSD 6910: Supervised Research
- RSD 6930: Special Topics in Rehabilitation Science
- RSD 6940: Supervised Teaching
- RSD 7979: Advanced Research
- RSD 7980: Research for Doctoral Dissertation
- RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling
- RCS 6066: Rehabilitation Issues in Human Growth and Development
- RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling
- RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling
- RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling
- RCS 6412: Rehabilitation Counseling Theory and Practice
- RCS 6470: Human Sexuality and Disability
- RCS 6601: Forensic Rehabilitation Consultation I
- RCS 6602: Forensic Rehabilitation Consultation II

- RCS 6625: Community Counseling and Case Management
- RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling
- RCS 6740: Rehabilitation Research
- RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation
- RCS 6801: Rehabilitation Counseling Practicum
- RCS 6825: Internship in Rehabilitation Counseling
- RCS 6905: Individual Work
- RCS 6910: Supervised Research
- RCS 6931: Special Topics
- RCS 6940: Supervised Teaching
- RCS 6945: Advanced Rehabilitation Counseling Practicum
- RCS 6971: Research for Master's Degree

## College of Veterinary Medicine

Dean: G. F. Hoffsis

Complete faculty listings: Follow this link.

The UF College of Veterinary Medicine is the state's only veterinary college. UF's College of Veterinary Medicine offers comprehensive services to the public through teaching, research, extension and state-of-the-art patient care.

For more information, please see our website: <http://www.vetmed.ufl.edu>

Departments and Programs within the College of Veterinary Medicine

College of Veterinary Medicine Courses

## Veterinary Medical Sciences

### College

College of Veterinary Medicine

### Veterinary Medical Sciences Program

*Chair:* C. Risco

*Graduate Coordinator (Large Animals):* I. Larkin

*Graduate Coordinator (Small Animals):* D. Lewis

*Complete faculty listing by department:* Follow this link.

The College of Veterinary Medicine offers graduate study leading to the Master of Science and Doctor of Philosophy degrees in veterinary medical sciences. The College also offers certification and a nonthesis concentration in forensic toxicology via web-based distance education. Minimum requirements for the Master of Science and Doctor of Philosophy degrees are described in the *Graduate Degrees* section of this catalog.

The program provides extensive training in basic and applied research for qualified students with a baccalaureate degree or a D.V.M. or equivalent degree. Applicants are expected to have a background in the biological sciences,

mathematics, chemistry, and physics. Particular attention is paid to the advanced education of veterinarians, those interested solely in research, and those interested in combining their graduate study with residency training in a clinical specialty. The College offers three areas of specialization within the veterinary medical sciences program:

**Large and Small Animal Clinical Sciences:** Physiology, endocrinology, aquatic animal health, fish diseases, gastroenterology, immunology, vision sciences, perinatology, reproductive biology, pharmacokinetics, veterinary sports medicine, and wildlife and zoological medicine (I. Larkin and D. Lewis Graduate Coordinators).

**Physiological Sciences:** Comparative anatomy, physiology, pharmacology, biochemistry, neurobiology, nutrition, reproductive biology, and toxicology (R. Johnson, Graduate Coordinator).

**Infectious Diseases and Experimental Pathology:** Bacteriology, parasitology, virology, immunopathology, molecular mechanisms of disease and host defense, epidemiology, and veterinary public health (M.T. Long, Graduate Coordinator).

The College participates in the interdisciplinary specialization in toxicology, in cooperation with other departments and colleges in both the Health Science Center and the Institute of Food and Agricultural Sciences and with the Center for Environmental and Human Toxicology (see the Toxicology description under *Interdisciplinary Graduate Studies*).

The following courses in related areas are acceptable for graduate major credit in veterinary medical sciences:

**Physiological Sciences:** ANS 6704, ANS 6751, BCH 5413, BCH 6206, BCH 6415, BCH 6740, BMS 6510, GMS 6400C, GMS 6735, GMS 7706C, GMS 7743. **Infectious Diseases and Experimental Pathology:** BCH 5413, BCH 6415, BMS 603, GMS 5304C, GMS 6140, GMS 6152, GMS 6330, GMS 6332, GMS 6333, GMS 6381, GMS 6382, GMS 6421, STA 6208, STA 6166, STA 6176. **Large and Small Animal Clinical Sciences:** all of the above.

## Degrees Offered with a Major in Veterinary Medical Sciences

Doctor of Philosophy

without a concentration

concentration in Animal Molecular and Cellular Biology

concentration in Clinical and Translational Science

concentration in Toxicology

Master of Science

without a concentration

concentration in Forensic Toxicology

concentration in Shelter Medicine

concentration in Veterinary Forensic Sciences

## Courses

- GMS 6070: Sensory and Motor Systems

- GMS 6074: Comparative and Evolutionary Neurobiology
- GMS 6077: Neural Degeneration and Regeneration
- GMS 6312: Clinical Chemistry and Toxicology
- GMS 6313: Clinical Chemistry and Toxicology: A Rotation
- GMS 6393: Seminar in Clinical Chemistry
- PHA 5270: Health Care and Patient Safety
- PHA 5271: Health Care Risk Management
- PHA 5272: Risk Management, Liability and Compliance
- PHA 6115: Equilibria, Complexations, and Interactions of Drugs
- PHA 6116: In Vivo and In Vitro Stability of Drugs
- PHA 6118: Molecular Diversity
- PHA 6125: Pharmacokinetics and Biopharmaceutics
- PHA 6170C: Pharmaceutical Product Formulation
- PHA 6183: Pharmaceutical Gene Delivery
- PHA 6185: Pharmaceutical Drug Development
- PHA 6227: Institutional Pharmacy Leadership I
- PHA 6228: Institutional Pharmacy Leadership II
- PHA 6235: Advanced Pharmaceutical Law
- PHA 6236: Health Sciences Liability Law
- PHA 6250: Patient Responsibility in Health Care
- PHA 6264: Pharmacoeconomics and Health Technology Assessment
- PHA 6265: Introduction to Pharmaceutical Outcomes and Policy I
- PHA 6266: Introduction to Pharmaceutical Outcomes and Policy II
- PHA 6268: Pharmacoepidemiology and Patient Safety
- PHA 6269: Pharmaceutical Products and Public Policy
- PHA 6273: Structure, Process, and Outcomes of Regulation
- PHA 6274: Federal Regulations of Drugs and Pharmacy
- PHA 6275: Federal Regulations of Controlled Substances
- PHA 6276: Regulating Pharmaceutical Access and Costs
- PHA 6277: Ethics in Drug Development Production and Use
- PHA 6278: State Regulation of Drugs and Pharmacy
- PHA 6279: Pharmaceutical Outcomes and Policy Seminar
- PHA 6286: Pharmaceutical Microeconomics
- PHA 6287: Pharmaceutical Health Economics
- PHA 6288: Critical Review of Research Methods
- PHA 6289: Regulating Clinical Research
- PHA 6291: Pharmaceutical Health Care Systems
- PHA 6416: Pharmaceutical Analysis I
- PHA 6417: Pharmaceutical Analysis II
- PHA 6427: Pharmacogenetics of Drug Metabolism
- PHA 6440: Seminar in Drug Discovery
- PHA 6717: Measurement in Pharmacy Administration Research
- PHA 6793: Evidentiary Basis of Pharmaceutical Use
- PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research
- PHA 6798: The Use and Abuse of Statistics in Drug Regulation
- PHA 6799: Patient Safety Program Evaluation
- PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy
- PHA 6891: Introduction to Pharmacoepidemiology
- PHA 6892: Practices and Procedures of the IRB

- PHA 6893: Research Ethics
- PHA 6894: Introduction to Graduate Studies
- PHA 6896: Preclinical Drug Evaluation
- PHA 6937: Topics in Pharmaceutical Administration
- PHC 6107: Introduction to Veterinary Public Health
- VME 5162C: Avian Diseases
- VME 5244: Physiology: Organ Systems
- VME 6008: Care of Aquatic Megavertebrates
- VME 6010: Aquatic Animal Conservation Issues
- VME 6011: Introduction to Aquatic Wildlife Health Issues
- VME 6017: Manatee Health & Conservation
- VME 6051: Cruelty to Animals and Interpersonal Violence
- VME 6052: Animal Crime Scene Processing
- VME 6054: Scientific and Legal Principles of Forensic Evidence
- VME 6056: Animal Law
- VME 6076C: Andrology
- VME 6135: Diseases of Laboratory Animals I
- VME 6136: Diseases of Laboratory Animals II
- VME 6186: Advanced Topics in Disease Pathogenesis
- VME 6421: Biology and Molecular Biology of Avian Viruses
- VME 6430C: Contemporary Issues in Small Animal Surgery
- VME 6464: Molecular Pathogenesis
- VME 6505: Autoimmunity
- VME 6570: Wildlife Conservation and Forensic Science
- VME 6571: Forensic Applied Animal Behavior
- VME 6572: Forensic Aspects of Agricultural Animal Welfare
- VME 6573: Wildlife Forensic Genetics
- VME 6575: Veterinary Forensic Medicine
- VME 6576: Veterinary Forensic Pathology
- VME 6577: Practicing Pathology
- VME 6578: Forensic Veterinary Osteology
- VME 6579: Veterinary Forensic Radiology and Imaging
- VME 6602: General Toxicology
- VME 6603: Advanced Toxicology
- VME 6604: Literature Survey in Toxicology
- VME 6605: Toxic Substances
- VME 6606: Ecological Risk Assessment
- VME 6607: Human Health Risk Assessment
- VME 6613: Forensic Toxicology I
- VME 6614: Forensic Toxicology II
- VME 6615: Veterinary Forensic Toxicology
- VME 6650: Principles of Mammalian Pharmacology
- VME 6766: Laboratory Quality Assurance/Quality Control
- VME 6767: Issues in the Responsible Conduct of Research
- VME 6771: Veterinary Epidemiologic Research
- VME 6905: Problems in Veterinary Medical Sciences
- VME 6910: Supervised Research
- VME 6931: Seminar in Veterinary Medical Sciences
- VME 6932: Seminar in Physiological Sciences

- VME 6933: Seminar in Infectious Diseases and Experimental Pathology
- VME 6934: Topics in Veterinary Medical Sciences
- VME 6936: Seminar in Pathophysiology
- VME 6938: Topics in Aquatic Animal Health
- VME 6940: Supervised Teaching
- VME 6971: Research for Master's Thesis
- VME 7979: Advanced Research
- VME 7980: Research for Doctoral Dissertation
- WIS 5323C: Impact of Diseases on Wildlife Population
- WIS 6557: Wildlife Conservation Laws and Legislation
- WIS 6559: Contemporary Issues in Wildlife Protection and Conservation
- WIS 6561: Wildlife Crime Scene Processing

## **College of Pharmacy Courses**

- PHA 5171: Pharmaceutical Biotechnology
- PHA 6131: Pharmacometrics and Systems Pharmacology
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6806: Pharmacoeconomic Modeling
- PHA 6910: Supervised Research
- PHA 6935: Selected Topics in Pharmacy
- PHA 6936: Advanced Topics in Pharmaceutical Sciences
- PHA 6938: Research Seminar
- PHA 6940: Supervised Teaching
- PHA 6971: Research for Master's Thesis
- PHA 7979: Advanced Research
- PHA 7980: Research for Doctoral Dissertation

## **Pharmacodynamics Courses**

- PHA 5531: Neurotoxicology
- PHA 6508: Systems Physiology and Pathophysiology I
- PHA 6509: Systems Physiology and Pathophysiology II
- PHA 6512L: Experiential Research Training in Pharmacodynamics
- PHA 6521C: Research Techniques in Pharmacodynamics
- PHA 6522L: ICBR Molecular Techniques Laboratory
- PHA 6540: Neurochemical Foundation of Pharmacodynamics
- PHA 7939: Journal Colloquy in Pharmacodynamics

## **Pharmacology Courses**

- GMS 6563: Molecular Pharmacology
- GMS 6590: Seminar in Pharmacology
- GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes
- GMS 6735: Neuropharmacology
- GMS 7593: Topics in Pharmacology and Toxicology

## **Animal Molecular and Cellular Biology Department**

*Director:* P.J. Hansen

*Complete faculty listing by department:* Follow this link.

For more information about the program, contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu), follow the link below to our catalog page, or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

## **Animal Molecular and Cellular Biology**

### **College**

- College of Agricultural and Life Sciences
- College of Liberal Arts and Sciences
- College of Veterinary Medicine

### **Department/School**

Animal Molecular and Cellular Biology Department

### **Animal Molecular and Cellular Biology Program**

The animal molecular and cell biology (AMCB) graduate program offers Master of Science and Doctor of Philosophy degrees. Faculty are drawn from these disciplines:

- Animal Sciences
- Biochemistry and Molecular Biology
- Large Animal Clinical Sciences
- Obstetrics and Gynecology
- Zoology

Early in the program, students choose a faculty supervisor who will ensure the quality of their research experience. Students may also do optional rotations through the laboratories of one or more other faculty. The Annual Research Symposium features guest speakers and student research presentations. A weekly journal club and monthly seminars draw on the knowledge and diversity the campus offers in molecular and cell biology.

Core course requirements for the M.S. degree are BCH 5045 and registration in a 1-credit graduate seminar course. Core course requirements for the Ph.D. include BCH 5413 and GMS 6421 and registration in two graduate seminar courses.

Contact P.J. Hansen at [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu) or visit the program's website at <http://www.animal.ufl.edu/amcb/>.

### **Degrees Offered with a Major in Animal Molecular and Cellular Biology**

Doctor of Philosophy

Master of Science

## Animal Molecular and Cellular Biology Courses

- ALS 5905: Individual Study
- ALS 6046: Grant Writing
- ANS 5312C: Applied Ruminant Reproductive Management
- ANS 5446: Animal Nutrition
- ANS 5935: Reproductive Biology Seminar and Research Studies
- ANS 6288: Experimental Techniques and Analytical Procedures in Meat Research
- ANS 6314: Experimental Embryology
- ANS 6313: Current Concepts in Reproductive Biology
- ANS 6449: Vitamins
- ANS 6452: Principles of Forage Quality Evaluation
- ANS 6458: Advanced Methods in Nutrition Technology
- ANS 6636: Meat Technology
- ANS 6666L: Molecular and Cellular Research Methods
- ANS 6702: Lactation Physiology of Farm Animals
- ANS 6704: Mammalian Endocrinology
- PCB 6816: Thermal Physiology
- ANS 6707: Growth Physiology in Farm Animals
- ANS 6711: Current Topics in Equine Nutrition and Exercise Physiology
- ANS 6715: Gastrointestinal and Feed Microbiology
- ANS 6716: Physiology in Farm Animals
- ANS 6718: Nutritional Physiology of Domestic Animals
- ANS 6723: Mineral Nutrition and Metabolism
- ANS 6745: Introduction to Statistical Genetics
- ANS 6750: Reproductive Physiology in Farm Animals
- ANS 6751: Physiology of Reproduction
- ANS 6751C
- ANS 6767: Molecular Endocrinology
- ANS 6905: Problems in Animal Science
- ANS 6910: Supervised Research
- ANS 6932: Special Topics in Animal Science
- ANS 6933: Graduate Seminar in Animal Science
- ANS 6936: Graduate Seminar in Animal Molecular and Cell Biology
- ANS 6939: Animal Molecular and Cellular Biology Journal Colloquy
- ANS 6940: Supervised Teaching
- ANS 6971: Research for Master's Thesis
- ANS 7979: Advanced Research
- ANS 7980: Research for Doctoral Dissertation
- BCH 5045: Graduate Survey of Biochemistry
- BCH 6876: Recent Advances in Membrane Biology
- BME 5085: Patents, Product Development, and Technology Transfer
- BME 5401: Biomedical Engineering and Physiology I
- BCH 5413: Mammalian Molecular Biology and Genetics
- BCH 6740: Physical Biochemistry/Structural Biology
- BCH 6877: Recent Advances in Structural Biology
- BCH 6878: Recent Advances in Cytoskeletal Processes



- GMS 6011: Mouse Genetics
- GMS 6012: Human Genetics
- GMS 6013: Developmental Genetics
- GMS 6014: Applications of Bioinformatics to Genetics
- GMS 6017C: In-Vitro Fertilization Laboratory Practicum A
- GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum
- GMS 6031: Molecular Immunology
- GMS 6051: Signal Transduction
- GMS 6061: Nuclear Structure and Dynamics
- GMS 6062: Protein Trafficking
- GMS 6065: Fundamentals of Cancer Biology
- GMS 6140: Principles of Immunology
- GMS 6331: Stem Cell Biology
- GMS 6421: Cell Biology
- GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation
- MCB 5305L: Microbial Genetics and Biotechnology Laboratory
- MCB 6485: Advanced Techniques in Microbiology and Cell Science
- PCB 5065: Advanced Genetics
- PCB 5235: Immunology
- PCB 5615: Molecular Evolution and Systematics
- PHA 6449: Pharmacogenomics
- STA 6166: Statistical Methods in Research I
- STA 6167: Statistical Methods in Research II
- STA 6934: Special Topics in Statistics
- VME 5244: Physiology: Organ Systems
- VME 6602: General Toxicology
- VME 6810: Integrating Veterinary Medicine with Shelter Systems
- VME 6811: Shelter Animal Physical Health
- VME 6812: Shelter Animal Behavior and Welfare
- ZOO 6927: Special Topics in Zoology

## UF Graduate Courses

### Course Descriptions - All (unsorted)

#### **ABE 5015: Empirical Models of Crop Growth and Yield Response**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Analytical models useful for engineering design and management decisions, including water reuse. Emphasis on analytical functions. Modeling strategy based on patterns of data, functional relationships, connections among various factors, consistency among data sets, and mathematical beauty.

### **ABE 5038: Recent Developments and Applications in Biosensors**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* At least senior status in engineering and background in biology including biomolecules.

Introduction to biosensors, design and performance analysis. Fundamental application of biosensor theory will be demonstrated, including recognition, transduction, signal acquisition, and post processing/data analysis.

### **ABE 5152: Electro-Hydraulic Circuits and Controls**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* EML 3100, EGM 3400, 3520.

Engineering analysis, design, and experimentation of electro-hydraulic circuits and systems. Design of hydraulic circuits, fluid power system components, hydraulic actuator analysis, servo and proportional valve performance, and electro-hydraulic control theory and applications.

### **ABE 5332: Advanced Agricultural Structures**

**Credits: 3**                      **Grading Scheme:** Letter

Design criteria for agricultural structures including steady and unsteady heat transfer analysis, environmental modification, plant and animal physiology, and structural systems analysis.

### **ABE 5442: Advanced Agricultural Process Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Engineering principles, processes, and techniques for using biological agents for production of chemicals, food, biofuels, and pharmaceuticals, and waste treatment.

### **ABE 5643C: Biological Systems Modeling**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* MAC 2312.

Introduction to concepts and methods of process-based modeling of biological systems; physiological, populational, and agricultural applications.

### **ABE 5646: Biological and Agricultural Systems Simulation**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* MAC 2312, STA 3032 or STA 4322.      *Corequisite:* GCC approved 10/22/07 and forwarded to registrar.

Basic concepts of systems analysis, modeling, and computer simulation of dynamic biological and agricultural systems. Methods for working with models, including sensitivity analysis, parameter estimation, and model evaluation. Applications of models in agricultural and biological systems.

### **ABE 5653: Rheology and Mechanics of Agricultural and Biological Materials**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* MAC 2313, PHY 2048, CHM 2045, or consent of instructor.

Relation of biophysical and biochemical structure to rheological and mechanical behavior of biological materials in solid, liquid, and granular form; methods for measuring material properties governing these behaviors.

### **ABE 5663: Advanced Applied Microbial Biotechnology**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* general biology and organic chemistry, or consent of instructor.

Principles of microbial biotechnology, emphasizing the application of microorganisms for industrial processes (e.g., energy, environmental, food, pharmaceutical, and chemical).

### **ABE 5707C: Agricultural Waste Management**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* 4 or higher classification.

Engineering analysis and design of systems for the collection, storage, treatment, transport, and utilization of livestock and other agricultural organic wastes and wastewaters. Field trips to operating systems and laboratory evaluation of materials and processes.

#### **ABE 5815C: Food and Bioprocess Engineering Design**

**Credits: 4**                      **Grading Scheme:** Letter

Engineering design of unit process operations employed in agro/food, pharmaceutical, and biological industries including sterilization/pasteurization, radiation, freezing, drying, evaporation, fermentation, distillation.

#### **ABE 6005: Applied Control for Automation and Robots**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 5311 .

Introduction to industrial controls, programmable logic controllers, and manipulator application programming in agricultural and biological engineering. Kinematics, dynamics, and control strategies for serial link manipulators in agricultural applications.

#### **ABE 6031: Instrumentation in Agricultural Engineering Research**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and application of measuring instruments and devices for obtaining experimental data in agricultural engineering research.

#### **ABE 6035: Advanced Remote Sensing: Science and Sensors**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302.

Develops understanding of remote sensing theory and systems using information obtained from visible/near infrared, thermal infrared, and microwave regions of the EM spectrum.

### **ABE 6037C: Remote Sensing in Hydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ABE 6035.

Develops practical understanding of remote sensing applications to hydrology using observations in different regions of the EM spectrum. Seminar style with emphasis on literature review and presentation.

### **ABE 6252: Advanced Soil and Water Management Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Physical and mathematical analysis of problems in infiltration, drainage, and groundwater hydraulics.

### **ABE 6254: Simulation of Agricultural Watershed Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 4111 and working knowledge of FORTRAN.

Characterization and simulation of agricultural watershed systems including land and channel phase hydrologic processes and pollutant transport processes. Investigation of the structure and capabilities of current agricultural watershed computer models.

### **ABE 6265: Vadose Zone Modeling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Recommended basic use of high level computer language or numerical computing environment (i.e., Matlab, Mathematica, etc.) that allows the student to test algorithms and read existing modeling source code.

Unsaturated zone modeling of water flow and solute transport processes. Comparative analysis of alternative mechanistic modeling approaches of different complexity.

### **ABE 6266: Nanotechnology in Water Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Basic knowledge of hydrology, environmental engineering, and water chemistry.

Applications of environmental nanotechnology to water quality control. Fate and transport of nanomaterials in hydrologic pathways.

### **ABE 6615: Advanced Heat and Mass Transfer in Biological Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CGS 2425, ABE 3612C.

Analytical and numerical technique solutions to problems of heat and mass transfer in biological systems. Emphasis on nonhomogeneous, irregularly shaped products with respiration and transpiration.

### **ABE 6644: Agricultural Decision Systems**

**Credits: 3                      Grading Scheme: Letter**

Computerized decision systems for agriculture. Expert systems, decision support systems, simulations, and types of applications in agriculture.

### **ABE 6816: Food and Bioprocess Sterilization**

**Credits: 3                      Grading Scheme: Letter**

Analysis of available process technologies for sterilization in the food, pharmaceutical and biotechnology industries.

### **ABE 6905: Individual Work in Agricultural and Biological Engineering**

**Credits: 1-4    Max: 6                      Grading Scheme: Letter**

Special problems in agricultural engineering.

**ABE 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ABE 6931: Seminar**

**Credits: 1    Max: 2            Grading Scheme: S/U**

Preparation and presentation of reports on specialized aspects of research in agricultural engineering and agricultural operations management.

**ABE 6933: Special Topics in Agricultural and Biological Engineering**

**Credits: 1-4    Max: 6            Grading Scheme: Letter**

Lectures, laboratory, and/or special projects.

**ABE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ABE 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**ABE 6972: Research for Engineer's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**ABE 6974: Nonthesis Project**

**Credits: 1-6    Max: 6**

**Grading Scheme: S/U**

In-depth project.

**ABE 6986: Applied Mathematics in Agricultural and Biological Engineering**

**Credits: 3**

**Grading Scheme: Letter**

Mathematical methods, including regression analysis, graphical techniques, and analytical and numerical solution of ordinary and partial differential equations, relevant to agricultural engineering.

**ABE 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ABE 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**



**ACG 5005: Financial Accounting**

**Credits: 2**                    **Grading Scheme:** Letter

Introduction for prospective managers. Primary emphasis on financial reporting and analysis.

**ACG 5065: Financial and Managerial Accounting**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* designed for MBA students.

Financial statement analysis including techniques, cash flow, and impact of accounting principles. Management control systems: planning, budgeting, reporting, analysis, and performance evaluation.

**ACG 5075: Managerial Accounting**

**Credits: 2**                    **Grading Scheme:** Letter

*Prerequisite:* ACG 5005.

Introduction for prospective managers. Primary emphasis on management control systems.

**ACG 5226: Advanced Accounting**

**Credits: 2**                    **Grading Scheme:** Letter

*Prerequisite:* 7AC Standing; ACG 4133C

Reporting of business combinations, equity method of accounting for investments in stocks, and issues concerning consolidated financial statements.

**ACG 5505: Governmental Accounting**

**Credits: 2**                    **Grading Scheme:** Letter

*Prerequisite:* ACG 4133C, 7AC standing.

Reporting by state and local governmental organizations and not-for-profit entities.

### **ACG 5637: Auditing I**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 4111(C) & ACG 4341(C) & CLASS GE 4 & COLLEGE EQ AC)

OR

ACG 5075 & CLASS GE 7 & COLLEGE EQ BA & MAJOR EQ MST

Concepts and theory underlying the audit of third party assertions. Coverage includes the audit environment, risk assessment, evidential search and evaluation, internal controls, audit programs and audit reporting.

### **ACG 5647: Auditing II**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5637: Auditing I, Class GE 4, and College EQ AC;

OR, ACG 4632(C), Class GE 4, and College EQ AC;

OR, ACG 5637: Auditing I, Class GE 7, and College EQ BA, and Major EQ MST.

Second of a two course sequence. Applies the concepts and theory of auditing to gain assurance about key business processes and financial statement assertions. Coverage includes: audit sampling, revenue process, acquisition process, human resource management process, inventory management, resource management processes; completion activities, audit reports and subsequent events.

### **ACG 5815: Accounting Regulation**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5637 and Class GE 7AC;

OR, ACG 5647 and Class GE 7AC.

Private and public sector accounting institutions and their respective professional literature. Research techniques for addressing accounting issues emphasized through case assignments.

### **ACG 6136: Accounting Theory**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5815, 7AC standing.

Theoretical frameworks essential to explore structure, features, and limitations of accounting and financial reporting.

### **ACG 6175: Financial Reporting and Analysis**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 5226, Class GE 7, and College EQ AC.

Analyzing a firm's financial and accounting information from a user's perspective on financial reporting. Topics include: integration of firm strategy with accounting information content, effects of alternative accounting principles, and how accounting measures can be used as anchors for valuation.

### **ACG 6207: Accounting for Risk**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 5815, ACG 5226, 7AC standing.

Overview of risk management, financial instruments used in risk management, and related accounting issues and practices.

### **ACG 6265: International Accounting and Taxation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 2021C or ACG 5005; not open to students majoring in accounting.

Introduction to international accounting and tax concepts from a financial statement user's perspective.

### **ACG 6635: Issues in Audit Practice**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 5815, ACG 5226, 7AC standing.

In-depth discussion of fundamental concepts underlying audit practice, including introduction to current topics in auditing, advanced audit methods, and trends in auditing practice.

### **ACG 6685: Forensic Accounting**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5647, ACG 5226, Class GE 7, and College EQ AC;  
OR, ACG 5226, ACG 5637, Class GE 7, and College EQ AC;

OR, ACG 5647, Class GE 7, College EQ BA, and Major EQ MST;

OR, ACG 5637, Class GE 7, College EQ BA, and Major EQ MST.

Analysis of contemporary forensic and investigative accounting. Topics include: fraud auditing, litigation support, valuation, cyber-crime, and other key forensic topics.

### **ACG 6691: International Auditing**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5647 , ACG 5226, Class GE 7, and College EQ AC  
OR, ACG 5226, ACG 5637, Class GE 7, and College EQ AC.

Global perspective of auditing issues including international auditing standards and corporate governance practices providing an in depth analysis of the audit of multinational companies, cross border transactions and transfer pricing within affiliated groups of companies.

### **ACG 6697: Information Systems Assurance**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 5637, ACG 5226 , Class GE 7, and College EQ AC standing;  
OR, ACG 5647, ACG 5226 , Class GE 7, and College EQ AC standing;

OR, ACG 5647, Class GE 7, College EQ BA, and Major EQ MST;

OR, ACG 5226 , Class GE 7, College EQ BA, and Major EQ MST.

Concepts of risk, control, and assurance in environments with advanced information technology. Technology based audit tools and techniques.

### **ACG 6905: Individual Work in Accounting**

**Credits: 1-4    Max: 7            Grading Scheme: Letter**

*Prerequisite:* approval of graduate coordinator.

Reading and research in areas of accounting.

**ACG 6935: Special Topics in Accounting**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**

*Prerequisite:* consent of associate director.

**ACG 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ACG 7885: Accounting Research I**

**Credits: 4                    Grading Scheme: Letter**

**ACG 7886: Accounting Research II**

**Credits: 4                    Grading Scheme: Letter**

Theoretical constructs in accounting, valuation models, information asymmetry and production, and nonmarket information use.

**ACG 7887: Research Analysis in Accounting**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* ACG 7886.

Analysis of accounting research and presentation of student research project results. Financial accounting, managerial accounting, auditing, taxation, management information systems, and information economics.

### **ACG 7939: Theoretical Constructs in Accounting**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 7886.

Emerging theoretical issues that directly impact research and development of thought in accounting. Theory construction and verification, information economics, and agency theory constitute subsets of this course.

### **ACG 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **ACG 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme:** S/U

### **ADV 5005: Advertising Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the process of developing advertising strategy, emphasizing theory and research methods.

**ADV 6006: Theories of Advertising**

**Credits: 3**                      **Grading Scheme:** Letter

Theories dealing with consumer responses to marketing communications: state-of-the-art advertising and marketing communications theory, academic articles examining consumer responses.

**ADV 6305: Advanced Media Planning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ADV 4300, MMC 6421, or equivalents.

Media planning to meet advertising goals. Use of research findings. Computer models.

**ADV 6325: Advertising and Social Media**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 6XXX Digital Communication Theory  
MMC 5427 Research Methods in Digital Communications  
MMC 6XXX Introduction to Multimedia Communication  
MMC 6XXX Introduction to Social Media

Students will learn to create, write and maintain a social advertising campaign for clients. Learn about transparency and how the advent of social media has changed advertising. Case studies will be examined and students will create several pieces for their portfolio.

**ADV 6405: International Advertising**

**Credits: 3**                      **Grading Scheme:** Letter

Global competition and worldwide markets; technological revolutions; and branding products and services under different cultural, regulatory, and competitive conditions.

**ADV 6503: Advertising Creative Strategy and Research**

**Credits: 3                      Grading Scheme: Letter**

*Corequisite:* MMC 6421 or equivalent.

Social science findings as guides for decisions. Use of consumer behavior concepts in shaping advertising message content and improving media selection.

### **ADV 6505: Advertising Research Methods**

**Credits: 3                      Grading Scheme: Letter**

Introduction to methods most commonly use in professional and scholarly research, including secondary, qualitative, survey, content analysis, and experimental methods.

### **ADV 6602: Advertising Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ADV 6305 and ADV 6503, or consent of instructor.

Application of management principles and practice to effective development of advertising/public relations plans. Case studies and discussion of current problems in research, planning, operations, administration, and evaluation.

### **AEB 5167: Economic Analysis in Small Farm Livelihood Systems**

**Credits: 3                      Grading Scheme: Letter**

General analysis techniques used to enhance economic analysis of small-scale, limited-resource family farm livelihood systems to evaluate impact of proposed technology, infrastructure, and policy changes on family welfare. Linear programming and regression. Emphasis on tropical agriculture.

### **AEB 5188: Economics of Agribusiness Decisions**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* AEB 3103 or ECO 2023.



Comprehensive treatment of microeconomic theory and its use in managerial decision making.

### **AEB 5326: Agribusiness Financial Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 2021C.

Integration of finance and management decision-making tools to solve advanced financial and other management problems faced by agricultural firms and agribusinesses.

### **AEB 5516: Quantitative Methods in Agribusiness Decisions**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023.

Introduction to variety of quantitative methods with application to business decision-making contexts.

### **AEB 5757: Strategic Agribusiness Human Resource Management**

**Credits: 3**                      **Grading Scheme:** Letter

Issues involved in strategic and effective leadership and management in agribusiness sector of economy. Emphasis on human resource ideas and techniques that managers utilize to improve organizational teamwork, productivity, and performance.

### **AEB 6106: Microeconomic Principles and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 3101 and MAC 2311 or equivalents.

Economics as a behavioral science describing actions of consumers and producers interacting in the market process; welfare economics; property rights; competition and equilibrium. Institutional backdrop for market process. Problem solving using economic principles.

### **AEB 6139: Strategic Agribusiness Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* AEB 5188, AEB 5326, AEB 6225, AEB 5757, AEB 6675.

Core concepts of strategic decision-making and how strategy influences economic and financial value of food and agribusiness firms.

### **AEB 6145: Agricultural Finance**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* AEB 3144 or FIN 3403.

Principles of firm financial management, financial markets, financial institutions, capital markets, firm growth, and analysis. Emphasis on markets and application of financial principles.

### **AEB 6183: Agribusiness Risk Management**

**Credits: 3                      Grading Scheme: Letter**

Examine and develop the applied risk analysis skills useful for risk management decision-making by agricultural producers, agribusinesses, and researchers.

### **AEB 6225: Public Policy and the Agribusiness Firm**

**Credits: 3                      Grading Scheme: Letter**

Economic policy process at national and international levels. Issues include structure of food system, food safety, and environmental impacts.

### **AEB 6301: Food Wholesale and Retail Marketing**

**Credits: 3                      Grading Scheme: Letter**

Wholesale and retail issues that exist both in U.S. and world markets, such as brand management, supermarket management, and market research.

### **AEB 6363: Agricultural Marketing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 3101.

Economic theory of markets and its use. Development of time, form, space, and vertical dimensions of market price and factors that facilitate market operation.

### **AEB 6385: Management Strategies for Agribusiness Firms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 3101.

Planning, organizing, implementing, and evaluating the agribusiness management functions of strategic planning, finance, marketing, and personnel.

### **AEB 6533: Static and Dynamic Optimization Models in Agriculture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ESI 4567.

Classical optimization models with emphasis on mathematical programming and applications. Introduction to dynamic optimization models.

### **AEB 6553: Elements of Econometrics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEB 3103, 4511; STA 3023.

Econometric problem solving and determining quantitative relationships among economic variables in agriculture and related industries.

**AEB 6592: Mathematical Programming for Economic Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Simplex method and primal-dual relationships in linear programming. Application of modeling techniques, such as separable, multi-objective, quadratic, and integer programming, to economic problems.

**AEB 6675: International Agribusiness Marketing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEB 5188.

Principles, issues, barriers, policies, strategies, and decisions involved in global marketing and trade of perishable and storable agricultural commodities and food products.

**AEB 6815: Science and Research Methodology**

**Credits: 3**                      **Grading Scheme:** Letter

Role of science, philosophy, and scientific methods in food and resource economics research.

**AEB 6817: Survey Research Methods for Economists**

**Credits: 3**                      **Grading Scheme:** Letter

Process of creating, validating, implementing, coding, and interpreting results from economic surveys.

**AEB 6905: Problems in Food and Resource Economics**

**Credits: 1-3    Max: 8**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Individual study. Problems of interest to the student and agreeable to the instructor.

**AEB 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**AEB 6921: Workshop in Food and Resource Economics I**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* AEB 6533.

Empirical applications of concepts developed in the microeconomic core.

**AEB 6933: Special Topics**

**Credits: 1-6    Max: 6            Grading Scheme: Letter**

**AEB 6934: Workshop in Food and Resource Economics II**

**Credits: 1                    Grading Scheme: Letter**

Developing and understanding how to apply food and resource economic concepts to agricultural and resource related problems.

**AEB 6942: Advanced Applications in Agribusiness Experience**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

Applications of marketing, management, and finance principles to workplace station. Applications developed from approved internship.

**AEB 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**AEB 7108: Microeconomic Theory II**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* ECO 7115.

Continuation of Microeconomic Theory I. Theory of the firm, market theory, market failure (externalities, market power, and asymmetric information). Game theory and applications. General equilibrium theory, welfare trade theory, and agricultural trade policy.

**AEB 7174: Economic Coordination and Organizational Behavior in Agribusiness**

**Credits: 3**

**Grading Scheme: Letter**

Analysis of the organization of economic activities across firms and markets, internal governance structures and the separation of ownership and control.

**AEB 7182: Agricultural Risk Analysis and Decision Making**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* AEB 6106 or equivalent.

Review of conceptual framework and research methods for analysis of decision making by agricultural producers. Expected utility theory, risk programming, stochastic dominance, and dynamic decision models.

### **AEB 7184: Production Economics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEB 7182.

Producer decisions including theoretical and empirical problems of multi-factor, multi-product, and poly-period cases. Input demand and product supply functions at the commodity and industry levels.

### **AEB 7240: Macroeconomic Theory in Open Economies II**

**Credits: 3**                      **Grading Scheme:** Letter

Essential elements of macroeconomic theory and policy in world of interdependent nations.

### **AEB 7373: Consumer Demand and Applied Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Theories of Consumer Behavior in Static and Dynamic Contexts; analysis of household expenditure and demand.

### **AEB 7453: Natural Resource and Environmental Economics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 3101 and 3203, or consent of instructor.

Resource use, management, development, and conservation. Institutional and market performance in providing socially desired outcomes.

### **AEB 7483: Seminar in Natural Resource and Environmental Economics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEB 7453.

Application of economic methods to problems of environmental and regional development; input-output models, cost-benefit analysis, economic valuation, and development planning.

#### **AEB 7571: Econometric Methods I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 2103, STA 4322.

Linear and nonlinear econometric models, serial correlation, heteroscedasticity, errors in variables, qualitative variables, specification errors, and simultaneous equation models.

#### **AEB 7572: Econometric Methods II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEB 7571.

Topics in econometrics including single equation and multiple equation linear and nonlinear models.

#### **AEB 7645: Economic Development and Agriculture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 3101 or AEB 3103.

Relation of human, capital, and natural resources, technology, and institutions to income growth and distribution. Development strategies in low-income countries.

#### **AEB 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.



**AEB 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**AEC 5032: Agricultural Media Writing**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* AEC 5541.

Varied media writing assignments: feature stories, news releases, and video.

**AEC 5037: Agricultural Media Production**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* AEC 5541.

Various agricultural media production assignments. Developing agricultural websites and publications.

**AEC 5060: Public Opinion and Agricultural and Natural Resource Issues**

**Credits: 3**

**Grading Scheme: Letter**

Public opinion measurement and agenda setting. Media treatment, public opinion, and public relations/public information activity on issues affecting agricultural production and trade.

**AEC 5074: Agriculture, Resources, People, and the Environment: A Global Perspective**

**Credits: 3**

**Grading Scheme: Letter**

Interdependence in the global context, and the need to cultivate a lifelong global perspective.

### **AEC 5201: Teaching in Colleges of Agricultural and Life Sciences**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Theories, principles, and practices associated with effective teaching and learning in higher education.

### **AEC 5203: Advanced Teaching in Colleges of Agricultural and Life Sciences**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* AEC 5201 or approval of the instructor.

Advanced theories, principles, and practices associated with effective teaching and learning in the agricultural and life sciences. Emphasis will be on selecting and implementing a variety of teaching methods.

### **AEC 5206: Teaching Methods in Agricultural Education**

**Credits: 3                      Grading Scheme: Letter**

Teaching methodology course that focuses on the selection and use of teaching strategies, methods/ approaches, and techniques; evaluating learning; managing learning environments; and classroom management for teaching agricultural subjects in formal educational settings.

### **AEC 5227: Teaching in Agricultural Education Laboratory Facilities**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Admission to state approved agriculture teacher certification program.

This course is designed to introduce pre-service agricultural education teachers to laboratory integration into the agricultural education curriculum at the middle school and secondary school level.

### **AEC 5302: Professional Skill Development in Agriscience Education I**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* Teaching experience.

Development and enhancement of technical agricultural and scientific knowledge and skills by professional agriscience teachers.

### **AEC 5324: Philosophy and Development of Agricultural Education**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* Admission to AEC state-approved graduate-level teacher certification program.

An analysis of evolving concepts and philosophies of agricultural education programs with emphasis upon history, legislation, and principles underlying organization and practice.

### **AEC 5416: Critical and Creative Thinking in Problem Solving and Decision Making**

**Credits: 3                      Grading Scheme:** Letter

Creating a foundation for effective leadership practice through the analysis and development of critical and creative thinking skills and dispositions as applied to dynamic organizational and community contexts. Contexts include agriculture, life sciences, natural resources, and related settings.

### **AEC 5454: Leadership Development for Extension and Community Nonprofit Organizations**

**Credits: 3                      Grading Scheme:** Letter

Application of concepts related to developing leaders for organizing and maintaining extension and community nonprofit organizations.

### **AEC 5501: Professional Skill Development in Agriscience Education II**

**Credits: 1-3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* AEC 5302.

Advanced level of development and enhancement of technical agriculture and scientific knowledge and skills by professional agriscience educators.

**AEC 5541: Communication and Instructional Technologies in Agricultural and Life Sciences**

**Credits: 3                      Grading Scheme: Letter**

Planning and producing written and visual instructional and communication materials for programs in the agricultural and life sciences. Requires a major instructional project or communication campaign.

**AEC 5544: Curriculum Development and Assessment Techniques in Emerging Agricultural Technologies**

**Credits: 3                      Grading Scheme: Letter**

Principles and practices used in developing agricultural education curriculum from developing objectives through instructional plans. Assessing student learning and implementing curriculum.

**AEC 5545: Special Methods in Teaching Agriculture**

**Credits: 3                      Grading Scheme: Letter**

Teaching methods for active learning, critical, creative and evaluative thinking in the agricultural education classroom. Strategies for managing student behavior, utilizing instructional technology and utilizing FFA and SAE as teaching tools.

**AEC 5546: Program Planning in Agricultural Education**

**Credits: 3                      Grading Scheme: Letter**

Principles and practices used in designing agricultural education program plans for effective and total program development.

### **AEC 6205: Advanced Curriculum and Teaching Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEC 5206 or equivalent.

An in-depth analysis and application of curriculum development and teaching method theories applied in an agricultural and natural resources education setting.

### **AEC 6210: Designing Educational Programs in Agricultural Settings**

**Credits: 3**                      **Grading Scheme:** letter

### **AEC 6211: Delivering Educational Programs in Agricultural Settings**

**Credits: 3**                      **Grading Scheme:** Letter

This course will be focusing on delivering educational programs in formal and nonformal settings. Emphasis will be placed on balancing theoretical and practical development and delivery of educational programs.

### **AEC 6212: Teacher Education in Agriculture**

**Credits: 3**                      **Grading Scheme:** Letter

Preparing future agricultural teacher educators with the knowledge and skills needed to provide leadership in a university teacher education program. Students will investigate various models of teacher education and determine the composition of a well-developed agriculture teacher education program.

### **AEC 6229: Laboratory Instruction: Theory and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Research and theoretical foundations underlying the aspects of planning, management, teaching, evaluation, safety, and facility design: discussed in the context of laboratory instruction.

**AEC 6300: Methodology of Planned Change**

**Credits: 3**                      **Grading Scheme:** Letter

Processes by which professional change agents influence the introduction, adoption, and diffusion of technological changes. Applicable to those who are responsible for bringing about change.

**AEC 6316: From America to Zimbabwe: An Overview of International Extension Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Various extension models and delivery systems, extension partners; linkages and issues affecting extension internationally. Field trip.

**AEC 6321: The Land Grant University and University Governance**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Implications of change and future pathways for teaching, research and extension, including global perspectives, and the role and philosophy of administrators in governing a complex university.

**AEC 6325: History and Philosophy of Agricultural Education**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of evolving concepts and philosophies. Emphasis on history, legislation, and principles underlining organization and practice. Participation in field experience required.

**AEC 6419: Communication and Competencies for Global Leadership**

**Credits: 3**                      **Grading Scheme:** Letter

Identifying and developing the personal and professional competencies required for effective leadership in an increasingly global society. International communication is included.

**AEC 6426: Development of a Volunteer Leadership Program**

**Credits: 3**                      **Grading Scheme:** Letter

Identification, recruitment, training, retention, and supervision of volunteer leaders.

**AEC 6512: Program Development in Extension Education**

**Credits: 3**                      **Grading Scheme:** Letter

Concepts and processes drawn from the social sciences that are relevant to the development of extension education programs.

**AEC 6540: Agricultural and Natural Resources Communications Theory and Strategies**

**Credits: 3**                      **Grading Scheme:** Letter

Communication theory and concepts as they apply to important agricultural/natural resources issues.

**AEC 6543: Teaching and Learning Theory: Applications in Agricultural Education**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AEC 5206

Contemporary and foundational theory and research on teaching and learning.

**AEC 6552: Evaluating Programs in Extension Education**

**Credits: 3**                      **Grading Scheme:** Letter

Concepts and research drawn from the social sciences relevant to evaluating youth and adult extension programs.

**AEC 6611: Agricultural and Extension Adult Education**

**Credits: 3**                      **Grading Scheme:** Letter

Concepts and principles related to design, implementation, and evaluation of education programs for adults.

**AEC 6704: Extension Administration and Supervision**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices for effective administration and supervision of the cooperative extension service program at the county and state levels.

**AEC 6767: Research Strategies in Agricultural Education and Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Application of principles, practices, and strategies for conducting behavioral research in agricultural and natural resource professions.

**AEC 6905: Problems in Agricultural and Extension Education**



**Credits: 1-3    Max: 8            Grading Scheme: Letter**

*Prerequisite:* consent of department chair.

For advanced students to select and study a problem related to agricultural and/or extension education.

**AEC 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**AEC 6912: Nonthesis Research in Agricultural and Extension Education**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

Library and workshop related to methods in agricultural and extension education, including study of research work, review of publications, development of written reports.

**AEC 6932: Special Topics In Agricultural Education and Communication**

**Credits: 1-3                    Grading Scheme: Letter**

Explores contemporary and emerging topics in agricultural education and communication.

**AEC 6933: Seminar in Agricultural Education and Communication**

**Credits: 1    Max: 3            Grading Scheme: Letter**

Exploration of current topics and trends.

**AEC 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**AEC 6945: Practicum in Agricultural Education and Communication**

**Credits: 1-9    Max: 9            Grading Scheme: Letter**

*Prerequisite:* Successful completion of all three portions of the Florida Teacher Certification Examination (FTCE) - General Knowledge, Professional Education, and Agriculture 6-12.

An individual program whereby students are apprenticed to expert teachers to gain practical experience in a school-based agriscience program.

**AEC 6947: Experiential Learning in Agricultural Education**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Graduate standing or consent of instructor.

ocuses on applying experiential learning theory in agricultural education through classroom-based lessons, project-based learning, service learning, guided inquiry, field trips, internships/externships, study abroad and outdoor/adventure learning.

**AEC 6971: Research for Master's Thesis**

**Credits: 1-15                Grading Scheme: S/U**

**AEC 7979: Advanced Research**

**Credits: 1-12                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**AEC 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**AFH 5297: History of African Agriculture**

**Credits: 3**

**Grading Scheme: Letter**

Begins with the transition to agriculture and continues through an examination of African agriculture in the post-colonial period.

**AFH 5348: History of West Africa**

**Credits: 3**

**Grading Scheme: Letter**

Ghana empire to the contemporary period.

**AFH 5458: Southern Africa**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

History of Africa south of the Zambezi River since 1800, especially the Republic of South Africa.

**AFH 5934: Topics in African History**

**Credits: 3    Max: 9**

**Grading Scheme: Letter**

**AFH 6259: Seminar in Modern Africa**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

In-depth reading and discussion of aspects of modern African history. Seminar focuses on specific themes, such as ethnicity, colonialism, violence, warfare, gender, religion, and nationalism.

**AFH 6805: Theories and Methods of African History**

**Credits: 3                            Grading Scheme:** Letter

Theories and methods that underlie the study of African history and change as the field has evolved over the last four or more decades. Attention to changing frameworks for viewing the African past, with a focus on the historians' research methods and techniques.

**AFH 6934: Africa**

**Credits: 3                            Grading Scheme:** Letter

**AFH 6936: Readings in African History**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

**AFS 5061: Africana Bibliography**

**Credits: 1                            Grading Scheme:** Letter

Survey of advanced reference, specialized research tools (including variety of electronic databases, published paper indexes, and bibliographies), and methods for graduate-level research in all disciplines of African area studies.

**AFS 6060: Research Problems in African Studies**

**Credits: 3**                      **Grading Scheme:** Letter

Interdisciplinary seminar on creating individual research designs and preparing funding proposals for research in Africa.

**AFS 6305: Development Theory and Practice Intro**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the basic core competencies and practical skills required of a development practitioner. It differs from other development courses at UF by uniquely focusing on the inter-relationship between management, health, natural and social sciences in African development contexts and by emphasizing both theory and practice.

**AFS 6307: Foundations of Economics for Sustainable Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Providing students with limited economics background with a foundation in development economics, with attention devoted to sustainable development. Students learn about the major theoretical debates within the discipline, the most current research topics and apply their knowledge to the comparative analysis of development in Africa and Latin America.

**AFS 6357: Anthropology of Humanitarian Intervention**

**Credits: 3**                      **Grading Scheme:** letter

*Prerequisite:* Graduate student standing

Examining of the structure, networks, culture, morality, and actions of global humanitarian interventions in crisis settings.

**AFS 6905: Individual Work in African Studies**

**Credits: 1-3    Max: 9                    Grading Scheme: Letter**

**AGG 5607: Communicating in Academia**

**Credits: 3                    Grading Scheme: Letter**

Teaching graduate students about academic writing, specifically focused on research proposals, theses, dissertations, manuscripts, grant proposals, and CVs. Also teaching students about aspects of academic writing that are not normally part of graduate curriculum but are necessary to succeed.

**AGR 5215C: Integrated Field Crop Science**

**Credits: 3                    Grading Scheme: Letter**

Intensive introduction to practical field crop production and management of common, as well as under-exploited, field crops. Offered summer A term.

**AGR 5230C: Florida Grassland Agroecosystems**

**Credits: 4                    Grading Scheme: Letter**

Comprehensive overview of planted and native grassland ecosystems in Florida emphasizing their growth, species diversity, management, and use by ruminant animals. Offered spring term.

**AGR 5266C: Field Plot Techniques**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* STA 3023.

Techniques and procedures used in design and analysis of field plot, greenhouse, and laboratory research experiments. Application of research methodology, the analysis and interpretation of research results. Offered fall term.

### **AGR 5277C: Tropical Crop Production**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Ecology and production practices of selected crops grown in the tropics. Offered spring term.

### **AGR 5307: Molecular Genetics for Crop Improvement**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303.

Lectures and laboratory demonstrations for a thorough understanding of concepts and applied aspects of plant molecular and cellular biology. Discussion of current research in plant biotechnology and functional genomics. Offered spring term.

### **AGR 5321C: Genetic Improvement of Plants**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303.

Genetic basis for crop improvement including methods for improving crop yield, pest resistance, and adaptability. Emphasis on manipulating genetic variability in self- and cross-pollinate, annual and perennial crop plants. Offered fall term.

### **AGR 5444: Ecophysiology of Crop Production**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3005 or equivalent.

Physiological, ecological, and environmental responses that impact growth, development, and yield formation of cultivated crops. Offered spring term.

### **AGR 5511: Crop Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 4210, BOT 3503, PCB 3043C, or equivalent.

Relationships of ecological factors and climatic classifications to agroecosystems, and crop modeling of the major crops. Offered fall term.

### **AGR 6233: Tropical Grassland Agroecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 4231C and ANS 5446 or consent of instructor.

Potential of natural grasslands of tropical and subtropical regions. Development of improved pastures and forages and their use in livestock production. Offered fall term in odd-numbered years.

### **AGR 6237C: Research Techniques in Forage Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.      *Corequisite:* STA 6166.

Experimental techniques for field evaluation of forage plants. Design of grazing trials and procedures for estimating yield and botanical composition in the grazed and ungrazed pasture. Offered summer C term in odd-numbered years.

### **AGR 6322: Advanced Plant Breeding**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303, 4231, AGR 6311 , and STA 6167.

Theory and use of biometrical genetic models for analytical evaluation of qualitative and quantitative characteristics, with procedures applicable to various types of plant species. Offered spring term in even-numbered years.



### **AGR 6325L: Plant Breeding Techniques**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* AGR 3303 or equivalent    *Corequisite:* AGR 6322.

Examination of various breeding techniques used by agronomic and horticultural crop breeders in Florida. Field and lab visits to active plant breeding programs, with discussion led by a specific breeder each week. Hands-on experience in breeding programs. Offered spring term in odd-numbered years.

### **AGR 6353: Cytogenetics**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* AGR 3303.

Genetic variability with emphasis on interrelationships of cytologic and genetic concepts. Chromosome structure and number, chromosomal aberrations, apomixes, and application of cytogenetic principles. Offered fall term in odd-numbered years.

### **AGR 6422C: Environmental Crop Nutrition**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* BOT 3503.

Design of cost-effective and environmentally sound crop nutrient management strategies. Diagnostic nutrient analysis, nutrient uptake, BMPs, and sustainable agriculture. Offered fall term.

### **AGR 6442C: Physiology of Agronomic Plants**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* BOT 3503.

Yield potentials of crops as influenced by photosynthetic efficiencies, respiration, translocation, drought, and canopy architecture. Plant response to environmental factors. Offered spring term.

### **AGR 6905: Agronomic Problems**

**Credits: 1-5    Max: 8            Grading Scheme: Letter**

Special topics for classroom, library, laboratory, or field studies of agronomic plants.

**AGR 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**AGR 6932: Topics in Agronomy**

**Credits: 1-3    Max: 8            Grading Scheme: Letter**

Critical review of selected topics in specific agronomic areas.

**AGR 6933: Graduate Agronomy Seminar**

**Credits: 1    Max: 3            Grading Scheme: Letter**

Current literature and agronomic developments.

**AGR 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**AGR 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**AGR 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**AGR 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**ALS 5027: Reusable Learning Objects**

**Credits: 1    Max: 2**

**Grading Scheme: Letter**

*Prerequisite:* Department approval is required to ensure students have basic knowledge in Windows operating system; web browsing; Power Point; a robust/high-speed Internet connection; and basic knowledge in environmental sciences or agriculture and life sciences.

Developing online learning material using a variety of modern digital media, including audio recordings, videos, photographs, and graphics. Gain knowledge on how to organize material, present and describe learning content, and formulate effective assessment questions which reinforce learning.

**ALS 5106: Food and the Environment**

**Credits: 3**

**Grading Scheme: Letter**

Relationship between food production and consumption and environmental quality. Scientific merits of controversies about impact of food production on environment and of different production strategies and practices. Biodiversity,

water quality, soil resources, ecological economics, and energy use in food production. Taught interactively on Internet in even-numbered years.

### **ALS 5155: Global Agroecosystems**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or SWS 5050 & ALS 3153 & AGR 4214C or equivalents.

Focusing on the principles of agroecology and presentation of topics that integrate ecological with agricultural principles to optimize resource conservation, productivity, societal benefit, and profitability.

### **ALS 5156: Agricultural Ecology Principles and Applications**

**Credits: 3                      Grading Scheme:** Letter

Introduction to agroecosystems. Ecological principles with examples and applications from agriculture.

### **ALS 5364C: Molecular Techniques Laboratory**

**Credits: 2                      Grading Scheme:** Letter

Current protocols in molecular biology techniques.

### **ALS 5905: Individual Study**

**Credits: 1-4    Max: 6                      Grading Scheme:** Letter

Supervised study or research not covered by other courses.

### **ALS 5932: Special Topics**

**Credits: 1-4    Max: 6            Grading Scheme: Letter**

**ALS 5934: Graduate Professional Development Seminar**

**Credits: 2                    Grading Scheme: S/U**

Presentations and group discussion of topics essential to enhance awareness, personal satisfaction, and professional success of graduate students

**ALS 6046: Grant Writing**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* admitted to doctoral program.

Preparation, submission, and management of competitive grants, including operations of national review panels and finding sources of extramural funding.

**ALS 6166: Exotic Species and Biosecurity Issues**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* BSC2010, BSC2010L, BSC2011, BSC2011L, or equivalent.

U.S. policies and programs affecting agricultural biosecurity, Attention is devoted to current agricultural and extension and regulatory programs. Emphasizes policies and procedures in detecting and reporting non-indigenous species. Students will develop the analytical capabilities to assess the consequences of agricultural biosecurity threats.

**ALS 6921: Colloquium on Plant Pests of Regulatory Significance**

**Credits: 1    Max: 3                    Grading Scheme: S/U**

*Prerequisite:* for students in PPRAM certificate program.

On-going colloquium series involving information on important emerging plant pests.

**ALS 6925: Integrated Plant Medicine**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* all core courses for DPM degree.

Review and synthesis of the principles of plant-problem prevention, diagnosis, and management.

**ALS 6930: Graduate Seminar**

**Credits: 1    Max: 4                      Grading Scheme: Letter, S/U**

Topics in agriculture and/or natural resources.

**ALS 6931: Plant Medicine Program Seminar**

**Credits: 1    Max: 3                      Grading Scheme: S/U**

*Prerequisite:* DPM student or consent of instructor.

On-going seminar series involving presentations on plant-health management.

**ALS 6935: Topics in Biological Invasions**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BSC2010/BSC2010L and BSC2011/BSC2011L or equivalent.

Non-native species invasions and environmental effects of these invaders. Students will develop analytical capabilities to assess the consequences of biological invasions.

**ALS 6942: Principles of Plant Pest Risk Assessment and Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* for students in PPRAM certificate program.

Plant pest risk estimation and how mitigation strategies are developed and implemented.

**ALS 6943: Internship in Plant Pest Risk Assessment and Management**

**Credits: 1-10    Max: 15                    Grading Scheme: S/U**

*Prerequisite:* for students in PPRAM certificate program.

Internships conducted with personnel involved in plant pest risk assessment and management.

**AMH 5405: The South to 1860**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

History of the South from the Civil War to present, emphasizing the South as an integral region and its relationship to the rest of the nation. Not open to students who have taken AMH 4403 or equivalent.

**AMH 5905: Special Studies**

**Credits: 3    Max: 12 including HIS 6905                    Grading Scheme: Letter**

**AMH 5930: Topics in United States History**

**Credits: 3    Max: 15                    Grading Scheme: Letter**

**AMH 6198: Early American Society**

**Credits: 3                    Grading Scheme: Letter**

Readings seminar focusing on a selected topic or topics in American history through the War of 1812.

**AMH 6199: Nineteenth Century America**

**Credits: 3**                      **Grading Scheme:** Letter

Readings seminar focusing on a topic or topics in nineteenth century American history.

**AMH 6290: Modern America**

**Credits: 3**                      **Grading Scheme:** Letter

Readings seminar focusing on topics in American history in the twentieth century.

**AMH 6356: Research in U.S. History**

**Credits: 3**                      **Grading Scheme:** Letter

Reading and research to produce a paper demonstrating your ability to do research in primary sources and connect original work with existing historical literature.

**AMH 6406: Readings in Southern History, 1607-1865**

**Credits: 3**                      **Grading Scheme:** Letter

An analysis of the major scholarly works and interpretations dealing with the development of a bi-racial society in the American South.

**AMH 6465: Seminar in U.S. Urban History**



**Credits: 3                      Grading Scheme: Letter**

Historical development of American cities and ways in which the urbanization process has reshaped social life.

**AMH 6506: Seminar in American Labor History**

**Credits: 4                      Grading Scheme: Letter**

**AMH 6516: Seminar in American Foreign Relations and Expansion**

**Credits: 3                      Grading Scheme: Letter**

American foreign policy since 1945, the United States response to Third World nationalism, the changing historiographical debate over the nature of U.S. diplomacy, and other selected topics.

**AMH 6557: Seminar in Constitutional or Legal History of the United States**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Chronological and thematic analysis of the evolution of American law, legal institutions, and constitutionalism from their English origins to present.

**AML 6017: Studies in American Literature Before 1900**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

**AML 6027: Studies in 20th-Century American Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ANG 5012: Fantastic Anthropology and Fringe Science**

**Credits: 3                    Grading Scheme: Letter**

Examination of paranormal and pseudoscientific theories concerning human condition. Critical examination of fringe science claims and their perpetuation in contemporary society.

**ANG 5085: Collection and Analysis of Visual Data in Anthropology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Graduate status or permission of instructor

Anthropological methods course in which students learn to: (1) produce high quality video for research projects; (2) code still and moving images, as well as audio; (3) analyze naturally occurring speech, interactions, facial expressions, and other observable events in video footage.

**ANG 5126: Zooarcheology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Human use of animal resources, emphasizing prehistoric hunting and fishing practices. Origins of animal domestication.

**ANG 5158: Florida Archeology**

**Credits: 3                    Grading Scheme: Letter**

Survey of 12,000 years of human occupation of Florida, including early hunters and foragers, regional cultural

developments, external relationships with the Southeast and Caribbean regions, peoples of historic period, and effects of European conquest. Not open to students who have taken ANT 3157.

### **ANG 5162: Maya Archeoastronomy and Ethnoastronomy**

**Credits: 3**                      **Grading Scheme:** Letter

Focus on Maya cosmology, past and present with emphasis on continuity of culture seen in specific astronomical concepts.

### **ANG 5164: The Inca and Their Ancestors**

**Credits: 3**                      **Grading Scheme:** Letter

Evolution of the Inca empire traced archeologically through earlier Andean states and societies to the beginning of native civilization. Not open to students who have taken ANT 3164.

### **ANG 5172: Historical Archeology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANT 3141 or consent of instructor.

Methods and theoretical foundations of historical archeology as it relates to the disciplines of anthropology, history, historic preservation, and conservation. Introduction to pertinent aspects of material culture during the historic period.

### **ANG 5194: Principles of Archeology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 1 course in anthropology.

Methods of archeological inquiry and interpretation, which include site identification and evaluation, dating techniques, environmental reconstructions, subsistence, technology, social and exchange systems, biological remains, and archeological ethics. Not open to students who have taken ANT 4185.

**ANG 5255: Rural Peoples in the Modern World****Credits: 3****Grading Scheme:** Letter

Historical background and comparative contemporary study of peasant and other rural societies. Unique characteristics, institutions, and problems of rural life stressing agriculture and rural-urban relationships in cross-cultural perspective. Not open to students who have taken ANT 4255.

**ANG 5265: Methods in Ethnoecology****Credits: 3****Grading Scheme:** Letter

*Prerequisite:* Graduate status or permission of the instructor

Acquainting students with the methods and analyses used by ethnoecologists to research contemporary issues between humans and the environment. Topics include community-based management of resources, co-evolution of cultural and biological diversity, ethnobiological classification, historical ecology and landscape modification, indigenous peoples and protected areas, traditional ecological knowledge, agrobiodiversity and traditional subsistence.

**ANG 5266: Economic Anthropology****Credits: 3****Grading Scheme:** Letter

Anthropological perspectives on economic philosophies and their behavioral bases. Studies of production, distribution, and consumption; money, savings, credit, peasant markets; and development in a cross-cultural context from perspectives of cultural ecology, Marxism, formalism, and substantivism. Not open to students who have taken ANT 4266.

**ANG 5303: Women and Development****Credits: 3****Grading Scheme:** Letter

Influence of development on women in rural and urban areas. Women's participation in the new opportunities of modernization.

**ANG 5310: The North American Indian**

**Credits: 3**                      **Grading Scheme:** Letter

The peopling of North America. The culture areas of North America. Unique characteristics, institutions, and problems. Not open to students who have taken ANT 4312.

**ANG 5323: Peoples of Mexico and Central America**

**Credits: 3**                      **Grading Scheme:** Letter

Settlement and early cultures of the area, emphasizing the rise of the major culture centers. Impact of European civilization on surviving Indians. Not open to students who have taken ANT 4326.

**ANG 5327: Maya and Aztec Civilizations**

**Credits: 3**                      **Grading Scheme:** Letter

Civilizations in Mesoamerica from the beginnings of agriculture to the time of the coming of Europeans. Maya and Aztec civilizations as well as the Olmec, Zapotec, and Teotihuacan cultures. Not open to students who have taken ANT 3325.

**ANG 5330: The Tribal Peoples of Lowland South America**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of marginal and tropical forest hunters and gatherers and horticulturalists of the Amazon Basin, Central Brazil, Paraguay, Argentina, and other areas of South America. Social organization, subsistence activities, ecological adaptations, and other aspects of tribal life. Not open to students who have taken ANT 4338.

**ANG 5331: Peoples of the Andes**

**Credits: 3**

**Grading Scheme:** Letter

The area-cotradition. The Spanish Conquest and shaping and persistence of colonial culture. Twentieth-century communities—their social land tenure, religious, and value systems. Modernization, cultural pluralism, and problems of integration. Not open to students who have taken ANT 4337.

**ANG 5336: The Peoples of Brazil**

**Credits: 3**

**Grading Scheme:** Letter

Ethnology of Brazil. Historical, geographic, and socioeconomic materials and representative monographs from the various regions of Brazil as well as the contribution of the Indian, Portuguese, and African to modern Brazilian culture. Not open to students who have taken ANT 4336.

**ANG 5341: Anthropology of the Caribbean**

**Credits: 3**

**Grading Scheme:** Letter

Transformation of area through slavery, colonialism, and independence movements. Contemporary political, economic, familial, folk-religious, and folk-healing systems. Migration strategies and future options. Not open to students who have taken ANT 4346.

**ANG 5352: Peoples of Africa**

**Credits: 3**

**Grading Scheme:** Letter

Survey of the culture, history, and ethnographic background of the peoples of Africa. A basis for appreciation of current problems of acculturation, nationalism, and cultural survival and change among African peoples. Not open to students who have taken ANT 4352.

**ANG 5354: Anthropology of Modern Africa**

**Credits: 3**                      **Grading Scheme: Letter**

Continuity and change in contemporary African societies, with special reference to cultural and ethnic factors in modern nations. Not open to students who have taken ANT 4354.

**ANG 5395: Visual Anthropology**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* basic knowledge of photography, or consent of instructor.

Photography and film as tools and products of social science. Ways of describing, analyzing, and presenting behavior and cultural ideas through visual means, student projects, and laboratory work with visual anthropology. Not open to students who have taken ANT 3390.

**ANG 5420: Social Network Analysis in Cultural Anthropology**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* graduate status or permission of instructor

Social network analysis is a set of theories and methods to analyze social structure. Participants will learn about whole network analysis (relations within groups) and personal network analysis (relations surrounding individuals). This is an introductory hands-on course, employing examples germane to anthropological research, using software such as Ucinet and Egonet.

**ANG 5426: Kinship and Social Organization**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* ANT 2402 or 2410.

Property concepts, forms, and complexes. Tribal patterns of government and social control. Not open to students who have taken ANT 4426.

**ANG 5464: Culture and Aging**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* two of following: ANT 2410, SYG 2000, or introductory psychology course.

Cross-cultural perspectives of adult development and aging in traditional and industrial society. Comparative assessment of culturally mediated, life-cycle transformations into old age and health related and human service policy issues. Not open to students who have taken ANT 4464.

### **ANG 5485: Research Design in Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

Examination of empirical and logical basis of anthropological inquiry. Analysis of theory construction. Research design. Problems of data collection, processing, and evaluation.

### **ANG 5486: Computing for Anthropologists**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANG 5485 or consent of instructor.

Practical introduction to the computer. Collecting, organizing, processing, and interpreting numerical data on a microcomputer. Data sets used correspond to participants' subfields.

### **ANG 5488: Geospatial Analysis in Cultural Anthropology**

**Credits: 4**                      **Grading Scheme:** Letter

Geospatial analysis and their integration and application in anthropology including remote sensing, geographic information systems, and global positioning systems. Covering concepts necessary to work with geospatial data including research set-up and design and the use of specialized software, such as ArcGIS, Erdas Imagine, and Multispec.

### **ANG 5525: Human Osteology and Osteometry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANT 3514 and consent of instructor.



Human skeletal identification for the physical anthropologist and archeologist. Techniques for estimating age at death, race, and sex from human skeletal remains. Measurement of human skeleton for comparative purposes. Not open to students who have taken ANT 4525.

**ANG 5531: Culture and Nutrition**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* HUN 3221.

Theory, methodology, and substantive material of nutritional anthropology. Emphasizes cross-cultural bio-behavioral patterns.

**ANG 5546: Seminar: Human Biology and Behavior**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Social behavior among animals from the ethological-biological viewpoint; the evolution of animal societies; the relevance of the ethological approach for the study of human development.

**ANG 5620: Language and Culture**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and problems of anthropological linguistics. The cross-cultural and comparative study of language. Primarily concerned with the study of non-Indo-European linguistic problems.

**ANG 5621: Proseminar in Cultural and Linguistic Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

History and theory of subfields of cultural and linguistic anthropology and their conceptual relationship to each other. Emphasis on current issues and their historical foundations.

**ANG 5700: Applied Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of history, theory and practice of applying cultural anthropology to human issues and problems. Applications to international development, peace studies, health, education, agriculture, ethnic minority and human rights issues. Case review, including aspects of planning, consultancy work, evaluation research, and ethics.

**ANG 5702: Anthropology and Development**

**Credits: 3**                      **Grading Scheme:** Letter

Examination of theories and development and their relevance to the Third World, particularly Africa or Latin America. After this microanalysis, microlevel development will be examined with special reference to rural areas.

**ANG 5711: Culture and International Business**

**Credits: 3**                      **Grading Scheme:** Letter

Anthropological and business concepts and literature in local and global economies. Value, wealth, communication, business practices, marketing, advertising, corporate organization, entrepreneurship, multinationals, etc.

**ANG 5743: Human Rights Missions in Forensic Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

Preparation for fieldwork in forensic investigation of human rights abuses and war crimes. Topics include review of current targeted ethnic conflicts, logistics of fieldwork, consulting with human rights groups, and scientific procedure.

**ANG 5744: International Forensic Fieldwork in Human Rights**

**Credits: 3-6**

**Grading Scheme: S/U**

Fieldwork in forensic investigation of human rights abuses, ethnic cleansing, and war crimes. Excavation of mass gravesites, lab work in human identification and trauma analysis, and logistical support for team members.

**ANG 5802: Methods for the Observation of Behavior**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* Graduate status or permission of instructor

Instruction on the use of behavior observation methods of data collection to answer questions of anthropological interest. Methods include traditional ethnographic direct observations, time diary techniques, and Internet mediated recordings and storage. Students learn the variable utility of different methods for specific research question

**ANG 5824L: Field Sessions in Archeology**

**Credits: 6**

**Grading Scheme: Letter**

*Prerequisite:* 6 hours of anthropology, or consent of instructor.

Excavating archeological sites, recording data, laboratory handling and analysis of specimens, and studying theoretical principles that underlie field methods and artifact analysis. Not open to students who have taken ANT 4124 or equivalent.

**ANG 6034: Seminar in Anthropological History and Theory**

**Credits: 3**

**Grading Scheme: Letter**

Theoretical principles and background of anthropology and its subfields.

**ANG 6086: Historical Ecology**

**Credits: 3**

**Grading Scheme: Letter**

Relationship between human social and physical environments over long time spans. Theoretical and methodological relationships of cultural ecology to biology, geographical, and historical issues.

### **ANG 6091: Research Strategies in Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Survey of techniques for preparing research proposals and strategies for securing extramural funding for thesis. Review of scientific epistemology, hypothesis specification, and ethics. Proposal and curriculum vitae preparation.

### **ANG 6110: Archaeological Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Proseminar in archaeology or consent of instructor; not open to students who have taken ANG 5110.

Theoretical approaches in social sciences and philosophies, developed and applied in anthropological archaeology through the 20th century and into the 21st. Relationship of archaeology to anthropology.

### **ANG 6112: Critical Archaeology of Time**

**Credits: 3**                      **Grading Scheme:** Letter

Case-based approach to problems at the intersection of measured time in archaeology, and the practice and reckoning of time, in mostly non-Western societies.

### **ANG 6113: Ideology and Symbolic Approaches in Archaeology**

**Credits: 3**                      **Grading Scheme:** Letter

Critical examination of the development of thought in archaeology extending beyond a materialist interpretation of culture. Explores causality and the role of mind and culture as mediators between the environment and political, economic, and social structures.

**ANG 6120C: Environmental Archaeology**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and case studies integrating zooarchaeology, archaeobotany, and geoarchaeology to interpret past human interactions with the natural environment.

**ANG 6122C: Archaeological Ceramics**

**Credits: 3**                      **Grading Scheme:** Letter

Technofunctional analysis and interpretation of archaeological ceramics. Emphasizes the life cycle of pottery.

**ANG 6128: Lithic Technology**

**Credits: 3**                      **Grading Scheme:** Letter

Flintworking techniques and uses of stone implements for two million years. Emphasis on stoneworking technology in prehistoric Florida.

**ANG 6146: Archaeology of Maritime Adaptations**

**Credits: 3**                      **Grading Scheme:** Letter

Archaeological and ethnographic cross-cultural examination of the nature of coastal adaptations.

**ANG 6155: Southeastern U.S. Prehistory**

**Credits: 3**                      **Grading Scheme:** Letter

Prehistory of the southeastern United States, emphasizing problem-oriented research of broad anthropological significance.

**ANG 6161: Problems in Caribbean Prehistory**

**Credits: 3**                      **Grading Scheme:** Letter

Theories and methods for study of prehistoric human societies. Case studies drawn primarily from Caribbean islands.

**ANG 6165: Problems in South American Archaeology**

**Credits: 3-6**    **Max: 9**                      **Grading Scheme:** Letter

Problems and issues raised by new research on cultural evolution in South America. Topics vary significantly by professor, and students may take one or all of the topics in any sequence.

**ANG 6183: Laboratory Training in Archeology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* an introductory level archeology course.

Processing of data recovered in field excavations; cleaning, identification, cataloging, classification, drawing, analysis, responsibilities of data reporting. Not open to students who have taken ANT 4123 or equivalent.

**ANG 6185: Ethnoarchaeology**

**Credits: 3**                      **Grading Scheme:** Letter

Case studies examining theoretical and methodological approaches to ethnoarchaeology, with applications to field exercises.

**ANG 6186: Seminar in Archeology**

**Credits: 3    Max: 10            Grading Scheme:** Letter

Selected topic.

**ANG 6187: Experimental Archaeology**

**Credits: 3                    Grading Scheme:** Letter

Principles and applications of experimental archaeology. Draws on a broad range of case studies to show the numerous experimental methods archaeologists have used to solve analytic or interpretive problems.

**ANG 6190: Seminar in Contemporary Methods**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Collecting and analyzing research data. Focus on one method or set of methods in any semester.

**ANG 6191: Archaeology of Death**

**Credits: 3                    Grading Scheme:** Letter

Archaeological literature on mortuary data. History, cultural anthropology, and ethnography offer insights into the origin of religion, the nature of society, and the structure of ritual.

**ANG 6224: Painted Books of Ancient Mexico: Codices of Aztecs, Mixtecs, and Mayas**

**Credits: 3                    Grading Scheme:** Letter

Colonial period and Precolumbian Codices of Mexico, with emphasis on painted books recording history and calendars of Mixtecs, Aztecs, and Mayas.

**ANG 6241: Special Topics in Ecology of Religion**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Cross-cultural examination of development of religious practices and their relationship to the environment.

**ANG 6267: Anthropology, Geographic Information System, and Human Ecosystems**

**Credits: 3                    Grading Scheme:** Letter

Sociocultural processes and interactions in large scale spatial/ecosystems context.

**ANG 6273: Legal Anthropology**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Interrelationships between aspects of traditional and modern legal systems and sociocultural, economic, and political forces that impinge upon them. Methods of analysis, legal reasoning crossculturally, pre-industrial and modern sociolegal systems.

**ANG 6274: Principles of Political Anthropology**

**Credits: 3                    Grading Scheme:** Letter

Problems of identifying political behavior. Natural leadership in tribal societies. Acephalous societies and republican structures. Kingship and early despotic states. Theories of bureaucracy. Not open to students who have taken ANT 4274.



**ANG 6286: Seminar in Contemporary Theory**

**Credits: 3    Max: 10            Grading Scheme:** Letter

Areas treated are North America, Central America, South America, Africa, Oceania.

**ANG 6304: Seminar in Gender and International Development**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* ANG 5303 recommended.

Analyses of academic and development concepts and projects in relation to gender. Multi-, bilateral, and NGO agencies considered by sector (health, agriculture, environment, education, political empowerment, etc.). RRA, PRA, GAF methods.

**ANG 6314: Peoples of the Arctic**

**Credits: 3                    Grading Scheme:** Letter

Survey of the culture, history, and ethnographic background of circumpolar Arctic. Examines problems of acculturation, human ecology, cultural survival, and self-determination of northern indigenous peoples.

**ANG 6351: Peoples and Culture in Southern Africa**

**Credits: 3                    Grading Scheme:** Letter

Prehistoric times through first contacts by explorers to settlers; the contact situation between European, Khoisan, and Bantu-speaking; empirical data dealing with present political, economic, social, and religious conditions.

**ANG 6360: Ethnicity in China**

**Credits: 3**

**Grading Scheme:** Letter

Ethnic diversity and ethnic relations in China. Multi-ethnic history of China; theories on nationality and ethnicity; state and ethnicity; ethnic conflict and political economy; gender and ethnic hierarchy.

**ANG 6366: Family, Gender, and Population in China**

**Credits: 3**

**Grading Scheme:** Letter

Examines the processes by which the family system, gender relations, and population interact to become powerful forces in shaping contemporary China's political, social, and economic conditions.

**ANG 6407: Sickness and Power**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* Students must have graduate standing.

Exploring the problems of culture, power, networks and circulation, and authority as underlying issues of global health. Emphasizing the use of culture histories, illness experiences, and multiscalar processes and structures to interrogate how macro processes, institutions, and forces intersect with the micro-worlds of families, localities, and individual experiences.

**ANG 6421: Landscape, Place, Dwelling**

**Credits: 3**

**Grading Scheme:** Letter

Contemporary theoretical approaches and applications to the social construction of place and space from the macro-scale of landscape to the micro-scale of dwelling. Emphasis on materiality of experience of inhabiting space.

**ANG 6452: Race and Racism in Anthropological Theory**

**Credits: 3**

**Grading Scheme:** Letter

Critical anthropological approaches to race. Historically contingent material and ideological contexts in which various peoples become racialized in culturally diverse ways.

**ANG 6453: Human Rights in Cross-Cultural Perspective**

**Credits: 3**                      **Grading Scheme:** Letter

Anthropological perspectives on the discourses and practices of international human rights.

**ANG 6478: Evolution of Culture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANT 3141.

Theories of culture growth and evolution from cultural beginnings to dawn of history. Major inventions of man and their significance.

**ANG 6481: Research Methods in Cognitive Anthropology**

**Credits: 3**                      **Grading Scheme:** Letter

Data collection including free lists, pile sorts, triad tests, paired comparisons, rankings, and ratings. Consensus analysis, cluster analysis, and multidimensional scaling.

**ANG 6483L: Anthropology of Science**

**Credits: 3**                      **Grading Scheme:** Letter

Production of scientific knowledge, expertise, and authority through ethnographies of scientific practice. Major schools of thought from social studies to scientific knowledge to the Bath School to Actor-Network Theory, and beyond.

**ANG 6511: Seminar in Physical Anthropology**

**Credits: 3    Max: 10            Grading Scheme:** Letter

Selected topic.

**ANG 6514: Human Origins**

**Credits: 3                    Grading Scheme:** Letter

Review of fossil record of human evolution from Miocene to present. "Hands-on" seminar in basics of hominid fossil record.

**ANG 6524: Skeletal Mechanics in Biological Anthropology**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* ANG 5525, and either ANG 5683 or ANG 6740.

Mechanobiology of the primate skeleton. Material and structural basis for the functional behavior of bone. Analytical approaches to functional, allometric, and evolutionary adaptation.

**ANG 6532: Molecular Genetics of Disease**

**Credits: 3                    Grading Scheme:** Letter

Examines the molecular genetics of human disease. Discusses a range of diseases from single-gene recessive defects (such as cystic fibrosis) to complex diseases (such as alcoholism and diabetes). Also discusses detection and treatment.

**ANG 6547: Human Adaptation**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* ANT 2511 or consent of instructor.

An examination of adaptive processes (cultural, physiological, genetic) in past and contemporary populations.

**ANG 6552: Primate Behavior**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* one course in either physical anthropology or biology.

Taxonomy, distribution, and ecology of primates. Range of primate behavior for each major taxonomic group explored.

**ANG 6553: Primate Cognition**

**Credits: 3**                    **Grading Scheme: Letter**

Evolution of cognition in primate lineages. Behavioral, social, and phylogenetic influences on cognitive processes. Theories of learning and imitation and their impact on analysis of ecological and social decisions.

**ANG 6555: Issues in Evolutionary Anthropology**

**Credits: 3**                    **Grading Scheme: Letter**

Current controversies in biological anthropology. Role of evolutionary theory in addressing problems of taxonomy, speciation, systematics, selection, development, and adaptation in primate and human evolution.

**ANG 6583: Primate Functional Morphology**

**Credits: 3**                    **Grading Scheme: Letter**

Practical and theoretical approaches to functional morphology in living and fossil primates. Biomechanical techniques. Problems of functional inference in paleontological and archeological records.

**ANG 6591L: Advanced Molecular Anthropology Laboratory**

**Credits: 1-3    Max: 6                    Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Research design, experimentation, discussion, and presentation of findings of individual laboratory-based projects.

**ANG 6592: Seminar in Molecular Anthropology**

**Credits: 3                                  Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Current applications of molecular data to questions of human evolution and genetics, based on most recent journal articles. Possible topics: emergence of modern *Homo sapiens* and population movements.

**ANG 6593L: Biological Anthropology Laboratory**

**Credits: 4                                  Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Hands-on experience with latest molecular and stable isotope techniques as applied to questions of anthropologic interest.

**ANG 6701: Seminar on Applied Anthropology**

**Credits: 3                                  Grading Scheme:** Letter

*Prerequisite:* ANG 5700 or consent of instructor.

Consideration of planned socio-cultural and technological change and development in the United States and abroad; special and cultural problems in the transferral of technologies; community development and aid programs. Comparative program evaluation.

**ANG 6737: Medical Anthropology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Theory of anthropology as applied to nursing, medicine, hospital organization, and the therapeutic environment. Instrument design and techniques of material collection.

**ANG 6740: Advanced Techniques in Forensic Anthropology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* human osteology and forensic anthropology introduction.

Hands on analysis and clinical diagnoses of human skeletal remains. Analysis of human trauma and other demographic techniques.

**ANG 6801: Ethnographic Field Methods**

**Credits: 3                      Grading Scheme: Letter**

Methods of collecting ethnographic data. Entry into the field; role and image conflict. Participant observation, interviewing, content analysis, photography and documents, data retrieval, analysis of data.

**ANG 6905: Individual Work**

**Credits: 1-3    Max: 10                      Grading Scheme: Letter**

Guided readings on research in anthropology based on library, laboratory, or field work.

**ANG 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**ANG 6915: Research Projects in Social, Cultural, and Applied Anthropology**

**Credits: 1-3    Max: 10            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

For students undertaking directed research in supplement to regular course work.

**ANG 6917: Professions of Anthropology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* required of all graduate students.

Organizations of the anthropological profession in teaching and research. Relationship between subfields and related disciplines; the anthropological experience; ethics.

**ANG 6930: Special Topics in Anthropology**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**ANG 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ANG 6945: Internship in Anthropology**

**Credits: 1-8    Max: 8            Grading Scheme: Letter**

*Prerequisite:* permission of graduate coordinator.



Required of all students registered in programs of applied anthropology. Students are expected to complete 4-8 hours.

**ANG 6971: Research for Master's Thesis**

**Credits: 1-15**                      **Grading Scheme: S/U**

**ANG 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ANG 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**ANS 5312C: Applied Ruminant Reproductive Management**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite: ANS 3319C*

In-depth review of applied bovine reproductive management; factors that affect the efficiency of reproduction (managerial, biological, and economical). Offered fall term.

**ANS 5446: Animal Nutrition**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ANS 3440, BCH 4024, or consent of instructor.

Carbohydrates, fats, proteins, minerals, and vitamins and their functions in the animal body. Offered fall term.

**ANS 5935: Reproductive Biology Seminar and Research Studies**

**Credits: 1    Max: 4                      Grading Scheme: S/U**

*Prerequisite:* ANS 3319C or equivalent.

Invited speakers on a wide range of topics. Student-faculty participation in research projects.

**ANS 6288: Experimental Techniques and Analytical Procedures in Meat Research**

**Credits: 3                      Grading Scheme: Letter**

Experimental design, analytical procedures; techniques; carcass measurements and analyses as related to livestock production and meats studies. Offered spring term in even-numbered years.

**ANS 6313: Current Concepts in Reproductive Biology**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ANS 3319C or equivalent; consent of instructor.

Lectures prepared by students and discussion of current review articles. Offered spring term in odd-numbered years.

**ANS 6314: Experimental Embryology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* ANS 6751, BCH 5045.

Fundamentals of embryology. Emphasizes mammals and current experimental approaches to embryo research.

**ANS 6447: Ruminant Nutrition**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 5446: Animal Nutrition

The anatomy and physiology of the ruminant digestive system as well as the digestion and metabolism of dietary nutrients for the purposes of growth, pregnancy, and lactation. Ration formulations using computer software.

**ANS 6449: Vitamins**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* organic chemistry.

Historical development, properties, assays, and physiological effects.

**ANS 6452: Principles of Forage Quality Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 5446, AGR 4231C.

Definition of forage quality in terms of animal performance, methodology used in forage evaluation, and proper interpretation of forage evaluation data. Offered spring term in even-numbered years.

**ANS 6458: Advanced Methods in Nutrition Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students but open to seniors by special permission.

Demonstrations and limited performance of procedures used in nutrition research. Offered fall term in even-numbered years.

**ANS 6636: Meat Technology**

**Credits: 3**                      **Grading Scheme:** Letter

Chemistry, physics, histology, bacteriology, and engineering involved in the handling, processing, manufacturing, preservation, storage, distribution, and utilization of meat. Offered fall term in odd-numbered years.

#### **ANS 6666L: Molecular and Cellular Research Methods**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* enrollment in AMCB concentration.

Diversity of research topics and laboratory techniques demonstrated. Short laboratory rotations (3 to 6 weeks) with 3 scientists.

#### **ANS 6702: Lactation Physiology of Farm Animals**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 6704 or permission of instructor

A comprehensive overview of the physiological, biochemical, cellular, and molecular processes controlling the process of milk formation and secretion, with emphasis on livestock species.

#### **ANS 6704: Mammalian Endocrinology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 4024 or BCH 3025, or equivalent.

Physiologic systems of farm animals. Emphasizes the impact of endocrinology and cell biology on animal physiology, development and performance.

#### **ANS 6705: Muscle Physiology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* Undergraduate coursework in biology, biochemistry, and physiology.

Overview of morphological, physiological, cellular, and molecular factors affecting muscle structure and function, with special emphasis on mammalian skeletal muscle.

**ANS 6707: Growth Physiology in Farm Animals**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 6704

Biological regulation of muscle, cartilage and bone formation and function in farm animals with integration of physiological systems to livestock tissue growth.

**ANS 6711: Current Topics in Equine Nutrition and Exercise Physiology**

**Credits: 2**                      **Grading Scheme:** Letter

Equine science with emphasis on current topics of interest. Offered fall term in odd-numbered years.

**ANS 6714: Current Topics in Microbial Physiology in Animals**

**Credits: 1**                      **Grading Scheme:** Letter

Insights into microbial pathogenesis, microbial genetics, and molecular microbiology with particular reference to livestock species.

**ANS 6715: Gastrointestinal and Feed Microbiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 5446.

Microbiology of the rumen, hindgut, and feed; relation to livestock production and food safety.

**ANS 6716: Physiology in Farm Animals**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 6704

Physiology and function of the gastrointestinal system in monogastrics and ruminants.

### **ANS 6718: Nutritional Physiology of Domestic Animals**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 5446; introductory biochemistry course.

Physiological, biochemical and molecular control of nutritional processes in monogastrics and ruminants.

### **ANS 6723: Mineral Nutrition and Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

Physiological effect of macro- and micro-elements, and mineral interrelationships.

### **ANS 6745: Introduction to Statistical Genetics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 6555, STA 6167.

Development and application of statistical and quantitative genetics theory to selection and estimation of genetic parameters.

### **ANS 6750: Reproductive Physiology in Farm Animals**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* ANS 6704 and ANS 3319C or equivalent.

Physiology and function of the reproductive system in farm animals.

### **ANS 6751: Physiology of Reproduction**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCH 5045 or equivalent.

Conceptual relationship of the hypothalamus, pituitary, and reproductive organs during the estrous cycle and pregnancy. Influence of exteroceptive factors and seasonal reproduction. Offered fall term in even-numbered years.

**ANS 6767: Molecular Endocrinology**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* BCH4024 or BCH 5045; ANS 6704 ; or equivalent, or consent of instructor.

Molecular basis of hormone action and regulation, and emerging techniques in endocrine system study; emphasis on molecular mechanisms of growth, development, and reproduction.

**ANS 6775: Essentials of Livestock Immunology**

**Credits: 1                      Grading Scheme: Letter**

Basic immunological concepts and their relation to immunity for livestock and other species.

**ANS 6905: Problems in Animal Science**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter, H**

**ANS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**ANS 6932: Special Topics in Animal Science**

**Credits: 1-3    Max: 9                    Grading Scheme: Letter**

New developments in animal nutrition and livestock feeding, animal genetics, animal physiology, and livestock management.

**ANS 6933: Graduate Seminar in Animal Science**

**Credits: 1    Max: 8                    Grading Scheme: Letter**

**ANS 6936: Graduate Seminar in Animal Molecular and Cell Biology**

**Credits: 1    Max: 2                    Grading Scheme: Letter**

Seminar attendance and 1-hour presentation on graduate research project.

**ANS 6939: Animal Molecular and Cellular Biology Journal Colloquy**

**Credits: 1    Max: 5                    Grading Scheme: S/U**

Critical evaluation, presentation and discussion of recent scientific journal articles on a specified topic in cellular and/or molecular biology.

**ANS 6940: Supervised Teaching**

**Credits: 1-3    Max: 5                    Grading Scheme: Letter**

Helping students develop teaching skills in the animal sciences under the guidance of faculty member.



**ANS 6942: Supervised Extension in the Animal Sciences**

**Credits: 1-3                      Grading Scheme: Letter**

Develops extension skills in the Animal Sciences under the guidance of faculty member.

**ANS 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**ANS 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ANS 7980: Research for Doctoral Dissertation**

**Credits: 1-15                      Grading Scheme: S/U**

**AOM 5334C: Agricultural Chemical Application Technology**

**Credits: 3                      Grading Scheme: Letter**

Equipment and methods used to apply pesticides in agriculture. Emphasis on techniques to avoid misapplication and pesticide drift.

### **AOM 5431: GIS and Remote Sensing in Agriculture and Natural Resources**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* working knowledge of computer or consent of instructor.

Principles and applications of geographic information systems (GIS) and global positioning system (GPS) technologies supporting land use/cover assessment, agricultural production, and natural resource conservation.

### **AOM 5435: Advanced Precision Agriculture**

**Credits: 3                      Grading Scheme: Letter**

Principles and applications of technologies supporting precision farming and natural resource data management planning. Global positioning systems (GPS), geographic information systems (GIS), variable rate technologies (VRT), data layering of independent variables, automated guidance, Internet information access, computer software management.

### **AOM 6905: Individual Work in Agricultural Operations Management**

**Credits: 1-6    Max: 6                      Grading Scheme: Letter**

Special problems.

### **AOM 6932: Special Topics in Agricultural Operations Management**

**Credits: 1-6    Max: 6                      Grading Scheme: Letter**

Lectures, laboratory, and /or special projects.

### **APK 5127: Assessment in Exercise Science**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PET 3351C or equivalent.

Techniques and methodologies to assess health and physical fitness.

#### **APK 5404: Sport Psychology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* Consent of instructor.

Survey of current research, learning processes, motivation, performance intervention, strategies, group dynamics, history of sport psychology, and other topics.

#### **APK 6111L: Practicum in Exercise Physiology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* APK 6110C.

Applied and experimental work emphasizing practical problems.

#### **APK 6116C: Physiological Bases of Exercise and Sport Sciences**

**Credits: 3                      Grading Scheme:** Letter

Applying fundamental concepts of human physiology to programs of physical education and sports. Recent research developments in sports physiology.

#### **APK 6118: Neuromuscular Adaptation to Exercise**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* APK 6110C.

Research developments; and describing neural and muscular function and adaptation to acute and chronic exercise.

### **APK 6126: Cardiopulmonary Pathologies**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PET 3350C, 3351C or equivalent.

Lecture and laboratory study of anatomy, physiology, and pathophysiology of cardiac and pulmonary systems. Attention to cardiopulmonary function in diseased and stressed states. Emphasizes dysfunction, clinical assessment, and rehabilitation of cardiopulmonary patients.

### **APK 6128: EKG Interpretation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PET 2350C and 3351C.

Basic and intermediate electrocardiography including cardiac function, lead systems, rate, axis, infarction, ischemia, hypertrophy, and effects of cardiovascular drugs and exercise on EKG. Particular attention to EKGs of diseased populations during exercise.

### **APK 6205C: Nature and Bases of Motor Performance**

**Credits: 3**                      **Grading Scheme:** Letter

Principles of motor skill development, and conditions affecting motor skill development and retention in physical education activities.

### **APK 6206: Planning Motor Actions**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Processes and mechanisms involved in planning voluntary human motor actions. Variables that influence movement planning and initiation.

### **APK 6210: Controlling Motor Actions**

**Credits: 3**                      **Grading Scheme:** Letter

Analyzing human voluntary motor actions, including the mechanisms and systems involved in motor control.

**APK 6225: Biomechanical Instrumentation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* APK 6220C.

Overview of data collection and analysis tools. Hands-on experience conducting projects using EMG, videography, and force transducer technology.

**APK 6226C: Biomechanics of Human Motion**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PET 2320C; MGF 1202 or MAC 1142.

Applying the principles of statics, kinematics, and kinetics to kinesiological systems of the human body in movement and sports skills.

**APK 6406: Exercise Psychology**

**Credits: 3**                      **Grading Scheme:** Letter

Overview, examining research evidence on psychological factors associated with adapting and maintaining an exercise program.

**APK 6408: Performance Enhancement**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* APK 5400.

Mental and psychological techniques and strategies to improve performance and achievement in sport and exercise.

**APK 6410: Seminar in Exercise Psychology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* APK 6405 or consent of instructor.

Critical review of the literature. Students design group research projects and pilot test.

**APK 6415: Seminar in Sport Psychology: Current Topics**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* sport psychology course or consent of instructor.

Discussion of research topics, including contemporary issues and interests. In-depth exploration of research and theory. Citation of practical sport setting applications where appropriate.

**APK 6900: Directed Independent Study**

**Credits: 1-5    Max: 12                      Grading Scheme:** Letter

Individual research projects under faculty guidance.

**APK 6940: Advanced Practicum in Exercise and Sport Science**

**Credits: 1-5    Max: 5                      Grading Scheme:** Letter

On-site practical experience in exercise and sport science.

**APK 7107: Cardiovascular Exercise Physiology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* APK 6110C/6356L or equivalent.

Basic mechanisms of cardiovascular dynamics at rest and in response to exercise.

### **APK 7108: Environmental Stress Exercise Physiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* APK 6110C/6356L or equivalent.

Energetics of environmental stress on cardiovascular, respiratory, metabolic, and muscle physiology as they pertain to physical performance.

### **APK 7117: Exercise Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* APK 6110C or equivalent.

Principles of metabolic regulation during exercise; effects of chronic exercise on muscle metabolism.

### **APK 7124: Free Radicals in Aging, Exercise and Disease**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2040, APK 6110C or consent of instructor.

Free radical biology and biochemistry dealing with aging, exercise, antioxidants, and diseases of aging, such as atherosclerosis, diabetes, and neurodegenerative diseases.

### **APK 7129: Pulmonary Function during Exercise**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* APK 6110C or equivalent.

Regulation of pulmonary gas exchange during exercise; acute and experimental procedures during exercise.

### **ARC 5791: Topics in Architectural History**

**Credits: 3                      Grading Scheme: Letter**

**ARC 5800: Survey of Architectural Preservation, Restoration, and Reconstruction**

**Credits: 3                      Grading Scheme: Letter**

**ARC 5810: Techniques of Architectural Documentation**

**Credits: 3                      Grading Scheme: Letter**

Documentation, interpretation, and maintenance issues relating to historic structures.

**ARC 6116: Drawing toward Architecture**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

Freehand drawing skills as generative and analytical architectural methodologies.

**ARC 6176: Advanced Computer-Aided Design**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

Available hardware and software and their current and potential usefulness to the profession. Future directions in hardware and software development.

**ARC 6212: Topics in Phenomena and Architecture**



**Credits: 3    Max: 9                    Grading Scheme: Letter**

Relationships between the philosophy of phenomenology and specific phenomena and architecture studied. Current and historic examples of theoretical and design applications considered.

**ARC 6226: Intercultural Perspectives in Architecture**

**Credits: 3    Max: 9                    Grading Scheme: Letter**

Studies on the impact of differing cultural practices displayed through politics, tourism, the arts and mass media on architectural thought and production.

**ARC 6228: Film and Architecture**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor or DCP majors.

Survey of the representation of architecture and urbanism in cinema and an investigation of how discourses of cinema construct urbanism and architecture.

**ARC 6241: Advanced Studio I**

**Credits: 1-9    Max: 9                    Grading Scheme: Letter**

An investigation of architecture as a systematic integration of program, space and tectonic systems to make public places in specific cultural and climatic contexts, culminating in a highly resolved spatial order and material resolution.

**ARC 6242: Research Methods**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Required of all graduate students as preparation for thesis.

**ARC 6280: Advanced Topics in Architectural Practice**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Analyzing contemporary practice models.

**ARC 6281: Professional Practice**

**Credits: 3                    Grading Scheme:** Letter

Principles and processes of office practice management, investment and financing, project phases, building cost estimation, contracts.

**ARC 6311C: Building Information Modeling**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* ARC2180

Building information modeling (BIM) in the context of advanced architectural design development and documentation.

**ARC 6355: Advanced Studio II**

**Credits: 6                    Grading Scheme:** Letter

Emphasis on architecture, program the experience of place. Introduces emergent paradigms for practice and the built environment as well as speculative methods and procedures.

**ARC 6356: Advanced Studio III**

**Credits: 6                    Grading Scheme:** Letter

Developing design methods for synthesizing special aspects of architectural practice: human behavior and space programming, environmental control and energy use, construction materials and structures, project management, preserving and reusing historic structures, and theoretical and philosophical areas of inquiry.

**ARC 6357: Advanced Topics in Architectural Design**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Expanding familiar concepts in the conception and production of architecture. Examines the potential for a program to generate architectonic form, bringing a multidisciplinary approach to historical manifestations.

**ARC 6383: St. Augustine Interdisciplinary Design Studio**

**Credits: 2-6    Max: 6            Grading Scheme: Letter**

Advanced-level design, construction, and planning in St. Augustine, Florida with attention to cultural heritage and interpretation.

**ARC 6391: Architecture, Energy, and Ecology**

**Credits: 3                    Grading Scheme: Letter**

Integration of energetic and environmental influences on architectural design.

**ARC 6393: Advanced Architectural Connections**

**Credits: 3                    Grading Scheme: Letter**

Analyzing architectural connections and details relative to selected space, form, and structural systems.

### **ARC 6399: Advanced Topics in Urban Design**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Transformations of historic urban form and newly developed urban areas and their cultural, sociological, economic, and technological impact.

### **ARC 6505: Architectural Structural Systems: Wood, Steel, and Concrete**

**Credits: 4                            Grading Scheme:** Letter

*Prerequisite:* ARC 3503 or equivalent.

Structural components as part of building system. Introduction to typical building components.

### **ARC 6512: Structural Modeling**

**Credits: 3                            Grading Scheme:** Letter

*Prerequisite:* ARC 3503

Fundamentals of structural information modeling. Develops the conceptual and theoretical understanding of building information modeling (bim), digital design, and approximate systems analysis and detailing for building structures. Students will learn how to efficiently implement bim to organize, coordinate and communicate information in order to convey data necessary for structural analysis and design. Incorporated are applied projects and case studies related to building design and detailing.

### **ARC 6576: Architectural Structures**

**Credits: 3                            Grading Scheme:** Letter

Analysis and behavior of reinforced concrete, prestress, masonry, foundations, steel, and suspension systems.

### **ARC 6611: Advanced Topics in Architectural Technology**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Structures, materials, construction systems, or environmental technology. Determining architectural form by available technologies and inventions throughout history.

#### **ARC 6621: Graduate Environmental Technology 2**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* ARC 3610.

Fundamentals of architectural lighting, acoustics, electrical power distribution, and building communications.

#### **ARC 6642: Architectural Acoustic Design Laboratory**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* ARC3610 and ARC 4620 or Equivalents

Theories and sciences of architectural acoustics as integral components of an architectural design problem.

#### **ARC 6643: Architectural Acoustics**

**Credits: 3                    Grading Scheme: Letter**

Theory, practice, and application of acoustics in architecture.

#### **ARC 6670: Lighting Design Seminar**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Design problems investigating theoretical, conceptual, and practical applications of illumination systems through speculative and analytical inquiry.

### **ARC 6685: Life Safety, Sanitation, and Plumbing Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Design problems investigating the theory, practice, and applications of fire safety, movement, sanitation, and plumbing systems in architecture.

### **ARC 6686: LEED for Sustainable Design and Construction**

**Credits: 3**                      **Grading Scheme:** Letter

Focusing on design and construction of high performance buildings, apply green building technologies, and strategies using on campus projects, and understand the economics and market development of building green using green building rating systems with focus on LEED. Successful completion of this course will fulfill the prerequisites for LEED™ Green Associate exam credentials.

### **ARC 6705: Graduate Architectural History 3**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ARC 1702.

Examination of key built works from early civilizations, their cultural context, and construction technologies.

### **ARC 6711: Architecture of the Ancient World**

**Credits: 3**                      **Grading Scheme:** Letter

Examination of key built works from early civilizations, their cultural context, and construction technologies.

### **ARC 6750: Architectural History: America**

**Credits: 3                      Grading Scheme: Letter**

Development of American architecture and the determinants affecting its function, form, and expression.

**ARC 6773: Strains of Modernism**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Examinations of the origins, development and transformations of modernism as known through publications and built work of varying scales.

**ARC 6793: Advanced Topics in Regional Architecture**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Critical studies of local, regional, and vernacular buildings and built environments.

**ARC 6805: Architectural Conservation**

**Credits: 3                      Grading Scheme: Letter**

A multidisciplinary study, supervised by an architectural professor and another professor from an appropriate second discipline, in the science of preserving historic architecture, utilizing individual projects.

**ARC 6821: Preservation Problems and Processes**

**Credits: 3                      Grading Scheme: Letter**

Preservation in the larger context. Establishing historic districts; procedures and architectural guidelines for their protection.

**ARC 6822: Preservation Programming and Design**

**Credits: 3                      Grading Scheme: Letter**

Architectural design focusing on compatibility within the fabric of historic districts and settings.

**ARC 6851: Technology of Preservation: Materials and Methods I**

**Credits: 3                      Grading Scheme: Letter**

Materials, elements, tools, and personnel of traditional building.

**ARC 6852: Technology of Preservation: Materials and Methods II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ARC 6851.

Preservation of twentieth-century structures.

**ARC 6883: Vernacular Architecture & Sustainability**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor or DCP major.

Investigation of vernacular architecture in the discourse of architectural sustainability, with an emphasis on the way that vernacular architecture has been constructed, represented, and consumed in the environmental histories of architecture.

**ARC 6911: Architectural Research**

**Credits: 1-6    Max: 9                      Grading Scheme: Letter, H**



Special studies adjusted to individual needs.

**ARC 6912: Architectural Research II**

**Credits: 1-6    Max: 9            Grading Scheme:** Letter, H

Special studies adjusted to individual needs.

**ARC 6913: Architectural Research III**

**Credits: 1-6    Max: 9            Grading Scheme:** Letter, H

Special studies adjusted to individual needs.

**ARC 6932: Advanced Topics in Architectural Methods**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Exploration of interconnection between architectural design and research methodology.

**ARC 6933: Sustainable Site Design**

**Credits: 3            Grading Scheme:** Letter

*Prerequisite:* must be a graduate student in the College of Design, Construction, and Planning.

Architecture's relationship to landscape environments. Focuses on architecture's interrelationship with the diverse fields of landscape architecture, ecology, and civil engineering.

**ARC 6934: European Approach to Sustainable Design**

**Credits: 3                      Grading Scheme: Letter**

Ideas and design strategies used in Europe that might be considered for the United States. Focuses on several countries in Europe that are leaders in sustainable design.

**ARC 6935: Seminar in Sustainable Design**

**Credits: 3                      Grading Scheme: Letter**

Overview of principles and practices of sustainable architecture design, including weekly reading, use studies of excellent design practices, local field trip, and on-campus practice.

**ARC 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**ARC 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**ARC 6979: Master's Research Project**

**Credits: 1-10                      Grading Scheme: Letter, H**

**ARE 6049: History of Teaching Art**

**Credits: 3                      Grading Scheme: Letter**

History of the theory and practice of teaching art.

**ARE 6148: Curriculum in Teaching Art**

**Credits: 3                      Grading Scheme: Letter**

Contemporary theories for developing art teaching curricula.

**ARE 6246C: Principles of Teaching Art**

**Credits: 3                      Grading Scheme: Letter**

Social and theoretical foundations of contemporary art education practice.

**ARE 6247C: Teaching Art: The Study of Practice**

**Credits: 3                      Grading Scheme: Letter**

Art teaching practices in the public schools. Emphasizes art curriculum planning, motivational strategies, art room management and alternative assessment in art.

**ARE 6386: Teaching Art in Higher Education**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history, or consent of instructor.

Study of teaching art at the post secondary level.

**ARE 6641: Issues in Art Education**

**Credits: 3                      Grading Scheme: Letter**

Exploration of contemporary issues in art, general education, and society that affect teaching of art in public schools.

**ARE 6746: Methods of Research in Art Education**

**Credits: 3                      Grading Scheme: Letter**

Study of qualitative and quantitative research methods. Review of research literature.

**ARE 6905: Individual Study**

**Credits: 1-5    Max: 12                      Grading Scheme: Letter**

**ARE 6910: Capstone Project**

**Credits: 3                      Grading Scheme: S/U**

*Prerequisite:* Advanced standing in the graduate program, ARE 6705, and consent of Instructor.

Completion of an original research project that addresses an identified issue or need with the field of art education.

**ARE 6933: Special Topics in Art Education**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

**ARE 6944: Internship in Teaching Art**

**Credits: 3                      Grading Scheme: S/U**

*Prerequisite:* Student must be accepted into the MA Program in Art Education w/ EPI, have passed his/her first-year review, and have completed ARE 6246C and ARE 6247C.

Develops pedagogical knowledge and skills in a school classroom, under the guidance of a K-12 art teacher.

**ARE 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**ARE 6973: Individual Project**

**Credits: 1-10    Max: 10                      Grading Scheme: S/U**

Project in lieu of thesis.

**ARH 5357: French Art of the Ancien Regime: 1680-1780**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in the Art History program, or consent of instructor.

Major artists, artistic movements, works and issues in art theory, and criticism in Europe from the late 17th century to the 1780s. Emphasizes painting in France and the reaction against Rococo.

**ARH 5420: Art in the Age of Revolution**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing in the Art History program, or consent of instructor.

Late-18th and early-19th century European art, including Neo-Classicism and Romanticism. Works are considered in the cultural, political, social, and aesthetic contexts in which they were created. Emphasizes the politics of style during the period of revolution and reaction.

### **ARH 5440: Beginnings of Modernism**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing in the Art History program, or consent of instructor.

Visual arts in Europe in the second half of the 19th century, focusing on the emergence of avant-garde and the formulation of the modern aesthetic in industrialized, urban culture, especially in Paris. Realism, Impressionism, and Post-Impressionism.

### **ARH 5527: Arts of Central Africa**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Traditional arts of the equatorial forests, the savannahs to the south of them, and portions of eastern and southern Africa.

### **ARH 5528: Art of West Africa**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Traditional arts of western Sudan and the Guinea coast.

### **ARH 5529: Clothing and Textiles in Africa**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate Student standing

This class will be focusing on techniques, styles, and uses of textiles and elements of African dress. Course exploration reveals information about culture and history, particularly regarding movements of textiles and technologies between regions and preservation of styles of traditional dress. Readings will vary from technical analyses to artists' biographies.

### **ARH 5655: Indigenous American Art**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* ARH 2518 or consent of instructor.

Native arts of the Americas (North, Central, or South) from pre-European times.

**ARH 5667: Colonial Andean Art**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* graduate standing in Art and Art History or Latin American Studies, or consent of instructor.

Examination of the colonial art of Peru, Ecuador, Bolivia, and other territories within the Spanish Viceroyalty of Peru.

**ARH 5816: Methods of Research and Bibliography**

**Credits: 3                    Grading Scheme: Letter**

**ARH 5877: Gender, Representation, and the Visual Arts: 1600-1900**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Graduate standing in the Art History program, or consent of instructor.

Historical and theoretical issues posed for visual media by attention to issues of gender, with particular emphasis on women artists.

**ARH 5905: Individual Study**

**Credits: 1-6    Max: 12 including ART 5905C            Grading Scheme: Letter**

**ARH 6141: Greek Art Seminar**

**Credits: 3    Max: 12            Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Topics in Greek art history.

#### **ARH 6292: Medieval Art Seminar**

**Credits: 3    Max: 12            Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Topics in medieval art.

#### **ARH 6394: Renaissance Art Seminar**

**Credits: 3    Max: 12            Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Special topics in the art and visual culture of the 14th through 16th centuries.

#### **ARH 6422: Beginnings of Modernism. Realism to Post-Impressionism 1848-1890**

**Credits: 3                    Grading Scheme: Letter**

This topic of this course is the history of European painting (French, actually) during the second half of the nineteenth century, considered within the social and political context provided by the Second Republic, Second Empire, the Commune and Third Republic. Major themes to be traced in lectures and readings will include: formation of the avant garde, the shifting social organization of industrial society, and changing structures of artistic personality, practice and consumption. The city of Paris will be our focus, as nearly all the artists we shall study -whether French, Dutch, or Scandinavian spent significant time there.

#### **ARH 6477: Eighteenth-Century European Art Seminar**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* graduate standing in the Art History program, or consent of instructor.



Intersecting ideologies of gender and representation in French art.

**ARH 6481: Contemporary Art Seminar**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate standing in art history or consent of instructor.

Topics in contemporary art.

**ARH 6496: Modern Art Seminar**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate standing in art history or consent of instructor.

Topics in modern art.

**ARH 6596: Chinese Art Seminar**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate standing in art history or consent of instructor.

Research seminar focusing on a topic or topics in the study of Chinese art.

**ARH 6597: African Art Seminar**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate standing in art history or consent of instructor.

Research seminar focusing on a topic or topics in the study of African art.

**ARH 6654: Pre-Columbian Art Seminar**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Rotating topics include topics pertaining to the study of Pre-Columbian art.

**ARH 6666: Colonial Latin American Art Seminar**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Rotating topics include issues pertaining to the study of colonial Latin American art.

**ARH 6694: Nineteenth-Century Art–Seminar**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in the Art History program, or consent of instructor.

**ARH 6696: American Art Seminar**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in art history or consent of instructor.

Topics in American art.

**ARH 6797: Museum Education**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Issues and content related to education in museums and other nontraditional education settings.

**ARH 6836: Exhibitions Seminar**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Basic information needed by the museum curator. Exhibition research, planning, interpreting, installing, and organizing and designing museum space.

**ARH 6895: Collections Management Seminar**

**Credits: 3                    Grading Scheme: Letter**

Information needed to access and conserve objects. Risk management, preparing objects for travel, and legal issues in collections management.

**ARH 6900: Independent Study in Museology**

**Credits: 1-6    Max: 9            Grading Scheme: Letter**

Independent research topics under faculty guidance.

**ARH 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ARH 6911: Advanced Study**

**Credits: 3-4    Max: 16            Grading Scheme: Letter**

*Prerequisite:* major in art.

**ARH 6914: Independent Study in Ancient Art History**

**Credits: 3-4    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Egyptian, Near Eastern, Aegean, Greek, Etruscan, Roman.

**ARH 6915: Independent Study in Medieval Art History**

**Credits: 3-4    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Early Christian, Byzantine, Early Medieval, Romanesque, Gothic.

**ARH 6916: Independent Study in Renaissance and Baroque Art History**

**Credits: 3-4    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Renaissance, High Renaissance, Mannerism, Baroque, Eighteenth Century art.

**ARH 6917: Independent Study in Modern Art History**

**Credits: 3-4    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Major art movements of the 19th and 20th centuries.

**ARH 6918: Independent Study in Non-Western Art History**

**Credits: 3-4    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

African, Latin American, American Indian, Asian, and Oceanic.

**ARH 6930: Special Topics in Museology**

**Credits: 3-9    Max: 9                    Grading Scheme: Letter**

Contemporary issues pertaining to museums and their social and cultural functions.

**ARH 6938: Seminar in Museum Studies**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

History, purposes, and functions of museums in general, and art museums in particular.

**ARH 6941: Supervised Internship**

**Credits: 1-6    Max: 9                    Grading Scheme: S/U**

Training in an approved regional or national museum, arts organization, institution, or facility. On-site supervision, with periodic reports filed with the instructor of record.

**ARH 6946: Museum Practicum**

**Credits: 1-6    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* consent of graduate program adviser and prior arrangements with professors.

Work under museum professionals. Readings and periodic discussions with the coordinating professor.

**ARH 6948: Gallery Practicum**

**Credits: 3-6    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* Consent of graduate program adviser and prior arrangements with coordinating professor.

Work under the supervision of gallery professionals. Readings and periodic discussions with the coordinating professor.

**ARH 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**ARH 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ARH 7980: Research for Doctoral Dissertation**

**Credits: 1/15                      Grading Scheme: S/U**

**ART 5674C: Digital Fabrication**

**Credits: 03                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor. Familiarity with 2-D and 3-D software recommended.

Interdisciplinary studio combines in-depth analysis of the role of the physical object in diverse conceptual art practices with project-based experimentation using rapid prototyping and manufacturing technologies.

**ART 5905C: Directed Study**

**Credits: 1-5    Max: 24 including ARH 5905                      Grading Scheme: Letter**

**ART 5930C: Special Topics**

**Credits: 3    Max: 15            Grading Scheme:** Letter

Rotating topics in studio art and studio practice.

**ART 6410C: Printmaking Seminar: Mastering Process and Content**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* graduate standing in studio art or consent of instructor

Complex ideation, approaches, and material handling to orchestrate a unified series of images that equally support concept and methods.

**ART 6411C: Printmaking Seminar: Transformation and Change**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* graduate standing in studio art or consent of instructor

Explorations of methodologies toward conceptual and perceptual image transformations.

**ART 6412C: Printmaking Seminar: Ideation, Studies, and Completed Works**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* graduate standing in studio art or consent of instructor

In-depth investigation of process, form, and content to strengthen previous visual philosophies.

**ART 6413C: Printmaking Seminar: Interdisciplinary Studio**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* Graduate standing in studio art or consent of instructor.

Explores diverse media and idea development as a way to develop innovative visual philosophies.

#### **ART 6671C: Advanced Experiments in Digital Art**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate student in Art and Art History or consent of instructor.

Rotating topics include electronic art forms, with an emphasis on creative and expressive use of emergent digital media, trends in digital media art.

#### **ART 6672: Hypermedia**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* graduate level in School of Art and Art History or consent of instructor.

Practical and theoretical issues related to the Internet as a medium for making art rather than as tool for delivering information. Emphasizes creation of dynamic and interactive experiences that utilize the Internet including video, graphics, animation, sound, image and typography.

#### **ART 6673C: Video Art**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate level in School of Art and Art History or consent of instructor.

Studio intensive course explores digital video through lectures, demonstrations, screenings and reading with a specific overview of concepts and techniques integral to video. Emphasizes conceptual and experimental forms, rather than on conventional narrative.

#### **ART 6675C: Digital Art and Animation**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate level in SAAH or consent of instructor.



Rotating topics explore principles and concepts of animation using traditional methods, digital imaging, and contemporary 2D and 3D software applications. Lectures, demonstrations, screenings and readings provide students with the opportunity to integrate concept, form and technology to explore the possibilities of animation.

### **ART 6691: Digital Art Studio**

**Credits: 4    Max: 12            Grading Scheme: Letter**

*Prerequisite:* graduate standing in art, or consent of instructor.

Investigation of digital art practices in one or more of the following areas: bit-mapped and object-oriented graphics, 3-D modeling, computer animation, hypermedia and interactivity, and image-processing.

### **ART 6794C: Vessel Aesthetic 1**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* None.

Further study of high-fire reduction methods, in throwing and handbuilding practice, and in the formal use of the vessel as an artistic means of expression. This course is for graduate students with basic background in handbuilding and throwing.

### **ART 6795C: Vessel Aesthetic 2**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* None.

Learning how to do intermediate study of in the development and use of ceramic color, forming techniques, and use of the vessel surface as an artistic means of expression. This course is for graduate students with basic background in handbuilding and throwing.

### **ART 6797C: Ceramic Sculpture 2**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Prior experience in hand building processes for Ceramics.

Learning sculpture forming techniques, plaster mold-making, as well as glaze testing to develop color and surface for

sculpture. As a graduate class, this course is intended for graduate elective students with a background in hand building who are seeking to do further study sculpting methods and mold making (an original three dimensional duplication technique).

**ART 6835C: Research in Methods and Materials of the Artist**

**Credits: 3-4    Max: 8            Grading Scheme: Letter**

**ART 6849C: Reactive Environments**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate level in School of Art and Art History or consent of instructor.

Explores site specificity and intervention in three-dimensional space through installation, using digital media, producing artworks expanding current body of work, intersecting with course theme.

**ART 6897: Professional Practices for the Visual Artist**

**Credits: 3            Grading Scheme: Letter**

**ART 6910C: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ART 6925C: Art + Technology Workshop**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Examines the conceptual ramifications of new technologies, allowing the artist to experiment with new forms, in the context of a projects-based course, producing artworks, expanding their current body of work, as it intersects with the course theme.

#### **ART 6926C: Advanced Study I**

**Credits: 2-4    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Applying the basic principles of studio art in one of the following areas: ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, or multi-media.

#### **ART 6927C: Advanced Study II**

**Credits: 2-4    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Investigating selected problems in one of the following areas: ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and multi-media.

#### **ART 6928C: Advanced Study III**

**Credits: 2-4    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Experimentation in nontraditional approaches to studio art in one of the following areas: ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and multi-media.

#### **ART 6929C: Advanced Study IV**

**Credits: 2-4    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* major in art; consent of instructor and graduate program adviser.

Stylistic and technical analysis of contemporary studio practices in one of the following areas: ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and multi-media.

**ART 6933: Area Methods: Rotating Topics**

**Credits: 1-4    Max: 27            Grading Scheme: Letter**

*Prerequisite:* Consent of instructor and graduate program adviser.

Readings, discussions, and/or studio exploration of various art issues.

**ART 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ART 6973C: Individual Project**

**Credits: 1-10    Max: 10            Grading Scheme: S/U**

Creative project in lieu of written thesis.

**ASH 5388: Topics in East Asian History**

**Credits: 3    Max: 9            Grading Scheme: Letter**

**ASL 5406: Manual Communication with the Hearing Impaired**

**Credits: 1    Max: 3            Grading Scheme: Letter**

Overview of signing systems, including ASL, Signed English, and Signing Exact English. Emphasis on signing skills most useful to audiologist.

### **AST 5113: Solar System Astrophysics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 2 years of college physics.

Survey of the solar system, including its origin and laws of planetary motion. The earth as a planet: geophysics, aeronomy, geomagnetism, and the radiation belts. Solar physics and the influence of the sun on the earth.

### **AST 5114: Solar System Astrophysics II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AST 5113.

The moon and planets; exploration by ground-based and spacecraft techniques. The lesser bodies of the solar system, including satellites, asteroids, meteoroids, comets; the interplanetary medium.

### **AST 6112: Solar System Astrophysics**

**Credits: 3**                      **Grading Scheme:** Letter

Systematic examination of the formation and current state of the solar system.

### **AST 6215: Stellar Structure and Function**

**Credits: 3**                      **Grading Scheme:** Letter

Stars as constituents of galaxies, with discussion of both the theoretical and observational aspects of the topic.

### **AST 6245: Stellar Atmospheres and Radiative Processes**

**Credits: 3**                      **Grading Scheme:** Letter

Radiative transfer, spectral line formation and broadening, and other topics applicable to stellar atmospheres and photoionized nebulae.

**AST 6309: Galactic and Extragalactic Astronomy**

**Credits: 3**                      **Grading Scheme:** Letter

Observations and interpretations of the kinematics, dynamics, and structure of the Milky Way Galaxy, extragalactic objects, and galaxy clusters.

**AST 6336: Interstellar Matter**

**Credits: 3**                      **Grading Scheme:** Letter

Complex interplay of physical processes that determine the structure of the interstellar medium in our galaxy; compares observational data with theoretical prediction.

**AST 6415: Observational Cosmology**

**Credits: 3**                      **Grading Scheme:** Letter

Basic science and observations that underlie modern cosmology.

**AST 6416: Physical Cosmology**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the observational background and to the theory of cosmology.

**AST 6506: Celestial Mechanics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* AST 3019.

Dynamics of the solar system, emphasizing the role of dissipative forces and resonant gravitational forces in determining the structure of the system.

#### **AST 6725C: Observational Techniques**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate student in astronomy.

Overview of techniques associated with observational astronomy.

#### **AST 6905: Individual Work**

**Credits: 1-6    Max: 12                      Grading Scheme: Letter**

Supervised study or research in areas not covered by other courses.

#### **AST 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

#### **AST 6925: Departmental Colloquium**

**Credits: 1                      Grading Scheme: S/U**

#### **AST 6935: Frontiers in Astronomy**

**Credits: 1                      Grading Scheme: S/U**

**AST 6936: Astronomy Journal Club**

**Credits: 1                      Grading Scheme: S/U**

**AST 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**AST 7939: Special Topics**

**Credits: 2-4    Max: 12                      Grading Scheme: Letter**

Assigned reading, programs, seminar, or lecture series in a new field of advanced astronomy.

**AST 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**AST 7980: Research for Doctoral Dissertation**



**Credits: 1-15**

**Grading Scheme: S/U**

**ATR 6124: Clinical Anatomy for the Exercise Sciences**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PET 2320C, 2350C, 3351C.

Cadaver dissection and lectures. Appreciation of clinical applications of anatomical knowledge for those pursuing careers in exercise science fields.

**ATR 6145: Human Pathophysiology for the Exercise Sciences**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PET 2320C, 2350C, 3351C.

Macrotraumatic and microtraumatic inflammatory processes, factors affecting inflammation and healing, and the role of exercise in controlling the onset or course of an inflammatory response.

**ATR 6215: Evidence-Based Orthopedic Exam I: Upper-Extremity**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* for students who are BOC-certified athletic trainers.

Identifying, evaluating, and managing acute athletic injuries.

**ATR 6216: Evidence-Based Orthopedic Exam II: Lower-Extremity**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* ATR 6215

Orthopedic and biomechanical assessment of lower-extremity function and dysfunction. Students develop skills and study the principles and procedures used in advanced evaluation techniques. Students examine components of lower-extremity function from biomechanical, neuromuscular and anatomical perspectives. Topics include advanced

orthopedic special tests, 3-dimensional kinematics, interpreting contemporary diagnostic tests and treatment of lower-extremity pathology/dysfunction and critical reviews of related research.

**ATR 6304: Rehabilitation and Modalities of Athletic Injuries**

**Credits: 3                      Grading Scheme:** Letter

Rehabilitation and therapeutic modalities in the field of athletic training.

**ATR 6624: Athletic Training Research and Technology I**

**Credits: 3                      Grading Scheme:** Letter

Current theory and practical application of techniques (cardiovascular testing, isokinetic strength testing, and EMG testing) for understanding and designing research projects related to athletic training and sports medicine.

**ATR 6625: Athletic Training Research and Technology II**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* NATA certified or eligible, or related degree or certification.

Current theory and practical application of techniques (modalities in research, proprioception testing, and force plate and balance testing) for understanding and designing research projects related to athletic training and sports medicine.

**ATR 6934: Seminar in Athletic Training**

**Credits: 1-5    Max: 5                      Grading Scheme:** Letter

*Prerequisite:* NATA certification.

Research topics or contemporary issues in athletic training.

**BCH 5045: Graduate Survey of Biochemistry**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* inorganic chemistry, organic chemistry, biology.

Introduction to plant, animal, and microbial biochemistry for graduate students who have not had biochemistry. Integration and regulation of biochemical processes stressed; limited discussion of some biochemical techniques.

### **BCH 5413: Mammalian Molecular Biology and Genetics**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* BCH 3025, 4014, CHM 3218, 4207, MCB 4303, or PCB 3063 or consent of instructor.

Biochemical and genetic approaches to understanding vertebrate and particularly mammalian molecular biology, moving from basic processes of replication, transcription, and protein synthesis to signal transduction, cell cycle, cancer, genomics, and developmental genetics.

### **BCH 6040: Research Discussion in Biochemistry and Molecular Biology**

**Credits: 1**                      **Grading Scheme: S/U**

*Prerequisite:* Required as students in Biochemistry and Molecular Biology. Open to students in other fields with permission of the instructor.

Current research in biochemistry and molecular biology will be presented by departmental faculty and invited speakers.

### **BCH 6107: Biophysical Techniques in Proteomics and Protein Science**

**Credits: 1**                      **Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.      *Corequisite:* BCH 6740 or consent of instructor.

Theory and application of modern biophysical techniques relevant to proteomics and protein science.

### **BCH 6206: Advanced Metabolism**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* BCH 4024, CHM 4207, or consent of instructor. One of three core biochemistry courses.

Reactions of intermediary metabolism, emphasizing their integrations, mechanisms, and control. Extensive examples from current literature.

#### **BCH 6207: Advanced Metabolism: Role of Membranes in Signal Transduction and Metabolic Control**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.

Fundamentals of membrane biochemistry. Discussions of membrane structure, nutrient and ion transport, protein targeting, and signal transduction. Experimental methods and techniques used to gather and analyze data related to membrane biochemistry and its regulation.

#### **BCH 6208: Advanced Metabolism: Regulation of Key Reactions in Carbohydrate and Lipid Metabolism**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.

Key reactions in metabolic pathways of carbohydrate and lipid metabolism. Explores the experimental basis for current understanding of these processes. Understanding the interactions between major metabolic pathways and control of these pathways under different physiological conditions.

#### **BCH 6209: Advanced Metabolism: Regulation of Key Reactions in Amino Acid and Nucleotide Metabolism**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.

Understanding interactions among major metabolic pathways and control of these pathways under different physiological conditions. Structural basis of enzyme function and regulation.

#### **BCH 6415: Advanced Molecular and Cell Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 4024, CHM 4207, MCB 4303, or consent of instructor. PCB 3063 or a similar course in genetics recommended. One of three core biochemistry courses.

Molecular biology of pro- and eukaryotic organisms. Emphasizes understanding the experimental approaches that led

to recent developments. Chromosome structure and organization, advances in recombinant DNA technology, DNA replication, RNA transcription and protein synthesis, and selected aspects of molecular regulation of gene expression.

### **BCH 6740: Physical Biochemistry/Structural Biology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCH 4024, CHM 4207, or consent of instructor. Course in physical chemistry recommended. One of three core biochemistry courses.

Physical chemistry of biological molecules and techniques to study their properties. Approaches to structure determination.

### **BCH 6741C: Magnetic Resonance Imaging and Spectroscopy in Living Systems**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* BCH 6740 or equivalent or consent of instructor.

MR imaging methods used to study the structure of cells, tissues, and whole animals. MR spectroscopy methods for monitoring biochemistry in living animals. Preparing samples, operating the instruments, and analyzing the data.

### **BCH 6744: Molecular Structure Determination by X-ray Crystallography**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* BCH 6740 or equivalent or consent of instructor.

Detailed theoretical and practical instruction on technique of x-ray crystallography used for three-dimensional structure determination of macromolecules in studies aimed at structure-function elucidation.

### **BCH 6744L: Molecular Structure Determination by X-Ray Crystallography Laboratory**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* or coreq: BCH 6744: Molecular Structure Determination by X-ray Crystallography .    *Corequisite:* BCH 6744: Molecular Structure Determination by X-ray Crystallography

Complement to BCH 744 lectures. Practical experience in sample preparation, operation of instrumentation, data

acquisition analysis, phasing and refinement. Hands-on approach reinforces applicability of this methodology in analysis of functional properties of biological macromolecule.

### **BCH 6745: Molecular Structure and Dynamics of NMR Spectroscopy**

**Credits: 1    Max: 2            Grading Scheme:** Letter

*Prerequisite:* BCH 6740 or equivalent or consent of instructor.

Theoretical and practical introduction to macromolecular NMR spectroscopy. Basics of multidimensional NMR for structure and dynamics measurements. Hands-on training in modern NMR.

### **BCH 6745L: Molecular Structure and Dynamics by NMR Spectroscopy Laboratory**

**Credits: 1                    Grading Scheme:** Letter

*Prerequisite:* or coreq: BCH 6745.

Complement to BCH 6745 lectures. Emphasizes practical applications of molecular structure and dynamics determination. Extensive use of computer software packages. Training in modern NMR instrumentation, data processing, and data analysis. Completed training sufficient for use of NMR instrumentation in Advanced Magnetic Resonance Imaging and Spectroscopy facility.

### **BCH 6746: Structural Biology: Macromolecular Structure Determination**

**Credits: 1    Max: 3            Grading Scheme:** Letter

*Prerequisite:* BCH 3025, 4024, CHM 3218, 4207, GMS 6001 or consent of instructor.

Experimental approaches to biological macromolecular structure determination. Emphasizes current understanding of protein-protein and protein-nucleic acid structure motifs.

### **BCH 6747: Structural Biology/Advanced Physical Biochemistry: Spectroscopy and Hydrodynamics**

**Credits: 1                    Grading Scheme:** Letter

*Prerequisite:* BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.

Applying spectroscopic techniques (circular dichroism, fluorescence, nuclear magnetic resonance) to determine the structure of biological macromolecules. Hydrodynamic approaches including light scattering, molecular diffusion, viscosity, and ultracentrifugation.

### **BCH 6749C: Numerical Methods in Structural Biology**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* BCH 6740 or equivalent or consent of instructor.

Introduction to mathematical and computational methods needed to understand current structural models, biophysical processes, data acquisition methods, and analysis of data acquired with current techniques.

### **BCH 6875: Crystallography and Cryo-Electron Microscopy**

**Credits: 1    Max: 4                      Grading Scheme: S/U**

*Prerequisite:* BCH 6740 or equivalent, or consent of instructor.

Journal club covering current literature on methodologies, applications, and discoveries in crystallography and cryo-electron microscopy.

### **BCH 6876: Recent Advances in Membrane Biology**

**Credits: 1                      Grading Scheme: S/U**

*Prerequisite:* general biochemistry or consent of instructor.

Literature presented by students and faculty, discussed in depth. Emphasizes current developments, data, interpretation, and critical analysis.

### **BCH 6877: Recent Advances in Structural Biology**

**Credits: 1    Max: 8                      Grading Scheme: S/U**

*Prerequisite:* general biochemistry or consent of instructor.

Literature on structural biology presented by students and faculty, discussed in depth. Current developments, data interpretation, and critical analysis.

### **BCH 6878: Recent Advances in Cytoskeletal Processes**

**Credits: 1    Max: 8            Grading Scheme: S/U**

*Prerequisite:* general biochemistry or consent of instructor.

Literature on cytoskeletal processes presented by students and faculty, discussed in depth. Current developments, data interpretation, and critical analysis.

### **BCH 6905: Independent Studies in Biochemistry and Molecular Biology**

**Credits: 1-5    Max: 12            Grading Scheme: Letter**

*Prerequisite:* permission of instructor.

Individual literature-based or experimental research problem.

### **BCH 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

### **BCH 6936: Biochemistry Seminar**

**Credits: 1    Max: 20            Grading Scheme: Letter**

*Prerequisite:* required of graduate students in biochemistry; open to others by special arrangement.

Research reports and discussions of current research literature given by graduate students, departmental faculty, and invited speakers.

### **BCH 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

### **BCH 7410: Advanced Gene Regulation**



**Credits: 1    Max: 3            Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Literature-based assessment of the most recent advances in factors governing eukaryotic gene regulation.

### **BCH 7412: Epigenetics of Human Disease and Development**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* GMS 6001.

*BCH 6415 recommended.* In-depth assessment of epigenetic mechanisms of mammalian gene regulation: DNA methylation, histone modifications, genomic imprinting, inherited genetic diseases, viral gene regulation, and epigenetic reprogramming in embryonic stem cells and cloning.

### **BCH 7414: Advanced Chromatin Structure**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* BCH 5413, GMS 6001, or consent of instructor.

Lecture and literature-based assessment of chromatin structure.

### **BCH 7515: Structural Biology/Advanced Physical Biochemistry: Kinetics and Thermodynamics**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* BCH 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.

Fundamentals of chemical kinetics and thermodynamic analysis of equilibria. Emphasizes applying this knowledge to understand basic enzyme kinetics, pulse-chase kinetics, protein polymerization, DNA dynamics, protein-nucleic acid interactions, and cooperative ligand binding.

### **BCH 7979: Advanced Research**

**Credits: 1-12                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**BCH 7980: BioChem Doctoral Research**

**Credits: 1-15**

**Grading Scheme: S/U**

**BCN 5470: Construction Methods Improvements**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Methods of analyzing and evaluating construction techniques to improve project time and cost control. Work sampling, productivity ratings, crew balance studies, time lapse photography, and time management.

**BCN 5618C: Comprehensive Estimating**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Classification of work and quantity survey techniques. Analysis and determination of costs of construction operations including direct and overhead costs, cost analysis, and preparation of bid proposals.

**BCN 5625: Construction Cost Analysis**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* BCN 4612C/BCN 5618C, 4720/BCN 5722 graduate standing.

Study of cost engineering and cost distribution and comparative analysis of actual and estimated cost as used for project control.

**BCN 5705C: Project Management for Construction**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCN 5618C, BCN 6748, non-BCN graduate.

Project organization, site planning, and implementation.

#### **BCN 5715: Advanced Construction Labor Problems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Labor problems in the construction industry and associated legislation. How to work effectively with unionized labor on construction projects.

#### **BCN 5722: Advanced Construction Planning and Control**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCN 4720, graduate standing.

Time-cost relationships for various construction operations.

#### **BCN 5729: Design-Build Delivery Methods**

**Credits: 3                      Grading Scheme: Letter**

This course will be focusing on an in depth examination of the advantages and disadvantages of design-build, the methodology of the design-build delivery process and implementation of this process. The class will be featuring inter-disciplinary instructors, industry speakers, and a design-build team competition with industry and faculty judges.

#### **BCN 5737: Advanced Issues in Construction Safety and Health**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCN 4735, graduate standing.

Current construction safety and health issues. Development of specific methodology to provide hazard reduction on job sites.

#### **BCN 5754C: Site Development**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices of land development including market analysis, site analysis, project programming, and financial feasibility.

#### **BCN 5776: International Construction Business Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCN 6748, graduate standing.

Construction contracting, emphasis on international economics, marketing, contracts, design, and specifications.

#### **BCN 5778: Facilities Operation and Maintenance**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Facilities management as a specialized professional career; study of how a facility, its people, equipment, and operations are served and maintained.

#### **BCN 5789C: Construction Project Delivery**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCN 5618C, 4720, BCN 6748, non-BCN graduate.

Designing, developing, estimating, scheduling, contracting, and administering small construction project, including extensive site and feasibility analysis.

#### **BCN 5874: Equipment and Methods for Heavy Construction**

**Credits: 3**

**Grading Scheme:** Letter

Teaching non-engineering students the theory and practice of heavy equipment utilization and construction methods through analysis of costs through production rates, optimizing crew, and equipment. Also including an introduction to planning and executing a construction project.

**BCN 5885: Methods and Management for Heavy Construction**

**Credits: 3**

**Grading Scheme:** Letter

Project control from conception through the construction phase: procurement of design professional, prime contractor, subcontractor construction manager, project/program manager, etc., and the definition of and delineation between each entity; construction contract types; delivery systems; heavy/highway plans reading; quality assurance / quality control; nuances of planning and bidding a unit price project.

**BCN 5905: Special Studies in Construction**

**Credits: 1-5    Max: 12**

**Grading Scheme:** Letter

*Prerequisite:* graduate standing.

For students requiring supplemental work in the building construction area.

**BCN 5949: Graduate Construction Management Internship**

**Credits: 1-3    Max: 6**

**Grading Scheme:** S/U

*Prerequisite:* approval of graduate coordinator.

Two-term employment in construction management position.

**BCN 5957: Advanced International Studies in Construction**

**Credits: 1-4    Max: 6**

**Grading Scheme:** S/U

*Prerequisite:* graduate standing or supervising instructor's approval; admission to approved study abroad program.

Issues of local construction techniques, construction marketing, international construction, sustainability, global economics, and influence on construction of local culture, traditions, architecture, history, and political climate.

### **BCN 6036: Research Methods in Construction**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Research proposal development process and statistical, computational, visualization, and presentation tools available to researcher.

### **BCN 6558C: Building Integrated Renewable Energy Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing in Construction Management, Engineering or Architecture

Addressing the emergence of economically and technically viable renewable energy systems and US and European Union policies calling for a net zero built environment. Provides the renewable energy piece for the Sustainable Construction (SCN) track in the BCN Masters program. It also provides additional capabilities and opportunities for students interested in employment in the renewable energy sector.

### **BCN 6580: High-Performance Green Building Delivery Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing, BCN 6585/ICM 6680, or consent of instructor.

High-performance green buildings; emerging delivery systems, evaluating their sustainability, and details on LEED criteria.

### **BCN 6585: Sustainable Construction**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Sustainability principles applied to planning, design, operation, renovation, and deconstruction of built environment. Emphasis on resource efficiency, environmental protection, and waste minimization.

### **BCN 6586: Construction Ecology and Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Sustainability principles and concepts related to reducing environmental impacts of creating, operating, and deconstruction built environment.

### **BCN 6621: Bidding Strategy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCN 3700/6748C, 4612C/BCN 5618C, graduate standing.

Strategy of contracting to maximize profit through overhead distribution, breakeven analysis, probability and statistical technique, a realistic risk and uncertainty objective, and bid analysis both in theory and in practice.

### **BCN 6641: Construction Value Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCN 4612C/BCN 5618C, graduate standing.

Principles and applications of value engineering in construction industry.

### **BCN 6748: Construction Law**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Formation of a company, licensing, bid process, contracts, plans and specifications, mechanics liens, insurance bonds, and remedies as they relate to the building constructor and construction manager. Case studies.

### **BCN 6755: Construction Financial Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ACG 2021C, graduate standing.

Financial management of construction company using and analyzing income statements and balance sheets, budgeting, cash flow, and cost reporting systems.

### **BCN 6756: Housing Economics and Policy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Concepts, terminology, and issues in affordable housing.

### **BCN 6777: Construction Management Processes**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Existing and emerging systems for designing, planning, and construction of projects. Changing roles, relationships, and responsibilities of the parties involved.

### **BCN 6785: Construction Information Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CGS 2531 or equivalent, graduate standing.

Potential applications of computer and information systems in construction industry.

### **BCN 6905: Directed Independent Study in Construction**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.



**BCN 6910: Supervised Research**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* graduate standing.

**BCN 6933: Advanced Construction Management**

**Credits: 1-5    Max: 12            Grading Scheme: Letter, H**

*Prerequisite:* graduate standing.

Financial and technological changes affecting construction and the management of construction projects.

**BCN 6934: Construction Research**

**Credits: 1-6    Max: 12            Grading Scheme: S/U**

*Prerequisite:* graduate standing.

Research for master's report option.

**BCN 6940: Supervised Teaching**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* graduate standing.

**BCN 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

*Prerequisite:* graduate standing.

**BME 5052L: Biomedical Engineering Laboratory**

**Credits: 3**

**Grading Scheme:** Letter

Integrates state-of-the-art technologies with a hands-on approach to education in a flexible system of academic topics tailored for specific disciplines within biomedical engineering, by teaching primary laboratory skills, experimental design, interpretation of data, and technical writing relevant to laboratory work.

### **BME 5085: Patents, Product Development, and Technology Transfer**

**Credits: 2**

**Grading Scheme:** Letter

For engineers and scientists. Product discovery and development; patents and trade secrets; copyright and trademark law; international intellectual property considerations; regulatory issues; business planning and market research; and licensing, marketing, negotiation, and technology transfer.

### **BME 5401: Biomedical Engineering and Physiology I**

**Credits: 3**

**Grading Scheme:** Letter

Physiology of cells, bones, and the circulatory system from a biomaterials, biomechanics, cellular, and tissue engineering perspective. Intellectual property and technology transfer included.

### **BME 5407: Molecular Biomedical Engineering**

**Credits: 3**

**Grading Scheme:** Letter

Fundamentals of molecular biology for biomedical engineers.

### **BME 5500: Biomedical Instrumentation**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* basic knowledge of physics and calculus, consent of instructor.

Engineering and medical aspects of measuring and processing signals from living systems. Discusses biomedical transducers for measuring movement, biopotentials, pressure, flow, concentrations, and temperature; and treatment devices like ventilators and infusion pumps. Whenever possible, devices actually used in clinical practice are used in class.

### **BME 5580: Introduction to Microfluidics and BioMEMS**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGN 3353C or consent of instructor.

Introduction to concepts of miniaturization, materials and methods for microfabrication, principles of microfluidics, and biological applications of microfluidic devices and biomedical microelectromechanical systems.

### **BME 5703: Statistical Methods for Biomedical Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Knowledge of calculus, linear algebra and basic statistics.

Computational methods needed for biomedical engineering research. Students will be acquainted with a variety of techniques for analyzing and modeling experimental data arising in molecular, cellular, physiological, and pathological systems encountered in typical laboratory and clinical settings.

### **BME 5704: Advanced Computational Methods for Biomedical Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* A basic knowledge of physics and calculus is required. This can be met by PHY2053 and MAC2311.

Covering advanced computational methods from a biomedical engineering perspective. Linear and nonlinear systems, partial differential equations, optimization and inverse problems will be discussed. This course is geared towards the applications of the advanced computational techniques to various biomedical engineering problems.

### **BME 5937: Special Topics**

**Credits: 1-4    Max: 6**                      **Grading Scheme:** Letter

### **BME 6010: Clinical Preceptorship**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Students observe clinical faculty and work with engineering faculty to examine current clinical practice and restraints with goal to propose jointly possible improvements.

### **BME 6164: Magnetic Biomaterials**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* Undergraduate physics and chemistry

Consists of classroom lectures on fundamental concepts in magnetism and magnetic micro- and nano-materials and their applications in biomedicine. As part of the course, students will present a critical review of recent literature in the field and lead a group discussion on a specific recent paper.

### **BME 6221: Biomolecular Cell Mechanics**

**Credits: 3                    Grading Scheme:** Letter

Biomolecular basis of cell mechanics and cell motility, emphasizing quantitative models and systems-biology approaches.

### **BME 6322: Dynamics of Cellular Processes**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* a course on kinetics and/or transport, or consent of instructor.

Develops research skills, including generation of questions, hypotheses testing, reporting, interpretation, and discussion of findings.

### **BME 6324: Stem Cell Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Corequisite:* Undergraduate cell biology and molecular biology and physiology, or enrollment in the Biomedical Engineering graduate program, or consent from instructor.

Including an historical review of stem cell research and policies surrounding stem cell research, current stem cell sources, strategies and reviews of current stem cell research. This information is essential for Biomedical Engineers to understand in repairing/rebuilding the human body after injury or disease using stem/progenitor cell strategies.

### **BME 6330: Cell and Tissue Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6421, BME 5001, or consent of instructor.

Applying engineering principles, combined with molecular cell biology, to developing a fundamental understanding of property-function relationships in cells and tissues. Exploiting this understanding to manipulate cell and tissue properties rationally to alter, restore, maintain, or improve cell and tissue functions; and to design bioartificial tissue substitutes.

### **BME 6360: Neural Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Applying engineering to neuroscience including such diverse areas as neural tissue engineering, models of neural function, and neural interface technology. Focuses mainly in the context of neural interfaces and prosthetics, from basic neural physiology and models of neural mechanisms to advanced neural interfaces currently in development or produced commercially.

### **BME 6502: Introduction to Medical Imaging**

**Credits: 3                      Grading Scheme: Letter**

Modern medical imaging technologies from a biomedical engineering perspective. The physics, mathematics, instrumentation and clinical applications of all common medical imaging modalities including x-ray radiography, computed tomography (CT), ultrasound imaging, positron emission tomography (PET), and magnetic resonance imaging (MRI) with a focus on non-ionizing radiation will be discussed. Emerging imaging modalities including diffuse optical tomography (DOT), Fluorescence Molecular Tomography (FMT), and photoacoustic tomography (PAT) will also be introduced.

### **BME 6505: Advanced Diagnostic Radiological Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 6657

Physics of diagnostic methodologies like ultrasound, NMR, MRI, CT, Electronic imaging systems.

### **BME 6522: Biomedical Multivariate Signal Processing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* multivariate calculus and a basic knowledge of probability and statistics.

Statistical analysis of biomedical signals, emphasizing multivariate time series. Introduces analysis concepts and methods in the time domain and the spectral domain. Uses actual recordings from biomedical applications to demonstrate the methods.

### **BME 6533: Radiologic Anatomy**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* BME 6590 Medical Physics

Imaging techniques as they relate to human anatomy and physiology.

### **BME 6534: Advanced Therapeutic Radiological Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 6627: Therapeutic Radiological Physics

Advanced course in therapeutic radiation therapy physics covering special topics targeted to those pursuing careers in radiation therapy physics.

### **BME 6535: Radiological Physics, Measurements and Dosimetry**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Upper level college physics

Interacting and measuring techniques for x-rays, gamma rays, neutrons and charged particles with matter; radioactive decay processes ion chamber measurements, scintillation detectors, and dosimetry techniques. Applications of cavity theory and dosimetry measurement in medical physics.

### **BME 6590: Medical Physics**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* BME 6534  
(Radiological Physics) or permission of instructor.

Introducing students to the physical basis and clinical practice of medical physics. Fundamentals of imaging physics and techniques including radiographic, CT, ultrasound, MRI and nuclear medicine procedures. Image quality metrics are introduced and the fundamental strategies of radiation therapy, treatment planning and components of professional development are studied.

### **BME 6591: Therapeutic Radiological Physics I**

**Credits: 3**                      **Grading Scheme: letter**

*Prerequisite:* BME 6534 (Radiological Physics) or permission of instructor.

Introducing students to the principles of therapeutic radiological physics including the measurement and calculation of absorbed dose and dosimetric calculations. Studying external beam radiation therapy including dose distributions within patients and the treatment planning techniques used to produce desired isodose distributions.

### **BME 6592: Therapeutic Radiological Physics II**

**Credits: 3**                      **Grading Scheme: letter**

*Prerequisite:* BME 6591 (Therapeutic Radiological Physics I) or permission of instructor.

Building upon the basic principles of radiation therapy studying more advanced radiation treatment planning, electron beam and brachytherapy techniques. Topics of clinical and regulatory significance including radiation shielding and quality assurance.

### **BME 6593: Therapeutic Radiological Physics III**

**Credits: 3                      Grading Scheme: letter**

*Prerequisite:* BME 6592 (Therapeutic Radiological Physics II) or permission of instructor.

Exploring state-of-the-art radiation therapy techniques in clinical practice. Examining the physical principles and clinical implementation of three-dimensional conformal therapy, Intensity modulated radiation therapy, stereotactic radiosurgery, high dose rate brachytherapy, image guided radiation therapy, proton beam therapy, and other techniques as they become integrated into clinical practice.

### **BME 6644: Pharmacokinetics**

**Credits: 3                      Grading Scheme: Letter**

Basic pharmacokinetic and pharmacodynamic concepts and models. Use of these concepts in the drug discovery process.

### **BME 6705: Mathematical Modeling of Biological and Physiological Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* calculus, linear algebra, and passing knowledge of differential equations.

Mathematical modeling of biological and physiological phenomena. Starting from basic theory of linear systems, introduces qualitative analysis of nonlinear ordinary differential equations and maps. Examples from biomedical applications show concepts and methods.

### **BME 6905: Individual Work in Biomedical Engineering**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

### **BME 6907: BME Project**

**Credits: 1-9    Max: 12                      Grading Scheme: Letter**



*Prerequisite:* BME MS non-thesis status.

**BME 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**BME 6936: Biomedical Engineering Seminar**

**Credits: 1    Max: 4            Grading Scheme: S/U**

**BME 6938: Special Topics in Biomedical Engineering**

**Credits: 1-4    Max: 6            Grading Scheme: Letter**

**BME 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**BME 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**BME 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**BME 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**BOT 5225C: Plant Anatomy**

**Credits: 4**

**Grading Scheme: Letter**

*Prerequisite:* BOT 2011C or 3303C; or consent of instructor.

Origin, structure, and function of principal cells, tissues, and vegetative and reproductive organs of seed plants. Offered fall term.

**BOT 5305: Paleobotany**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* upper-level course in botany or geology; or consent of instructor.

Comparative study of plants through geologic time with attention to morphology and evolution of major groups of land plants, based on the fossil record. Offered spring term in odd-numbered years.

**BOT 5505C: Intermediate Plant Physiology**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* BOT 3503/3503L and CHM 2200/2200L or equivalent.

Fundamental processes underlying water relations, metabolism, growth, and reproduction of plants. Overview of plant

physiological and biochemical processes for plant science students. Basic information about plant processes integrated with agronomical and environmental considerations.

### **BOT 5625: Plant Geography**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 3151C or BOT 5725C.

Geography of the floras and types of vegetation throughout the world, with emphasis on problems in the distribution of taxa, and the main factors influencing types of vegetation. Offered fall term in even-numbered years.

### **BOT 5655C: Physiological Plant Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* basic plant physiology or consent of instructor.

Traits affecting success in different environments (emphasizing energy balance, carbon balance, water relations, and nutrient relations). Introduction to ecophysiological methods and instrumentation. Offered fall term in even-numbered years.

### **BOT 5685C: Tropical Botany**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* elementary biology/botany; consent of instructor.

Study of tropical plants using the diverse habitats of South Florida (emphasizing uses, anatomy and morphology, physiology and ecology, and systematics of these plants). Field trips and the Fairchild Tropical Garden supplement laboratory experiences. Offered summer term.

### **BOT 5695C: Ecosystems of Florida**

**Credits: 3-4**                      **Grading Scheme:** Letter

*Prerequisite:* basic ecology; and consent of instructor.

Major ecosystems of Florida in relation to environmental factors and human effects. Emphasis on field trips (Saturdays and some overnights). Offered spring term in odd-numbered years.

### **BOT 5725C: Taxonomy of Vascular Plants**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 2011C and 3303C or equivalent.

Introduction to systematic principles and techniques used in classification; field and herbarium methods. Survey of vascular plants, their classification, morphology, and evolutionary relationships. Offered spring term in odd-numbered years.

### **BOT 6508C: Proteomics Theory and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamentals and new developments in plant proteomics and mass spectrometry. Practice through scientific reasoning and hands-on laboratory sessions.

### **BOT 6516: Plant Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 5505C, BCH 4024.

Metabolism of carbohydrates, fats, and nitrogen compounds in higher plants; cell structures as related to metabolism; metabolic control mechanisms. Offered fall term.

### **BOT 6566: Plant Growth and Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 5505C.

Fundamental concepts of plant growth and development with emphasis on the molecular biological approach. Offered fall term in even-numbered years.

### **BOT 6716C: Advanced Taxonomy**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* BOT 5725C or equivalent.

Survey of vascular plant families of limited distribution and/or of phylogenetic significance not covered in BOT 5725C. Discuss their classification, morphology, and evolutionary relationships. Review published studies to demonstrate principles and methods involved in classification. Offered on demand.

### **BOT 6726C: Principles of Systematic Biology**

**Credits: 4                      Grading Scheme: Letter**

Theory of biological classification and taxonomic practice. Laboratory experience in taxonomic procedures and techniques, including computer methods. Offered spring term in even-numbered years.

### **BOT 6905: Individual Studies in Botany**

**Credits: 1-9    Max: 9                      Grading Scheme: Letter**

*All credits in excess of 3 must be approved by department chair or graduate coordinator.* Individual nonthesis, research problem in one of the following areas of botany: ecology, physiology and biochemistry, cryptogamic botany, morphology and anatomy of vascular plants, systematics, cytology, genetics, and ultrastructure. Topics selected to meet the interests and needs of students.

### **BOT 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **BOT 6927: Advances in Botany**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

Supervised study in specific areas.

**BOT 6935: Special Topics**

**Credits: 1-4    Max: 9            Grading Scheme: Letter**

**BOT 6936: Graduate Student Seminar**

**Credits: 1-2    Max: 9            Grading Scheme: S/U**

Readings and oral presentation on general topics in botany.

**BOT 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**BOT 6943: Internship in College Teaching**

**Credits: 1-6    Max: 6            Grading Scheme: Letter**

Required for Master of Science in Teaching candidates but available for students needing additional practice and direction in college-level teaching.

**BOT 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**BOT 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**BOT 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****BUL 5445: Ethical Role of the Manager****Credits: 1****Grading Scheme: Letter**

Meeting the responsibilities of being entrusted with resources to manage.

**BUL 5810: Legal Environment of Business****Credits: 3****Grading Scheme: Letter**

American legal system, sources of law, adjudication, legal nature of corporation, major areas of state and federal corporate law, state and federal regulation of business, legal aspects of ethical and social responsibility of business; intellectual property, employment law, torts and contracts.

**BUL 5811: Managers and Legal Environment of Business****Credits: 2****Grading Scheme: Letter**

*Designed for M.B.A. students.* Law governing relationships with corporation and between corporation and social, political, and ethical environment. Business and the Constitution, litigation and dispute resolution, agency and forms of business organization, state and federal regulation of corporations and securities.

**BUL 5831: Commercial Law**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BUL 4310. Primarily for students in M.Acc. program.

Contracts for sale of goods and services, documents of title, secured transactions, negotiable instruments, commercial paper, payment systems, bankruptcy, and related subjects. Emphasis on Uniform Commercial Code, federal bankruptcy act, and other federal and uniform state laws.

**BUL 5832: Commercial Law for Accountants**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* level 5—M.Acc.

Legal ramifications of business transactions. Basic transactional areas to be studied include contracts, sales, and secured transactions. Brief review of accountants' legal liability.

**BUL 6440: Business Ethics and Corporation Social Responsibility**

**Credits: 3**                      **Grading Scheme:** Letter

Practical issues of managers in addressing ethical and moral problems; emphasis on critical thinking skills and developing an analytical framework for thinking about business ethical problems.

**BUL 6441: Business Ethics and Corporate Social Responsibility**

**Credits: 2**                      **Grading Scheme:** Letter



*Designed for advanced master's students in business administration. Ethical issues managers face in business organizations.*

**BUL 6516: Law of Real Estate Transactions**

**Credits: 2**                      **Grading Scheme:** Letter

Introduction to legal aspects, including basic concepts of real estate law, landlord-tenant relations, commercial leasing, multi-unit real estate interests, real estate finance, and sale of real estate. Analysis of legal aspects of real estate development, including impact of zoning and environmental laws, land improvement, and real estate syndication.

**BUL 6652: Law and Ethics of Corporate Governance**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BUL 5810 or BUL 5811.

Law and ethics underlying and governing the structure and operation of business corporations in the U.S. and other industrial countries.

**BUL 6656: Law for Entrepreneurs**

**Credits: 2**                      **Grading Scheme:** Letter

Examining the legal aspects in starting and growing a company (small or medium-sized business or SMEs); strategies for ensuring compliance with law; use of law and the legal system to increase predictability, maximize value, marshal resources, and manage risk in an entrepreneurial enterprise. Since law permeates every act of an entrepreneurship enterprise, the course will consist of a broad survey of legal issues confront a new—small or medium-sized business.

**BUL 6821: Cyberlaw and Ethics**

**Credits: 2**                      **Grading Scheme:** Letter

Critical legal and ethical underpinnings of electronic commerce and electronic business on the internet. Governmental approach to content control; commercial and personal information rights; access; jurisdiction; digital property; national and international issues in securities law, antitrust, fraud, financial crime, negligence, and encryption areas.

**BUL 6841: Employment Law**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for master's students in business.* Law related to employment and employees in business organizations.

**BUL 6851: International Business Law**

**Credits: 3**                      **Grading Scheme:** Letter

*Designed for M.B.A. students.* Legal aspects of managing the international business environment.

**BUL 6852: International Business Law**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for M.B.A. students.* Legal aspects of managing the international business environment.

**BUL 6891: Legal Aspects of Technology Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed primarily for advanced master's students in business administration.* Legal aspects of managing and trading technology, especially law that governs development, protection, and transfer of firm's intellectual assets. Topics include patents, copyrights, trademarks, trade secrets, and other forms of intellectual property with applications to high technology and internet.

**BUL 6905: Individual Work**

**Credits: 1-5    Max: 10            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Reading and/or research in business law.

**BUL 6930: Special Topics**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Topics not offered in other courses and of special current significance.

**CAP 5100: Human-Computer Interaction**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* COP 3530, and any one programming course (CGS 2414, CGS 3460, or CGS 3464).

Topics related to interaction with technology, including interface design, software tools, 3-D interaction, virtual environments, interaction devices, collaboration, and visualization.

**CAP 5416: Computer Vision**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MAC 2312, CGN 3421 or C-language.

Introduction to image formation and analysis. Monocular imaging system projections, camera model calibration, and binocular imaging. Low-level vision techniques, segmentation and representation techniques, and high-level vision.

**CAP 5510: Bioinformatics**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* CIS 3020 or equivalent.

Basic concepts of molecular biology and computer science. Sequence comparison and assembly, physical mapping of DNA, phylogenetic trees, genome rearrangements, gene identification, biomolecular cryptology, and molecular structure prediction.

### **CAP 5515: Computational Molecular Biology**

**Credits: 3**                      **Grading Scheme:** Letter

Algorithms related to molecular biology. Sequence comparisons, pattern matching, pattern extraction, graph techniques in phylogeny construction, secondary structure prediction, multiple sequence alignment, contig search, DNA computing, computational learning theory, and genetic algorithms.

### **CAP 5635: Artificial Intelligence Concepts**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

Heuristic search, game theory, knowledge representation, logic, machine learning, AI languages and tools. Applications such as planning, natural language understanding, expert systems, and computer vision.

### **CAP 5705: Computer Graphics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

Display device characteristics; system considerations, display algorithms. Curve and surface generation. Lighting models and image rendering.

### **CAP 5771: Introduction to Data Science**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate standing, Data Structures and Algorithms (COP 3530)

Introducing the basics of data science including programming for data analytics, file management,

relational databases, classification, clustering and regression. The foundation is laid for big data applications ranging from social networks to medical and business informatics.

### **CAP 5805: Computer Simulation Concepts**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

Introduction to concepts in continuous and discrete simulation. Emphasizes fundamental concepts and methodology, using practical examples from a wide variety of disciplines.

### **CAP 6137: Malware Reverse Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CDA 3101      *Corequisite:* COP 5615 or consent of instructor.

Introducing the theory and practice of software reverse engineering applied to analysis of malicious software (malware). Students learn techniques of static and dynamic analysis to help identify the behavior of programs presented without documentation or source code and to identify possible remediation and avoidance techniques.

### **CAP 6402: Aesthetic Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CAP 5705, CAP 5805

Principles of artistically motivated, personalized representations of formal model structures in computing and mathematics.

### **CAP 6516: Medical Image Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* expertise in image proc./comp. vision, proficiency in C language or MATLAB.

Image formation, reconstruction mathematics (Fourier slice theorem, Abel, Hankel and Radon transforms), PDE-based denoising and segmentation, multidimensional clustering algorithms, iso-surface extraction, basic differential geometry of curves and surfaces, multidimensional splines, active 2D/3D models, image matching/registration with application to multimodal co-registration.

### **CAP 6610: Machine Learning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Mathematics for Intelligent Systems.

Concepts in developing computer programs that learn and improve with experience. Emphasis on methods based on probability, statistics, and optimization.

### **CAP 6615: Neural Networks for Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CAP 5635.

Neural network models and algorithms. Adaptive behavior, associative learning, competitive dynamics and biological mechanisms. Applications include computer vision, cognitive information processing, control, and signal analysis.

### **CAP 6617: Advanced Machine Learning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CAP 6610.

Advanced concepts in developing computer programs that learn and improve with experience. Emphasis on methods based on probability, statistics, and optimization.

### **CAP 6685: Expert Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CAP 5635.

Production systems, meta-knowledge, heuristic discovery, indepth examination of several expert systems including TEIRESIAS, AM, DENDRAL, MYCIN, IRIS, CASNET, INTERNIST, BACON, PROSPECTOR.

### **CAP 6701: Advanced Computer Graphics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CAP 4730 or CAP 5705 or consent of instructor.

Curved surface representations, representation and visualization of higher-dimensional fields, advanced rendering, collision detection and collision response, and scene navigation in context of high-level graphics environments.

### **CAP 6769: Advanced Topics in Data Science**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing, CAP 5771

Advanced topics in data science such as relational databases and parallel and distributed processing in the cloud, tree-based classifiers and support vector machines, dimensionality reduction and theories of visualization.

### **CAP 6779: Projects in Data Science**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing, CAP 5XXX: Introduction to Data Science

Advanced topics in data science, individual projects in application areas such as vision, natural language processing, computational fluid dynamics, social networks, bioinformatics, etc.

### **CBH 6056: Comparative Psychology**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of literature.

### **CCE 5035: Construction Planning and Scheduling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CCE 4204.

Planning, scheduling, organizing, and control of civil engineering projects with CPM and PERT. Application of optimization techniques.

#### **CCE 5405: Construction Equipment and Procedures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CCE 4204 or consent of instructor.

Design and optimization of equipment systems for heavy construction.

#### **CCE 6037: Civil Engineering Operations I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status.

Advanced construction engineering and management procedures at the project level to support quantitative decision making.

#### **CCE 6038: Innovative Construction Techniques**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* CCE 4204 or consent of instructor.

Advanced construction engineering techniques and management coordination procedures for civil engineering projects.

#### **CCE 6505: Computer Applications in Construction Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CGS 2425, CCE 5035, or consent of instructor.

Application of computer solutions to construction engineering/civil engineering management problems; microcomputer use.

#### **CCE 6507: Computer Applications in Construction Engineering II**



**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CGS 4161, CCE 6505 or consent of instructor.

Applications of advanced computer solutions to construction engineering/civil engineering management problems.

### **CCE 6516: Topics in Airborne Laser Mapping Technology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SUR 6381.

Laser mapping technology, current status of technology, data collection methodologies and requirements, data processing, calibration, errors, conversion to local datums, data base management, filtering techniques and bare earth DTM, product generation and application.

### **CCJ 5934: Contemporary Issues in Criminology and Law**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

Policy, theory, and research issues in crime, criminal justice, and law.

### **CCJ 6063: Communities and Crime**

**Credits: 3                      Grading Scheme: Letter**

Overview of issues in the study of communities and crime. Theories used to study neighborhood crime levels. Critical analysis of existing empirical research. Factors that influence neighborhood-level crime rates. Effects of neighborhood characteristics on behavior and outcomes of individuals.

### **CCJ 6285: Criminal Justice Process**

**Credits: 3                      Grading Scheme: Letter**

Police, courts, and the correction system.

**CCJ 6619: Crime and the Life Course**

**Credits: 3**                      **Grading Scheme:** Letter

Intensive examination of crime and the life course. How criminal activity is patterned over time.

**CCJ 6643: White Collar Crime**

**Credits: 3**                      **Grading Scheme:** Letter

White collar and corporate crime.

**CCJ 6658: Drugs, Crime, and Policy**

**Credits: 3**                      **Grading Scheme:** Letter

Interdisciplinary introduction to the study of drugs, drug use, and drug control.

**CCJ 6705: Research Methods in Crime, Law, and Justice**

**Credits: 3**                      **Grading Scheme:** Letter

Research issues (qualitative, quantitative, and historical) associated with crime, law, and justice, including skills to become consumers and producers of research.

**CCJ 6708: Research Issues in Crime and Deviance**

**Credits: 3                      Grading Scheme: Letter**

Overview of data sources and research methods used to study delinquency, crime, and deviance.

**CCJ 6712: Evaluation Research**

**Credits: 3                      Grading Scheme: Letter**

Provides skills for evaluating criminology and criminal justice programs.

**CCJ 6905: Independent Study**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

Reading or research areas in criminology, law, and society. Topics not available in current courses.

**CCJ 6910: Supervised Research**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

**CCJ 6920: Seminar in Criminological Theory**

**Credits: 3                      Grading Scheme: Letter**

Classic and contemporary explanations of criminal activity.

**CCJ 6936: Proseminar in Crime, Law, and Justice**

**Credits: 3**                      **Grading Scheme: Letter**

Interdisciplinary examination of the relationship between legal and social orders. Focuses on various functions of law, different forms of legal thought, development of law, and the impact of law/sanctions on society.

**CCJ 6971: Research for Master's Thesis**

**Credits: 1-9**                      **Grading Scheme: S/U**

**CCJ 7742: Research Methods in Crime, Law, and Justice II**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CCJ 6705.

Quantitative and qualitative methods.

**CCJ 7921: Professional Development in Criminology, Law, and Society**

**Credits: 3**                      **Grading Scheme: S/U**

Professional aspects of research, teaching, and service activities in the areas of crime, justice, law, and society.

**CCJ 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**CCJ 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**CDA 5155: Computer Architecture Principles**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* CDA 3101, COP 3530, and COP 4600.

Fundamental design issues of processor and computer architecture, a variety of design approaches for CPU, memory, and system structure.

**CDA 5636: Embedded Systems**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* CDA 3101, COP 3530, and any one programming course (CGS 2414, CGS 3460, or CGS 3464).

Design and verification of embedded systems including system level modeling/specification, design space exploration, hardware-software partitioning, architecture synthesis, compilation for area/power/performance code compression, real-time operating systems/databases, and functional validation of embedded systems.

**CDA 6156: High Performance Computer Architecture**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* CDA 5155, COP 5615.

Design and evaluation of instruction-level (superscalar, superpipeline) and task-level (fine and coarse-grained) parallel architecture. Language and operating system support for instruction and task scheduling and task synchronization.

**CEG 5105: Geotechnical Engineering**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Shallow foundations, bearing capacity, settlements, deep foundations, pile testing, earth pressures, excavations, retaining structures, dewatering.

#### **CEG 5114: Advanced Geotechnical Aspects of Landfill Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CEG 4012 or consent of instructor.

Settlement analysis, slope stability, liner design, and LCRS design.

#### **CEG 5115: Foundation Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CEG 4012, CES 4702, or consent of instructor.

Investigations, bearing capacity, and the analysis and design of shallow footings, walls, and deep pile foundations.

#### **CEG 5205C: Insitu Measurement of Soil Properties**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CEG 4012.

Methods of soil exploration; techniques of soil sampling and insitu testing; field performance of insitu testing.

#### **CEG 5206: Geosensing I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

History of geodetic science as applied to earth's shape, local and world reference frames, gravity and anomalies, geoid, satellite geodesy and GPS, geodetic positioning, and navigation by satellite technology.

#### **CEG 5805: Ground Modification Design**

**Credits: 2**                    **Grading Scheme:** Letter

*Prerequisite:* CEG 4012, CGS 2425.

Introduction to design of ground modification techniques for improvement of marginal construction sites.

### **CEG 6015: Advanced Soil Mechanics**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* CEG 4011, 4012, or consent of instructor.

Nature and origin of soil. Stresses within a soil body. Stress-strain behavior and shear strength of dry, saturated no flow, saturated transient flow soils.

### **CEG 6116: Advanced Shallow Foundation Design**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* CEG 6015, CES 4702.

Application of soil mechanics to design and analysis of shallow foundations.

### **CEG 6117: Advanced Deep Foundation Design**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* CEG 6015.

Application of soil mechanics to design and analysis of deep foundations.

### **CEG 6201: Experimental Determination of Soil Properties**

**Credits: 3**                    **Grading Scheme:** Letter, H

*Prerequisite:* CEG 4012 or consent of instructor.

Advanced laboratory tests, constant rate of strain consolidation, factors influencing stress-deformation response, elastic-plastic constitutive relationships, failure criteria.

**CEG 6207: Geosensing II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CCE 5206.

Introduction to satellite positioning technologies; advancement in global positioning system, reference frames, orbits, and GPS observables; errors and positioning with GPS; static and phase-differenced kinematic GPS for precise aircraft trajectory.

**CEG 6405: Seepage in Soils**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CEG 4011, 4012, or consent of instructor.

Focusing on Darcy's law, coefficient of permeability, flownets, seepage forces; engineering applications: use of computer software for seepage and slope stability analyses in dewatering systems, embankment design, filter design, earth dams, and drainage problems.

**CEG 6505: Numerical Methods of Geomechanics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CGN 3421, CEG 6015 or consent of instructor.

Application of computer solutions to geotechnical engineering problems.

**CEG 6515: Earth Retaining Systems and Slope Stability**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CEG 6015

Applications of soil mechanics to design and analysis of earth retaining systems and slope stability.

**CEN 5035: Software Engineering**



**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CIS 3020 and COT 3100.

Topics in projects organization, specification techniques, reliability measurement, documentation.

### **CEN 5726: Natural User Interaction**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* COP 3530(C)

Introducing design, development, and evaluation of Natural User Interaction (NUI) technologies (e.g., non-keyboard and mouse technologies, such as touchscreen interaction, gesture interaction, speech interaction, etc.). Key concepts include hardware-to-software NUI pipeline and considerations in NUI software development (including existing platforms, toolkits, and APIs used to create NUI software).

### **CEN 6070: Software Testing and Verification**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CEN 5035.

Concepts, principles, and methods for software testing and verification. Topics include human and machine-based testing strategies, formal proofs of correctness, and software reliability.

### **CEN 6075: Software Specification**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CEN 5035.

Concepts, principles, and methods for practical specification. System modeling, requirements exploration, validation and prototyping, and documentation techniques.

### **CES 5010: Probabilistic and Stochastic Methods in Civil Engineering**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CES 3102 or equivalent.

Fundamental aspects of uncertainty and their roles in determining system reliability. Probability and statistics, stochastic processes, random data analysis, and reliability methods.

### **CES 5116: Finite Elements in Civil Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CES 4141.

Introduction to finite elements, use of finite element concepts for structural analysis. Application of 1-, 2-, and 3-D elements of structural problems.

### **CES 5325: Design of Highway Bridges**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CES 4605, 4702.

Analysis by influence lines, slab and girder bridges, composite design, prestressed concrete, continuity, arch bridges, design details, highway specifications.

### **CES 5606: Topics in Steel Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CES 4605.

Plate girders, torsion, biaxial bending, frame design, composite beams and columns, fatigue, monosymmetric members, and moment connections.

### **CES 5607: Behavior of Steel Structures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CES 4605.

Plastic analysis and designs of beams and frames. Buckling and stability problems. Shear and torsion.

### **CES 5715: Prestressed Concrete**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CES 4702.

Analysis and design of prestressed concrete flexural members; pre- and post-tensioned construction, allowable stress, strength evaluation; design for bending moments and shear; evaluation of serviceability requirements; design of simple bridges.

### **CES 5726: Design of Concrete Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CES 4141 and 4702.

Strength design of building systems (frames and shear walls), torsion floor systems, biaxial moment in columns, load systems.

### **CES 5801: Design and Construction in Timber**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Analysis and design of beams, columns, connections, and diaphragm/shearwall structures using sawn timber, laminated timber, and plywood and including a comprehensive design project.

### **CES 5835: Design of Reinforced Masonry Structures**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CES 4702.

Properties, specifications, and construction requirements for structures incorporating clay brick, concrete block, and mortar; analysis and design of masonry structures including a comprehensive diaphragm/shearwall masonry structure design project.

### **CES 6106: Advanced Structural Analysis**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CES 4605, 4702.

Traditional methods of analyses for forces and deformations; modern matrix methods including the direct stiffness method.

### **CES 6108: Structural Dynamics**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* EGM 3400, CES 6106.

Evaluating structural response to the effect of dynamic loads for single-degree and multidegree of freedom systems. Considers seismic and wind effects, modal analysis, numerical methods, structural idealization, response spectra, and design codes.

### **CES 6165: Computer Methods in Structural Engineering**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CGS 2425, 6106.

Modern program development techniques for structural analysis. Efficiency, databases, modularity, equation solving, and substructure programming concepts.

### **CES 6551: Design of Folded Plates and Shells**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CES 4605, 4702.

Bending of systems of plates. Analysis for membrane stresses; pressure vessels, secondary bending stresses. Design of shell systems and folded plates. Design details.

### **CES 6571: Design of Temporary Structures**

**Credits: 3**                      **Grading Scheme: Letter**

Introduction to structural engineering principles in the design of temporary structures and operations used in the construction of permanent structures.

### **CES 6585: Wind Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CES 3102 and CWR 3201 or equivalent.

The nature of wind related to wind-structure interaction and design loads for extreme winds, tornadoes and hurricanes.

### **CES 6588: Protective Structures**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BS in Civil Eng; CES 6108

Addressing a range of tissues to mitigate blast, shock, and impact effects. It will include extensive course notes, references, manuals, handouts, and special computer codes. Also, it is expected that guest lectures on several topics will be given by invited experts.

### **CES 6590: Impact Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* B.S. in Civil Engineering; CES 6108

Addressing a broad range of technical issues on mitigating the severe loading effects associated with impact loading incidents. The course will address static and dynamic structural behavior of elastic and elastic-perfectly-plastic systems that include: contact between bodies, classical impact problems for ideal systems, beams under concentrated or distributed loads, transverse shear and rotary inertia, strain rate effects, and instability.

### **CES 6591: Applied Protective Structures**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* B.S. in Civil Engineering; CES 6588

Expanding knowledge gained from the course on protective structures for expedient applications that can be deployed under emergency situations associated with abnormal loading incidents (e.g., blast, shock, impact, etc.).

### **CES 6592: Retrofit Protective Structures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* B.S. in Civil Engineering; CES 6588: Protective Structures

Focusing on engineering approaches, innovative materials, and structural systems for enhancing the performance of protective structures against blast, shock, impact.

### **CES 6593: Advanced Protective Structures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* B.S. in Civil Engineering; CES 6588

Expanding the basic knowledge gained by the students in the previous course on Protective Structures by deeper treatments of the various key topics handled there.

### **CES 6706: Advanced Reinforced Concrete**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CES 4704, 5726C.

Torsion in structural members. Ultimate load theories and application to design. Columns and beam columns. Shear walls, combined shear walls and frames. Research topics.

### **CES 6855: Condition Assessment of Structures**

**Credits: 3**                      **Grading Scheme:** Letter

Testing techniques for assessing the condition of existing structures. Focuses on material damage and durability.

### **CGN 5125: Legal Aspects of Civil Engineering**

**Credits: 3                      Grading Scheme: Letter**

Engineer's view of contracts for design and construction. Legislation and policy affecting labor-management relationships in construction.

**CGN 5315: Civil Engineering Systems**

**Credits: 3                      Grading Scheme: Letter**

Civil engineering applications of operations research techniques, models of scheduling, linear programming, queuing theory, and simulation.

**CGN 5605: Public Works Planning**

**Credits: 3                      Grading Scheme: Letter**

Functional approach to planning and implementing public works needs with emphasis on role of engineer.

**CGN 5606: Public Works Management**

**Credits: 3                      Grading Scheme: Letter**

Nature of profession, duties, and administrative responsibilities. Organization and management of operating divisions with emphasis on role of engineer.

**CGN 5715: Experimentation and Instrumentation in Civil Engineering Materials Research**

**Credits: 3                      Grading Scheme: Letter**

Fundamentals and applications of testing and measuring systems commonly used; constitutive models, testing methods, instrumentation, and error analysis.

### **CGN 6150: Engineering Project Management**

**Credits: 3**                      **Grading Scheme:** Letter

Engineering project management skills and procedures in support of engineering project development and management.

### **CGN 6155: Civil Engineering Practice I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status.

Advanced construction engineering management skills and procedures in support of design and construction practice at the project level.

### **CGN 6156: Construction Engineering II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CCE 4204 or consent of instructor.

Advanced construction engineering management skills and procedures in support of design and construction practice above the project level.

### **CGN 6505: Properties, Design and Control of Concrete**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CGN 3501.

Portland cement and aggregate properties relating to design, control, and performance of concrete. Concrete forming and construction methods. Laboratory testing and analysis.



### **CGN 6506: Bituminous Materials**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* TTE 4811.

Analysis of strength and deformation mechanism for asphalt concrete, properties, and their effect on flexible pavement performance. Pavement construction and quality assurance methods, testing and evaluation of asphalts and mixture.

### **CGN 6525: Sustainable Materials**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing or permission of instructor.

Providing a contemporary perspective to the sustainability problems associated with our dependence on materials and the consequences of their use. It introduces a method of decision making regarding materials selection, and design with materials, that considers the environmental and social impacts, in addition to the traditional assessment of the economic impact.

### **CGN 6905: Special Problems in Civil Engineering**

**Credits: 1-6    Max: 10                      Grading Scheme: Letter**

Studies in areas not covered by other graduate courses.

### **CGN 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

Credits do not apply to any graduate degree.

### **CGN 6936: Civil Engineering Graduate Seminar**

**Credits: 1    Max: 6                      Grading Scheme: S/U**

Lectures by graduate students, faculty members, and invited speakers.

**CGN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**CGN 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**CGN 6972: Research for Engineer's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**CGN 6974: Master of Engineering or Engineer Degree Report**

**Credits: 1-6    Max: 6            Grading Scheme: S/U**

Individual work culminating in a professional practice-oriented report suitable for the requirements of the Master of Engineering or Engineer degree. Three credits only are applicable toward the requirements of each degree.

**CGN 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**CGN 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**CHM 5224: Basic Principles for Organic Chemistry**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* one year of undergraduate organic chemistry.

A review for those students intending to enroll in the Advanced Organic Sequence CHM 6225, CHM 6226.

**CHM 5235: Organic Spectroscopy**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CHM 2211.

Advanced study of characterization and structure proof of organic compounds by special methods, including IR, UV, NMR, and mass spectrometry.

**CHM 5275: The Organic Chemistry of Polymers**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* CHM 2200, 2210, or equivalent.

Classification of polymerization types and mechanisms from a mechanistic organic point of view. The structure of synthetic and natural polymers and polyelectrolytes. Reaction of polymers. Practical synthetic methods of polymer preparation.

**CHM 5305: Chemistry of Biological Molecules**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CHM 2211 and 4412.

Mechanistic organic biochemistry. Emphasis on model systems, enzyme active sites, and physical and organic chemistry of biomacromolecules.

#### **CHM 5413L: Advanced Physical Chemistry Laboratory**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* CHM 4411L.

Techniques used in experimental research; techniques of design and fabrication of scientific apparatus. Advanced experiments involving optical, electronic, and high vacuum equipment.

#### **CHM 5511: Physical Chemistry of Polymers**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* CHM 4411 or equivalent.

Structure, configuration, conformation, and thermodynamics of polymer solutions, gels, and solids. Thermal, mechanical, optical, and rheological properties of plastics and rubbers.

#### **CHM 6036: Chemical Biology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Admission to the graduate program and CHM 5305 (Bioorganic Chemistry), or permission of the professor.

In depth examination of current research directions in the field of chemical biology. Topics covered include aptamers, chemical synthesis of proteins, in vitro incorporation of unnatural amino acids into proteins, directed evolution of enzymes, natural product discovery and their biosynthesis mechanisms, chemically synthesized small-molecule libraries, chemical genetics, chemical screening, and target identification.

#### **CHM 6037: Chemical Biology and Biochemistry Seminar**

**Credits: 1    Max: 12                      Grading Scheme: S/U**

*Prerequisite:* Admission into the graduate program

Weekly seminar series from graduate students and outside speakers in chemical biology/biochemistry areas. Attendance and participation of graduate students required.

### **CHM 6153: Electrochemical Processes**

**Credits: 3                      Grading Scheme:** Letter

Principles of electrochemical methods, ionic solutions, and electrochemical kinetics.

### **CHM 6154: Chemical Separations**

**Credits: 3                      Grading Scheme:** Letter

Theory and practice of modern separation methods with emphasis on gas and liquid chromatographic techniques.

### **CHM 6155: Spectrochemical Methods**

**Credits: 3                      Grading Scheme:** Letter

Principles of atomic and molecular spectrometric methods; discussion of instrumentation, methodology, applications.

### **CHM 6158C: Electronics and Instrumentation**

**Credits: 1-4    Max: 6                      Grading Scheme:** Letter

Principles of operation of instruments, optimization of instrumental conditions, and interpretation of instrumental data for qualitative and quantitative analysis.

**CHM 6159: Mass Spectrometric Methods**

**Credits: 3                      Grading Scheme:** Letter

Modern spectrometry including fundamentals, instrumentation, and analytical applications.

**CHM 6165: Chemometrics**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Analytical method, information theory, and chemometrics, including statistical data analysis, heuristic and non-heuristic data analysis (pattern recognition and artificial intelligence), and experimental design and optimization.

**CHM 6180: Special Topics in Analytical Chemistry**

**Credits: 1-3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* two courses of graduate level analytical chemistry.

Lectures or conferences covering selected topics of current interest in analytical chemistry.

**CHM 6190: Analytical Chemistry Seminar**

**Credits: 1    Max: 20                      Grading Scheme:** Letter, S/U

*Attendance required of graduate majors in the analytical area. graduate course in analytical chemistry.* Presentation of one seminar.

**CHM 6225: Advanced Principles of Organic Chemistry**

**Credits: 4                      Grading Scheme:** Letter

*Prerequisite:* CHM 2211.

Principles of organic chemistry and their application to reaction mechanisms.

**CHM 6226: Advanced Synthetic Organic Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 6225.

Discussion and application of synthetic methodology.

**CHM 6227: Topics in Synthetic Organic Chemistry**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 6226.

Synthesis of complex organic molecules, with emphasis on recent developments in approaches and methods.

**CHM 6251: Organometallic Compounds**

**Credits: 3**                      **Grading Scheme:** Letter

Properties of organometallic compounds, the nature of the carbon-metal bond, compounds of metals in groups 1, 2, 3, and 4, and transition metals.

**CHM 6271: The Chemistry of High Polymers**

**Credits: 2**                      **Grading Scheme:** Letter

Fundamental polymer chemistry, with emphasis on the mechanisms of polymerization reactions and the relationship of physical properties to chemical constitution.

**CHM 6301: Enzyme Mechanisms**

**Credits: 3**

**Grading Scheme:** Letter

Principles of enzyme structure; isolation and purification; physical chemistry of enzyme/substrate interactions; general overview of classes; transition state theory and catalysis; types of chemical catalysis; survey of cofactors; example mechanisms; catalytic antibodies; ribozyme structure and catalysis.

### **CHM 6302: Chemistry and Biology of Nucleic Acids**

**Credits: 3**

**Grading Scheme:** Letter

Principles of nucleic acid structure and function; protein/nucleic acid interactions with particular emphasis on transcriptional regulators and DNA and RNA polymerases; chemistry of phosphate hydrolysis and its application to enzyme mechanisms; evolution of novel RNA molecules capable of specific binding and catalysis.

### **CHM 6303: Methods in Computational Biochemistry and Structural Biology**

**Credits: 3**

**Grading Scheme:** Letter

Modeling and protein structures enzyme reaction mechanisms using empirical as well as quantum-mechanical methods.

### **CHM 6306: Special Topics in Biological Chemistry Mechanisms**

**Credits: 3-6    Max: 9**

**Grading Scheme:** Letter

Molecular evolution, bioinformatics and protein structure prediction, principles of molecular recognition, rational protein design, biotechnology, reengineered organisms, advanced biophysical techniques, and computational biology.

### **CHM 6381: Special Topics in Organic Chemistry**

**Credits: 1-3    Max: 9**

**Grading Scheme:** Letter



*Prerequisite:* CHM 6225, CHM 6226.

Chemistry of selected types of organic compounds, such as alkaloids, carbohydrates, natural products, steroids.

**CHM 6390: Organic Chemistry Seminar Presentation**

**Credits: 1    Max: 20            Grading Scheme:** Letter

*Attendance required of graduate majors in the organic area.* Presentation of one seminar.

**CHM 6391: Organic Chemistry Seminar Discussion**

**Credits: 1    Max: 10            Grading Scheme:** S/U

*Prerequisite:* graduate standing.

Attendance at weekly seminars reporting current advances in organic chemistry.

**CHM 6430: Chemical Thermodynamics**

**Credits: 3                    Grading Scheme:** Letter

Energetics, properties of ideal and nonideal systems primarily from the standpoint of classical thermodynamics.

**CHM 6461: Statistical Thermodynamics**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* CHM 6430.

Fundamental principles with applications to systems of chemical interest.

**CHM 6470: Chemical Bonding and Spectra I**

**Credits: 3                      Grading Scheme: Letter**

Basic methods and applications of quantum chemistry; atomic structure; chemical bonding in diatomic and polyatomic molecules. Brief introduction to molecular spectroscopy.

**CHM 6471: Chemical Bonding and Spectra II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CHM 6470.

Theory of symmetry and its chemical applications; semi-empirical molecular orbital treatment of simple inorganic and organic molecules; further applications to inorganic and organic chemistry.

**CHM 6480: Elements of Quantum Chemistry**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CHM 6471.

Brief treatment of the Schrodinger equation, followed by a survey of applications to chemical problems.

**CHM 6490: Theory of Molecular Spectroscopy**

**Credits: 3                      Grading Scheme: Letter**

*Coreq: CHM 6471.* Molecular energy levels, spectroscopic selection rules; rotational, vibrational, electronic, and magnetic resonance spectra of diatomic and polyatomic molecules.

**CHM 6520: Chemical Physics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CHM 6470 or consent of instructor. Identical to PHZ 6247 .

Topics from the following: intermolecular forces; molecular dynamics; electromagnetic properties of molecular systems; solid surfaces; theoretical and computational methods.

**CHM 6580: Special Topics in Physical Chemistry**

**Credits: 1-3    Max: 12                    Grading Scheme: Letter**

Lecture or conferences covering selected topics of current interest in physical chemistry.

**CHM 6586: Computational Chemistry**

**Credits: 3                                    Grading Scheme: Letter**

*Prerequisite:* undergraduate physical chemistry.

Software for computational chemistry; model building and molecular mechanics; molecular orbitals and electronic structure; optical, infrared, and magnetic resonance spectra; solvation effects and molecular dynamics; building large systems.

**CHM 6590: Physical Chemistry Seminar**

**Credits: 1    Max: 20                    Grading Scheme: S/U**

*Attendance required of graduate majors in physical chemistry. graduate course in physical chemistry.* Presentation of one seminar.

**CHM 6620: Advanced Inorganic Chemistry I**

**Credits: 3                                    Grading Scheme: Letter**

Crystalline state; covalent bonding; acids, bases, and solvents, nonmetallic compounds of Groups II through VII with emphasis on structure and reactivity.

### **CHM 6621: Advanced Inorganic Chemistry II**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* CHM 6620.

Electronic structure of metals and transition metal complexes; solution chemistry and reaction mechanisms at metal centers; redox reactions; introduction to organometallic and bioinorganic chemistry.

### **CHM 6626: Applications of Physical Methods in Inorganic Chemistry**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* graduate standing or consent of instructor.

Principles and applications of spectroscopic methods to the solution of inorganic problems. Those techniques used most extensively in current inorganic research are treated.

### **CHM 6628: Chemistry of Solid Materials**

**Credits: 3                      Grading Scheme:** Letter

Structure and properties of solids; semiconductors and superconductors.

### **CHM 6670: Inorganic Biochemistry**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* graduate standing or consent of instructor.

Role of elements in biology. Modern spectroscopic and physical methods for study of Group I and II metals, metalloenzymes, metal ion transport and storage, functions of nonmetals in biochemical systems, and biomedical/biotechnical applications of metals.

### **CHM 6680: Special Topics in Inorganic Chemistry**

**Credits: 1-3    Max: 12                      Grading Scheme:** Letter

Lectures or conferences on selected topics of current research interest in inorganic chemistry.

**CHM 6690: Inorganic Chemistry Seminar**

**Credits: 1    Max: 20            Grading Scheme:** Letter, S/U

*Attendance required of graduate majors in inorganic chemistry. graduate course in inorganic chemistry. Presentation of one seminar.*

**CHM 6720: Chemical Dynamics**

**Credits: 3                    Grading Scheme:** Letter

Basic concepts of rate laws, collision theory, and transition state theory; an introduction to reaction dynamics, structural dynamics, and quantitative structure-reactivity correlations.

**CHM 6905: Individual Problems, Advanced**

**Credits: 1-5    Max: 10            Grading Scheme:** Letter, S/U

*Prerequisite:* consent of faculty member supervising the work.

Double registration permitted. Assigned reading program or development of assigned experimental problem.

**CHM 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme:** S/U

**CHM 6934: Advanced Topics in Chemistry**

**Credits: 1    Max: 8            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Discussion and evaluation of chemical research advances reported in current chemical literature. S/U

**CHM 6935: Chemistry Colloquium**

**Credits: 1    Max: 7            Grading Scheme: S/U**

Topics presented by visiting scientists and local staff members.

**CHM 6943: Internship in College Teaching**

**Credits: 2, 4, 6    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Required for Master of Science in Teaching students but available for students needing additional practice and direction in college-level teaching.

**CHM 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**CHM 7485: Special Topics in Theory of Atomic and Molecular Structure**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* PHZ 6426 or equivalent.

Mathematical techniques used in atomic, molecular, and solid-state theory. The one-electron approximation and the general quantum-mechanical manybody problems. Selected advanced topics.

**CHM 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**CHM 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****CHS 5110L: Radiochemistry Laboratory****Credits: 3****Grading Scheme: Letter**

*Prerequisite:* CHM 3120 and 3400 or 4412, or consent of instructor.

Radioactivity detection, radiochemical separations and analyses, radiochemistry laboratory techniques, the practice of radiological safety, and tracer applications of radioisotopes in chemistry and other fields.

**CIS 5370: Computer and Information Security****Credits: 3****Grading Scheme: Letter**

*Prerequisite:* COP 4600 Operating Systems or equivalent

Covers systematic threat and risk assessment; programmed threats and controls in hardware, software, and human procedures; security policies, models, and mechanisms; theoretical limitations and practical implementations; certification and accreditation standards; and case study reviews. Coursework includes a significant term project.

**CIS 5371: Introduction to Cryptology****Credits: 3****Grading Scheme: Letter**

*Prerequisite:* COT 3100 Applications of Discrete Structures or equivalent      *Corequisite:* COT 5405 Analysis of Algorithms or equivalent

Introducing classical and modern cryptography and cryptanalysis, including symmetric and asymmetric (public key) ciphers. It covers cryptographic hash functions, block and stream ciphers, as well as differential and linear cryptanalysis. It reviews BAN logic, applications of cryptography, cryptographic standards and protocols, and analyzes case studies of failed implementations.

### **CIS 6905: Individual Study**

**Credits: 1-3    Max: 6                    Grading Scheme:** Letter, S/U

*Prerequisite:* consent of faculty member supervising the study.

### **CIS 6910: Supervised Research**

**Credits: 1-5    Max: 5                    Grading Scheme:** S/U

*Prerequisite:* graduate status in CIS.

### **CIS 6930: Special Topics in CIS**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

*Prerequisite:* vary depending on topics.

### **CIS 6935: Graduate Seminar**

**Credits: 1    Max: 12                    Grading Scheme:** S/U

Presentations by visiting researchers, faculty members, and graduate students.

### **CIS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme:** S/U



*Prerequisite:* graduate status in CIS.

**CIS 6971: Research for Master's Thesis**

**Credits: 1-15**                      **Grading Scheme: S/U**

**CIS 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**CIS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**CJC 6120: Corrections and Public Policy**

**Credits: 3**                      **Grading Scheme: Letter**

Issues associated with corrections and public policy. Incarceration, community corrections, and probation.

**CJL 6039: Law and Society**

**Credits: 3**                      **Grading Scheme: Letter**

Interdisciplinary examination of relationship between legal and social orders. Focuses on various functions of law, different forms of legal thought, development of law, and the impact of law/sanctions on society.

**CJL 6089: Humanitarian Law**

**Credits: 3**                      **Grading Scheme:** Letter

Concepts and rules dealing with human rights law of armed conflict.

**CJL 6090: Law and Social Science**

**Credits: 3**                      **Grading Scheme:** Letter

The interface between law and knowledge from various social scientific disciplines, including psychology, sociology, history, and anthropology.

**CJL 6091: Anthropology of Law**

**Credits: 3**                      **Grading Scheme:** Letter

The nature of law cross-culturally and cross-nationally. Relationships with various forms of socioeconomic and political organization.

**CJL 6095: Human Rights in Cultural Context**

**Credits: 3**                      **Grading Scheme:** Letter

The nature of human rights cross-culturally. History of the concept, its development, universalism vs. cultural particularism, religion, gender, and human rights in peace and in war.

**CLA 6125: Augustan Age**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* B.A. in classics.

In-depth investigation of history, political organization, literature, and society of Augustan Rome.

**CLA 6515: Roman Dynasty: Nero and the Julio-Claudians**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* B.A. in classics or Latin.

In-depth investigation of the history, political organization, literature, social customs, and architecture of early Imperial Rome (14-68 A.D.).

**CLA 6795: Greek and Roman Archeology**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* B.A. in classics or related field.

Grounding in monuments of ancient Greece and Roman, and history and methodology of classical archeology.

**CLA 6805: The Classical Research Tradition**

**Credits: 3**                    **Grading Scheme:** Letter

Research methods in the classics.

**CLA 6885: Roman Law and Society**

**Credits: 3**                    **Grading Scheme:** Letter

Survey of Roman law with special attention to constitutional history and judicial practice in context of conceptual development of civil law (person, property, succession, contract, delict).

**CLA 6895: Athenian Law and Society**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* B.A. in classics or related field.

Comprehensive assessment of structures of classical Athens, offering detailed study of Athenian law, constitution, society, gender relations, and culture. Ancient life linked with modern debate on similar issues.

**CLA 6905: Individual Work**

**Credits: 2-4    Max: 10                      Grading Scheme:** Letter

Readings and reports in Classical civilization.

**CLA 6930: Greece and the Near East**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

Rotating topics concerning political, economic, diplomatic, and cultural interaction between Greek world and its neighbors in the East.

**CLP 5316: Health Psychology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PSY 2013.

Examines relationships among health and behavior in the assessment, treatment, prevention, and rehabilitation of health problems. Review of clinical health psychology with implications for other disciplines.

**CLP 5426: Introduction to Neuropsychology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PSY 2013, CLP 3144.

Overview of clinical and experimental data on brain-cognition relationships in humans.

**CLP 6169: Seminar: Psychology and Deviant Behavior**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

Analysis of specific deviant behaviors, with emphasis on theory and research related to diagnosis and clinical management.

**CLP 6304: Psychological Foundations of Clinical Psychology I**

**Credits: 2-3    Max: 3                      Grading Scheme: Letter**

History and systems of psychology, social psychology, developmental psychology, and cognitive psychology foundations of clinical psychology.

**CLP 6307: Human Higher Cortical Functioning**

**Credits: 3                      Grading Scheme: Letter**

Models that explain linkages between brain and behavior. Focus on both functions and dysfunctions.

**CLP 6308: Psychological Foundations of Clinical Psychology II**

**Credits: 2-3    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* CLP 6304.

Continuation of CLP 6304.

**CLP 6309: Psychological Foundations of Clinical Psychology III**

**Credits: 2-3    Max: 3            Grading Scheme: Letter**

*Prerequisite:* CLP 6308.

Continuation of CLP 6308.

**CLP 6344C: Lifespan Foundations of Behavioral Health and Illness I**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* admission to CLP.

Theoretical and research foundations of behavioral health and illness using lifespan perspective. Integration of topics of personality, stress and coping, psychopathology, and fundamentals of health psychology.

**CLP 6345: Lifespan Foundations of Behavioral Health and Illness II**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* CLP 6344C.

Continuation of CLP 6344C.

**CLP 6375: Introduction to Clinical Psychology**

**Credits: 1-3    Max: 3            Grading Scheme: Letter**

*Prerequisite:* admission to CLP.

Seminar on issues and concepts concurrent with field observation and participation.

**CLP 6407: Psychological Treatment I**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* admission to CLP or consent of instructor.

Current dynamic and personality theories, practices, and related research in psychotherapy.

### **CLP 6417: Psychological Treatment II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* admission to CLP or consent of instructor.

Current behavioral theories, practices, and related research.

### **CLP 6425: Seminar in Clinical Neuropsychology**

**Credits: 1**    **Max: 6**                      **Grading Scheme:** Letter

*Prerequisite:* graduate students only and permission of director.

Basic issues and recent advances. Presentation of research topics, clinical cases, and discussion of professional issues.

### **CLP 6430: Clinical Psychological Assessment**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* admission to the Clinical Psychology doctoral program.

Introduction to concepts, theory, and practices in clinical psychological assessment across the lifespan.

### **CLP 6434C: Clinical Psychology Assessment I**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* CLP 6345.

Lifespan approach to assessment with special focus on cognitive functioning.

### **CLP 6435C: Clinical Psychology Assessment II**

**Credits: 4**                    **Grading Scheme:** Letter

*Prerequisite:* CLP 6345.

Lifespan approach to assessment with special focus on personality and behavior.

**CLP 6446C: Psychological Assessment of Children**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* admission to CLP or consent of instructor.

Developmental, intellectual, visual-motor, achievement, and personality assessment of children.

**CLP 6447C: Psychological Assessment of Adults**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* admission to CLP or consent of instructor.

Basic theories, procedures and administration experience in assessment of adult intellect and personality factors.

**CLP 6476: Lifespan Psychopathology**

**Credits: 4**                    **Grading Scheme:** Letter

*Prerequisite:* admission to Clinical Psychology doctoral program.

Diagnostic issues, theoretical formulas, clinical manifestations, and research related to child and adult psychopathology across the lifespan.

**CLP 6497: Psychopathological Disturbances**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* admission to CLP or PSY or consent of instructor.

Theories and related research to etiology, clinical description, and diagnosis with implications for treatment.



**CLP 6527C: Measurement, Research Design, and Statistical Analysis in Clinical Psychology I**

**Credits: 3-4                      Grading Scheme: Letter**

*Prerequisite:* admission to CLP.

Integration and interaction among research design, tests and measurements, and statistics.

**CLP 6528C: Measurement, Research Design, and Statistical Analysis in Clinical Psychology II**

**Credits: 3-4                      Grading Scheme: Letter**

*Prerequisite:* CLP 6527C.

Continuation of CLP 6527C.

**CLP 6529: Applied Multivariate Methods in Psychology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CLP 6528C or equivalent

Application of multivariate methods (MANOVA, discriminant functions, factor analysis, SEM) to research problems in psychology.

**CLP 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

Reading or research in areas in clinical psychology.

**CLP 6910: Supervised Research**

**Credits: 1-4    Max: 5                      Grading Scheme: S/U**

**CLP 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**CLP 6943: Core Practicum in Clinical Psychology**

**Credits: 1-4    Max: 8            Grading Scheme: S/U**

*Prerequisite:* consent of program director.

Supervised training in appropriate work settings.

**CLP 6945: Advanced Practicum in Neuropsychology**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* CLP 7427C, consent of area head and program director.

Supervised clinical experience in neuropsychological assessment and cognitive rehabilitation of patients with neurologic impairments.

**CLP 6946: Advanced Practicum in Applied Medical Psychology**

**Credits: 1-3    Max: 8            Grading Scheme: S/U**

*Prerequisite:* consent of area head and program director.

Supervised clinical experience in inpatient and outpatient consultation, assessment and intervention with psychosomatic, stress-related, and somatopsychic disorders.

**CLP 6947: Practicum in Intervention**

**Credits: 1-4    Max: 18            Grading Scheme: S/U**

*Prerequisite:* consent of program director.

Designed for individual with special interests and needs.

**CLP 6948: Advanced Practicum in Clinical Child Psychology**

**Credits: 1-3    Max: 8                    Grading Scheme: S/U**

*Prerequisite:* CLP 6943, consent of area head and program director.

Supervised clinical experiences working with children or adolescents in either inpatient or outpatient settings.

**CLP 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**CLP 7317: Advanced Health Psychology and Behavior Medicine**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* CLP 7936.

Theory, research, and clinical applications related to core topic areas. Special attention to pathophysiology, research methods, issues of diversity, and ethical concerns.

**CLP 7404C: Special Issues, Methods, and Techniques in Psychological Treatment**

**Credits: 3    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* CLP 6407, CLP 6417, or consent of instructor.

**CLP 7427C: Neuropsychological Assessment of Children**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PSB 6067 or consent of instructor.

Research, theory, and basic procedures.

**CLP 7428C: Neuropsychological Assessment of Adults**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PSB 6067 or consent of instructor.

Research, theory, and basic procedures.

**CLP 7525: Best Methods for Studying Psychological Change**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CLP 6529

Application of change methods (longitudinal mixed effects, latent growth models, survival analysis) to research problems in psychology.

**CLP 7934: Special Topics In Clinical Psychology**

**Credits: 1-9    Max: 15                      Grading Scheme: Letter**

*Prerequisite:* admission to CLP.

Advanced seminar for in-depth examination of selected issues and topics.

**CLP 7949: Internship**

**Credits: 1-2    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* admission to candidacy for the doctorate, successful completion of the qualifying examination, and consent of the program director.

Reading assignments and conferences. Must include 1500 work hours; designed as a 2-semester sequence.

**CLP 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**CLP 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**CLT 6295: Greek Drama in Translation**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* B.A. in classics or related field.

Readings of plays by Aeschylus, Sophocles, Euripides, and Aristophanes, and discussion of their context and production within fifth-century Athenian society.

**CNT 5106C: Computer Networks**

**Credits: 3**                      **Grading Scheme: Letter**

Design, implementation, and internals of networks. Routing, congestion control, internetworking, TCP/IP, optimization, and proxy services.

**CNT 5410: Computer and Network Security**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* COP 3530, COT 5405.      *Corequisite:* COP 4600.

Issues, analysis, and solutions. Viruses, worms, logic bombs, network attacks, covert channels, steganography, cryptology, authentication, digital signatures, electronic commerce.

## **CNT 5412: Network and System Security**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CNT 5106C: Computer Networks or equivalent; COP 4600 - Operating Systems or equivalent

*Corequisite:* COT 5405: Analysis of Algorithms or equivalent.

Examining networked threats and vulnerabilities; trust, identification, authentication, and authorization in networked and distributed systems; secure network protocols and standards; certification of network products; firewall configurations, intrusion detection, and anomaly detection; security flaws in network protocols and distributed applications. Coursework includes a significant term project.

## **CNT 5517: Mobile Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CNT 4007C.

Emerging topics of wireless and mobile computing and networking including mobile computing models, mobile-IP, adhoc networks, Bluetooth, and 802.11b. Mobile database access and mobile transactions in context of emerging field of M-commerce.

## **CNT 6107: Advanced Computer Networks**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 5615 , COP 5536 , and CNT 5106C

Computer network architecture, including topologies, media, switching, routing, congestion control, protocols, and case studies.

## **CNT 6805: Network Science and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 3135, EEE 5544, some knowledge of MATLAB or C programming.

Introduction to various methodologies and technologies in network science and studies a multitude of applications of network science.

## **CNT 6885: Distributed Multimedia Systems**

**Credits: 3                      Grading Scheme: Letter**

Design issues; survey of recent advances, including compression, networking, and operating system issues.

**COM 6315: Advanced Research Methods**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* MMC 6421 and STA 6126 or equivalents, and consent of instructor.

Scientific method, measurement, analysis. Student research required.

**COM 6338: Advanced Web Topics I: Advanced Design**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* Digital Design, Intro to Web Design, Digital Imagery

Delving deeply into the processes of website design. Students will have 4 contact hours of instruction per week from lectures posted in E-Learning, not including individual work. Because the class is asynchronous, students may access lectures at any time during the week.

**COM 6940: Supervised Teaching**

**Credits: 1-3    Max: 5                      Grading Scheme: S/U**

**COP 5536: Advanced Data Structures**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* COP 3530.

Development of efficient data structures used to obtain more efficient solutions to classical problems, such as those based on graph theoretical models, as well as problems that arise in application areas of contemporary interest.

### **COP 5555: Programming Language Principles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

History of programming languages, formal models for specifying languages, design goals, run-time structures, and implementation techniques, along with survey of principal programming language paradigms.

### **COP 5615: Distributed Operating System Principles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 4600.

Concepts and techniques for efficient management of computer system resources.

### **COP 5618: Concurrent Programming**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3100, 3530.

Overview of principles and programming techniques. Reasoning about concurrency, synchronization, program structuring, multi-threaded server applications.

### **COP 5625: Programming Language Translators**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 5555.

Anatomy of translators for high-level programming languages.

### **COP 5725: Database Management Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530, 4600, or equivalent.



Introduction to systems and procedures for managing large computerized databases.

### **COP 6726: Database System Implementation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 4600 and 4720 or COP 5725.

DBMS architecture, query processing and optimization, transaction processing, index structures, parallel query processing, object-oriented and object-relational databases, and related topics.

### **COP 6755: Distributed Database Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 5615, COP 5725, and a course in computer networks.

Distributed database systems including the areas of distributed database design, resource allocation, access plan selection, and transaction management.

### **COT 5405: Analysis of Algorithms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

Introduction and illustration of basic techniques for designing efficient algorithms and analyzing algorithm complexity.

### **COT 5442: Approximation Algorithms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530 or COT 5405

Fundamentals of algorithmic paradigms, analysis, techniques, and software. Topics include greedy methods, randomized algorithms, IP-rounding, approximability, covering, packing, clustering, and network problems.

### **COT 5519: Sparse Matrix Algorithms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COT 3100, COT 4501, COP 3530

Many applications in computational science rely on algorithms for large-scale sparse matrices (circuit simulation, finite-element methods, 'big data', Google StreetView, etc). Course equips students to understand and design methods that exploit sparsity in matrix computations. Focus is direct methods, which rely on combinatorics, graph theory and algorithms, and numerical methods.

### **COT 5520: Computational Geometry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530.

Design, analysis, and implementation of algorithms and data structures to solve geometric problems. Applications in graphics, robotics, computational biology, data mining, and scientific computing. Convex hulls, Voronoi diagrams, triangulations, arrangements, and range searching.

### **COT 5615: Mathematics for Intelligent Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAC 2313, Multivariate Calculus; MAS 3114 or MAS 4105, Linear Algebra; STA 4321, Mathematical Statistics.

Mathematical methods commonly used to develop algorithms for computer systems that exhibit intelligent behavior.

### **COT 6315: Formal Languages and Computation Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* COP 3530 and familiarity with discrete mathematics and data structures.

Introduction to theoretical computer science including formal languages, automata theory, Turing machines, and computability.

### **CPO 5935: Advanced Topics in Comparative Politics**

**Credits: 3**    **Max: 6**                      **Grading Scheme:** Letter

*Prerequisite:* departmental approval.

**CPO 6046: Politics in Advanced Industrial Societies**

**Credits: 3**                      **Grading Scheme:** Letter

Comparative analysis of typical political, economic, and social problems confronting governments of advanced industrial states.

**CPO 6059: Democracy and Its Competitors**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of democracy's components and several forms of authoritarianism such as apartheid, racism, fascism, right-wing populism, and totalitarianism.

**CPO 6077: Social Movements in Comparative Perspective**

**Credits: 3**                      **Grading Scheme:** Letter

Examines major classical and contemporary theoretical approaches to the field of collective action and social movements.

**CPO 6091: Introduction to Comparative Political Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to major theoretical and methodological approach to study of comparative politics.

**CPO 6206: Seminar in African Politics**

**Credits: 3                      Grading Scheme: Letter**

Study of African politics in comparative perspective.

**CPO 6307: Latin American Politics I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* knowledge of Spanish or Portuguese; French may be substituted with consent of instructor.

**CPO 6728: Ethnicity and Nationalism**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CPO 6091

Introducing the main approaches to the study of how ethnic and national identities are formed, and how they are activated in politics. Exploration of various forms of ethnic politics: peace, rioting, and the most extreme forms, genocide and secession.

**CPO 6732: Democratization and Regime Transition**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CPO 6091.

Review of structural, institutional, and cultural dimensions of democratization, with special attention to Latin America, Africa, and Eastern Europe.

**CPO 6736: Post-Communist politics**

**Credits: 3                      Grading Scheme: Letter**

Analysis of problems associated with democratic transition and market reform in the post-communist countries of Eastern Europe and the former Soviet Union.

### **CPO 6756: Comparative Elections and Party Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CPO 6091

Major issues related to the study of elections and political parties in the comparative context. Specifically, we will discuss the relationship between political parties and electoral institutions in authoritarian, democratic, and transitioning political systems.

### **CPO 6757: The European Union In Comparative Perspective**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CPO 6091 (B or better)

Graduate level introduction to the study of the European Union from a comparative perspective. Assuming familiarity with graduate level comparative politics (CPO 6091), but no previous knowledge of the EU is required. The EU is analyzed as a comparative case through an institutionalist perspective.

### **CPO 6786: Peasant Politics and Society**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of social organization and politics of the rural poor in Latin America, Africa, Asia, and pre-industrial Europe.

### **CPO 6795: Environmental Politics**

**Credits: 3**                      **Grading Scheme:** Letter

Explores a variety of social-scientific approaches to the question of how politics (including ideologies, institutions, interests, and power relationships) shape humans' relationship with the natural environment.

### **CPO 6796: Water Politics**

**Credits: 3**

**Grading Scheme:** Letter

Interdisciplinary exploration of the political dimensions of human manipulation of water, wetlands and watersheds. Topics include large-scale hydrodevelopment, common-pool resources, community-based water management, marketization, and transboundary waters. Also provides a general introduction to social-scientific theorizing on human-environment relations.

**CRW 6130: Fiction Writing**

**Credits: 3    Max: 12**

**Grading Scheme:** Letter

**CRW 6166: Studies in Literary Form**

**Credits: 3    Max: 12**

**Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Formal aspects of literature.

**CRW 6331: Verse Writing**

**Credits: 3    Max: 12**

**Grading Scheme:** Letter

**CRW 6906: Individual Work**

**Credits: 1-3    Max: 12**

**Grading Scheme:** Letter

Individual study in reading literature and criticism, required for MFA specialization in creative writing.

**CWR 5125: Groundwater Flow I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CWR 4202 or consent of instructor.

Porous media flow. Darcy's law. Conservation of mass. Laplace equation. Flownets. Well hydraulics.

### **CWR 5127: Evaluation of Groundwater Quality**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CWR 5125 or CWR 6525, or consent of instructor.

Characteristics of flow in saturated and unsaturated zones; solute convection and dispersion; effects of chemical reactions and adsorption; management of groundwater quality.

### **CWR 5235: Open Channel Hydraulics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* CWR 4202 or consent of instructor.

Classification of flow, Normal depth. Specific energy and critical depth. Gradually varied flow. Transitions.

### **CWR 6115: Surface Hydrology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAP 2302, CWR 3201, or EGN 3353C.

Occurrence and distribution of water by natural processes including atmospheric thermodynamics, precipitation, runoff, infiltration, water losses, flood routing and catchment characteristics, analysis, and methods of runoff prediction. Current hydrologic computer models.

### **CWR 6116: Advanced Surface Hydrology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ENV3040C or equivalent numerical methods, STA 3032 or equivalent statistics, CWR3201 or equivalent hydrodynamics

Physical and quantitative concepts and principles of hydrologic processes and their engineering applications. Reynolds Transport Theorem, the Continuity and Momentum Equations applied to phenomena and processes. Hydrologic analyses, including unit hydrograph theory, lumped flow routing, and distributed flow routing. Engineering concepts of hydrologic design, design storms and hydrologic chemistry.

### **CWR 6126: Variable-Density Groundwater Flow**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 5125 Groundwater Flow 1 or consent of instructor.

Numerical groundwater modeling, including groundwater flow, contaminant transport, and variable-density flow and transport equations and finite-difference approximations.

### **CWR 6236: Sediment Transport I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 5235 or consent of instructor.

Introduction to movable bed models. Sediment properties. Scour initiation. Influence of slope. Stable channels. Bed forms. Transport as bed load and suspended transport.

### **CWR 6240: Mixing and Transport in Turbulent Flow**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENG 3353 (or CWR 3201), MAP 2302.

Applying fluid mechanics to problems of turbulent mixing and transport of substances in the natural environment.

### **CWR 6252: Environmental Biochemistry of Trace Metals**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Environmental impact and fate of trace metals and metalloids as they cycle through geological and biological environmental compartments. Emphasizes anthropogenic activities of metals with growing environmental concerns, including arsenic, mercury, chromium, and lead.



### **CWR 6255: Diffusive and Dispersive Transport**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 4202 or consent of instructor.

Introduction to diffusive and dispersive transport processes in flowing water. Fick's law. Available analytical and numerical models.

### **CWR 6525: Groundwater Flow II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 5125 or consent of instructor.

Analytical and computer modeling of groundwater flow problems by means of finite difference, finite element, and boundary element methods.

### **CWR 6536: Stochastic Subsurface Hydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* senior-level course in probability and statistics, calculus through differential equations, soil physics, and/or subsurface hydrology.

Stochastic modeling of subsurface flow and transport including geostatistics, time series analysis, Kalman filtering, and physically based stochastic models.

### **CWR 6537: Contaminant Subsurface Hydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302 or 4341 or equivalent; CGS 2420 or equivalent; SWS 4602C or ABE 6252 or CWR 5125 or CWR 5127 or equivalent; or EES 6208 or equivalent.

Physical-chemical-biological concepts and modeling of retention and transport of water and solutes in unsaturated and saturated media. Applications of environmental aspects of soil and groundwater contamination.

### **DAA 6757: Pilates Technique for the Dancer**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Systematic achievement of strength, tone, flexibility, and posture for optimal physical performance in dance.

**DAA 6905: Graduate Dance Project**

**Credits: 1-3                    Grading Scheme: Letter**

Dance to enhance and develop skills in a specific style of dance or movement study.

**DAN 6436: Laban Movement Analysis**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Experiential examination of movement from the integrated theoretical framework of body, effort, shape, and space.

**DAN 6949: Dance Clinical Practice**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* DAN 3775 and consent of instructor.

Clinical experience in using movement to enhance healing in a hospital or community setting. Student works through Shands Arts in Medicine or a comparable program, in individually contracted situations.

**DCP 6205: Ecological Issues in Sustainability and the Built Environment**

**Credits: 3                    Grading Scheme: Letter**

Examining the direct and indirect impacts of the built environment on terrestrial and aquatic ecosystems. Presenting cutting edge approaches to reduce the negative impacts and restore ecological health.

### **DCP 6211: Preservation Topics, Issues, and Practice**

**Credits: 3**

**Grading Scheme:** Letter

Focuses on a critical assessment of current preservation practices and how they can be applied to a sustainable future. Historic preservation of existing buildings and landscapes embodies the concept of sustainable architecture and landscape architecture.

### **DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning**

**Credits: 4**

**Grading Scheme:** Letter

Teaching students basic principles of natural systems and adopting that model to inform the design process. Students learn to analyze and use the natural resources that reside in geographically specific regions and sites, prepare case studies of best practices and apply lessons learned to an individual research paper.

### **DCP 6301: Sustainable Planning and Design Studio**

**Credits: 6**

**Grading Scheme:** Letter

*Prerequisite:* DCP 6XXX International Sustainable Development, DCP 6212: Sustainable Design Issues: Ecology, Architecture, and Planning      *Corequisite:* DCP 6205: Ecological Issues in Sustainability and the Built Environment

This specialized studio introduces design thinking and problem solving through intensive research and the development of design proposals. Studio projects apply theories of sustainability, with specific attention to issues of water quality, density, urban scale, mixed-use development, infrastructure, ecosystems, and habitat preservation.

### **DCP 6710: History and Theory of Historic Preservation**

**Credits: 3**

**Grading Scheme:** Letter

National, state, and local historic preservation policies and programs are explored. Theoretical concepts that shape the way we view, protect, and preserve historic interiors, structures, sites, districts, and landscapes.

**DCP 6711: History of the Built Environment for Preservation Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Historical developments in American cultural heritage through the study of buildings, sites, and figures.

**DCP 6712: Preservation Technology: Conserving Modern Buildings**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices of physical conservation of culturally significant structures and sites of the Post World War II period.

**DCP 6713: Historic Preservation: Principles, Practice, and Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices of physical conservation of culturally significant structures and sites. Presentation and study of contemporary advocacy, planning, and technology.

**DCP 6714: Built Heritage Resources: Research, Documentation, And Conservation**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the principles and practices guiding the preservation of built heritage resources at three different scales: cultural and urban landscapes and building ensembles; architecture; and materials and finishes.

**DCP 6715: Preservation Building Technology**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of traditional building materials and systems, preservation principles and conventions, and the behavior of building systems in older structures.

#### **DCP 6716: Cultural Resource Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* None.

Focusing on interpretive and research topics in a case study format. Topics include introduction to new technologies, use of modern materials in historic buildings, conservation and sustainability, historic building dating methods and other issues pertaining to historic sites.

#### **DCP 6730: Preservation Policy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* DCP 6710 or consent of instructor.

Study of federal and state preservation policy and ways regulations and laws are put into effect. Lectures will be supplemented with selected field trips, providing students with the opportunity to meet and learn from active cultural resource professionals, regulatory officers and site managers.

#### **DCP 6905: Independent Study**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* Consent of faculty member supervising the study

Research in special or individual DCP projects and issues, under faculty supervision.

#### **DCP 6931: Special Topics in Design, Construction, and Planning**

**Credits: 1-4    Max: 6                      Grading Scheme: Letter**

**DCP 6943: Practicum in Historic Preservation**

**Credits: 3                      Grading Scheme: Letter**

Enables students to work in real-life situations, finding solutions to diverse historic preservation issues, while acquiring research methodology and presentation skills.

**DCP 6971: Research for Master's Thesis**

**Credits: 1-9    Max: 9                      Grading Scheme: S/U**

Research for master's thesis in Historic Preservation

**DCP 7790: Doctoral Core I**

**Credits: 3                      Grading Scheme: Letter**

Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.

**DCP 7792: Doctoral Core II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* DCP 7790.

Urban, environmental, and legal systems in the context of urban development.

**DCP 7794: Doctoral Seminar**

**Credits: 1    Max: 4                      Grading Scheme: S/U**

*Corequisite:* DCP 7911; for entering Ph.D. students.

Successfully negotiating graduate school and writing a dissertation.

### **DCP 7911: Advanced Design, Construction, and Planning Research I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6167.      *Corequisite:* DCP 7794; for entering Ph.D. students.

Survey and critical analysis of research in the disciplines of design, construction, and planning. Emphasizes theory and methods.

### **DCP 7940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* not open to students who have taken 6940.

Independent student teaching under the supervision of a faculty member.

### **DCP 7949: Professional Internship**

**Credits: 1-5    Max: 5                      Grading Scheme: Letter**

Professional faculty-supervised practicum.

### **DCP 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **DCP 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**DEN 6602: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 1: Class I Treatment**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of all methods and techniques used to treat various malocclusions and their basic biologic principles.

**DEN 6603: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 2: Class II Treatment**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Continuation of DEN 6602.

**DEN 6604: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 3: Class II Treatment and Overbite Treatments**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Continuation of DEN 6603.

**DEN 6605: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 4: Class II Treatment and Overbite Treatments**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Continuation of DEN 6604.



**DEN 6606: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 5: Class III and Crossbite Treatments and Soft Tissue Considerations**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Continuation of DEN 6605.

**DEN 6607: Orthodontic Treatment–Appliance Management and Effect of Treatment Part 6: Impactions, Transplantations and Stability**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Continuation of DEN 6606.

**DEN 6608: Analysis, Diagnosis, and Treatment Planning: Part I**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Information to aid in examining patient, gathering data, analyzing and manipulating data, diagnosing, and subsequent treatment plan development.

**DEN 6609: Analysis, Diagnosis, and Treatment Planning: Part II**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Information to aid in examining a patient, gathering data, analyzing and manipulating data, diagnosing, and subsequent treatment plan development.

**DEN 6610: Biology of Tooth Movement: Part I**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Review of literature related to biology of orthodontic tooth movement.

#### **DEN 6612: Orthodontic Biomechanics: Part I**

**Credits: 1    Max: 2            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Biomechanical principles, biomechanics in certain treatment approaches, methods of research in biomechanics.

#### **DEN 6613: Orthodontic Biomechanics: Part II**

**Credits: 1    Max: 2            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Biomechanical principles, biomechanics in certain treatment approaches, methods of research in biomechanics.

#### **DEN 6614: Ortho-Perio Relationships: Part I**

**Credits: 1    Max: 2            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Understanding the effects of orthodontics on periodontal tissue, treating the periodontally compromised patient, and literature on various periodontal procedures.

#### **DEN 6615: Ortho-Perio Relationships: Part II**

**Credits: 1    Max: 2            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Understanding effects of orthodontics on periodontal tissue, treatment of periodontally compromised patient, and literature on various periodontal procedures.

### **DEN 6616: Orthognathic Surgery: Part I**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Principles involved in correction of skeletal problems by orthodontics and oral and maxillofacial surgery.

### **DEN 6617: Orthognathic Surgery: Part II**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Principles involved in correcting skeletal problems by orthodontics and oral and maxillofacial surgery.

### **DEN 6618: Postnatal Growth and Development**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Review of topics in postnatal growth and development pertinent to orthodontics. Emphasizes basic concepts of facial growth.

### **DEN 6622: Principles of Occlusion**

**Credits: 2                      Grading Scheme: Letter**

Chronological history of gnathology and developing treatment philosophies. In-depth biomechanical and neuro-physiological study of human dental occlusion. The role of sound occlusion in oral health, and current methods of treatment.

### **DEN 6623: Maxillofacial Prosthetics**

**Credits: 1                      Grading Scheme: Letter**

The art and science of anatomic, functional, and cosmetic reconstruction, using nonliving substitutes for structures missing as a result of surgical intervention, trauma, or congenital malformation.

**DEN 6624: Dental Implant Restoration**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* D.M.D. or D.D.S. degree.

Diagnostic and laboratory principles involved with restoration of dental implants.

**DEN 6625: Fixed Prosthodontic Ceramics**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* D.M.D. or D.D.S. degree.

Laboratory and diagnostic principles associated with preparation and fabrication of metal and ceramic fixed partial prostheses.

**DEN 6626: Advanced Removable Partial Dentures**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* D.M.D. or D.D.S. degree.

Principles and applications. Survey of supporting tissues, classification systems, biomechanics, treatment planning, materials, and historical overview of removable partial prosthodontics.

**DEN 6627: Treatment Planning Seminar**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* D.M.D. or D.D.S. degree.

Format to evaluate treatment planning skills, to present comprehensive cases in organized and logical manner and to use literature and experience to defend treatment plans.

## **DEN 6642: Introduction to Advanced Endodontics**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Analysis of principles, philosophies, and treatment procedures relative to morphology, physiology, and pathology of human dental pulp and periradicular tissues.

## **DEN 6643: Treatment Planning/Cases Presentation**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* DEN 6642.

Seminars to analyze patient treatment plans with regard to differential diagnosis and treatment of oral pains of pulpal and/or periradicular origin, vital pulp therapy, nonsurgical and surgical root canal therapy, intentional replantation and replantation of avulsed teeth, endodontic implants, and bleaching of discolored teeth.

## **DEN 6644: Nonsurgical Endodontic Care I**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* DEN 6642.

Supervised clinical experience in comprehensive management of patients' needs in areas of differential diagnosis of pulp and periradicular disease, vital pulp therapy, nonsurgical root canal therapy, bleaching of discolored teeth, and procedures related to coronal restorations by means of post and/or cores involving root canal space.

## **DEN 6645: Nonsurgical Endodontic Care II**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* DEN 6644.

Continuation of DEN 6644.

## **DEN 6646: Surgical Endodontics I**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* DEN 6642.

Supervised clinical experience in comprehensive management of patients' needs in areas of differential diagnosis of pulp and periradicular disease requiring surgical intervention, selective removal of pathological tissue resulting from pulpal pathosis, intentional replantation and replantation of avulsed teeth, surgical removal of tooth structure such as in apicoectomy, hemisection, and root amputation and endodontic implants.

#### **DEN 6647: Surgical Endodontics II**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* DEN 6646.

Continuation of DEN 6646.

#### **DEN 6652: Review of Periodontics Literature I**

**Credits: 1                      Grading Scheme:** Letter

Periodontal data collection, etiology of periodontal disease, pathogenesis of periodontal diseases, acute periodontal lesions, and classification of periodontal diseases.

#### **DEN 6653: Review of Periodontics Literature II**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* DEN 6652.

Diagnosis, prognosis and treatment planning including tooth mobility and tooth movement, prognosis, plaque control and nonsurgical periodontal therapy.

#### **DEN 6654: Review of Periodontics Literature III**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* DEN 6653.

Principles of periodontal surgery and wound healing.

**DEN 6655: Review of Periodontics Literature IV**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* DEN 6654.

Mucogingival surgery, antibiotic therapy, ultrasonics, irrigation and maintenance of the periodontal patient. Discussion of restorative considerations and orthodontics.

**DEN 6656: Introduction to Advanced Periodontology**

**Credits: 1**                      **Grading Scheme:** Letter

Intense general review of periodontal structure, function and disease pathogenesis. Tissues of periodontium, cementum, bone, periodontal ligament and epithelial attachment. Review of etiology of disease process pertaining to microbial flora and host response.

**DEN 6657: Periodontal Histology and Histopathology**

**Credits: 1**                      **Grading Scheme:** Letter

Survey of histology and histopathology of periodontium, utilizing light and electron microscopy.

**DEN 6658: Treatment Planning in Periodontal Therapy**

**Credits: 1**                      **Grading Scheme:** Letter

Interdisciplinary seminar. Students present findings of examination of patients with advanced dental diseases and discuss diagnosis and treatment planning for these patients.

**DEN 6670: Craniofacial Anomalies**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Etiology, development, treatments, and treatment outcomes of craniofacial anomalies.

#### **DEN 6671: Prenatal Growth and Development**

**Credits: 1    Max: 2            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Selected topics in cellular and molecular aspects of craniofacial development.

#### **DEN 6672: Materials in Orthodontics**

**Credits: 0-1    Max: 4            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Evaluation of the basics and the applicability of materials normally used in orthodontia, to enable the practitioner to evaluate new materials commonly introduced in today's market.

#### **DEN 6674: Advanced Oral Pathology**

**Credits: 1                      Grading Scheme: Letter**

Survey of clinical characteristics, microscopic features, and treatment and prognosis of diseases affecting the head and neck, oral mucosa, and jaws.

#### **DEN 6675: Craniofacial Pain**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Structure, function, and pathofunction of cranio-cervical region and stomatognathic system emphasizing differential diagnosis and case-specific management.



### **DEN 6678: Advanced Oral Medicine and Drug Interactions in Dentistry**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor. Designed for dental specialty and general practice residents.

Understanding medications available to practicing dentists.

### **DEN 6679: Advanced Radiology and Interpretation**

**Credits: 1**                      **Grading Scheme:** Letter

A series of lectures designed to provide graduate students with advanced information on oral and maxillofacial radiology. Subjects include material designed to prepare the advanced practitioner in radiologic management of patients with complex diagnostic problems.

### **DEN 6680: Principles and Craniofacial Biology and Emerging Therapies**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of instructor.

Reviewing basic biological, biochemical, cellular and molecular concepts important to the appreciation and understanding of the unique functions of the hard and soft oral tissues. It also provides a framework to introduce students to emerging therapies in the treatment of oral diseases and the biological concepts behind these therapies.

### **DEN 6681: Craniofacial Pathobiology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of instructor.

Emphasizing biochemical, molecular and cellular aspects of pathological conditions that either are localized to craniofacial components within of effecting the oral cavity, are systemic but effect oral functions, or emanate from the orall cavity to influence system health.

### **DEN 6905: Individual Study**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

**DEN 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**DEN 6934: Special Topics in Dentistry**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* Consent of instructor

Presenting a series of topics that are relevant to the majority of specialties, provide relevant information for practicing dentistry at the highest level of knowledge, and to prepare them for the future changes in dentistry.

**DEN 6935: Special Topics in Dentistry**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

**DEN 6936: Practice Management**

**Credits: 1            Grading Scheme: S/U**

Fundamental management principles and practices. Emphasizes establishing the dentist in practice without making major business mistakes. Consideration to selecting an associate, developing an association contract, and understanding the associate relationship.

**DEN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**DEN 6941: Clinical Teaching in Dentistry**

**Credits: 1                    Grading Scheme: S/U**

Assessing recall factors that influence learning in clinical situations. Accessing relevant learning and factors while in clinical situations, thus providing effective instructional decisions. Designed to help the participant recall and use this information.

**DEN 6942: Grand Rounds**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* Consent of instructor

The broadest possible input on treatment of patients with perspectives from endodontics, orthodontics, periodontology, pediatric dentistry, prosthodontics and oral surgery. Interdisciplinary treatment plans will be developed for patients that are brought to the grand rounds by participating attending and resident practitioners. The intent is to develop a comprehensive treatment plan for cases forwarded to the group.

**DEN 6971: Research for Master's Thesis**

**Credits: 1-6                    Grading Scheme: S/U**

**DEN 6973: Project in Lieu of Thesis**

**Credits: 1-9    Max: 9            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Project or research acceptable to the candidate's supervisory committee and the Graduate School.

**DEP 6057: Advanced Developmental Psychology I**

**Credits: 3**                      **Grading Scheme:** Letter

Surveys research literature on developmental changes during infancy and cognitive development during childhood.

**DEP 6058: Advanced Developmental Psychology II**

**Credits: 3**                      **Grading Scheme:** Letter

Theories and current literature in social development, focusing on the period of infancy through adolescence.

**DEP 6059: Seminar: Special Topics in Developmental Psychology**

**Credits: 1-3**    **Max: 12**                      **Grading Scheme:** Letter

Examination of theory and research in selected topic.

**DEP 6099: Survey of Developmental Psychology**

**Credits: 2-3**    **Max: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status.

Empirical, theoretical, and methodological foundations of developmental psychology.

**DEP 6216: Psychological Disturbances of Children**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* admission to CLP or PSY or consent of instructor.

Stresses both affective and cognitive.

**DEP 6406: Advanced Adulthood and Aging**

**Credits: 3                      Grading Scheme: Letter**

Overview of major theories and research in psychology in relation to aging.

**DEP 6409: Seminar: Adult Development and Aging**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Topics in the psychology of aging, with emphasis on theory, research, and methodology.

**DEP 6799: Current Research Methods in Developmental Psychology**

**Credits: 3                      Grading Scheme: Letter**

Methods for study of development, including experimental and observational techniques.

**DEP 6936: Current Research in Developmental Psychology**

**Credits: 1-2    Max: 20                      Grading Scheme: Letter**

**DEP 7608: Theories of Developmental Psychology**

**Credits: 3                      Grading Scheme: Letter**

Theoretical perspectives and major theorists in child and developmental psychology.

### **DIE 6241: Advanced Medical Nutrition Therapy**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* admission to Master of Science-Dietetic Internship.

Opportunity to integrate theories and principles of medical nutrition therapy into clinical practice.

### **DIE 6242: Advanced Medical Nutrition Therapy II**

**Credits: 4                      Grading Scheme:** Letter

*Prerequisite:* admission to Master of Science-Dietetic Internship and DIE 6241.

Opportunity to integrate principles of medical nutrition therapy into clinical practice.

### **DIE 6516: Professional Development in Dietetics**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* DIE 6938.      *Corequisite:* DIE 6944.

Professional development assessment, planning, and evaluation for future dietetics professionals.

### **DIE 6905: Problems in Dietetics**

**Credits: 1-3    Max: 4                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor. Not open to students on probation or conditional admission.

Individual study and research carried out in community, hospital, or laboratory settings.

### **DIE 6938: Advanced Dietetic Seminar**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* admission to Master of Science-Dietetic Internship.      *Corequisite:* DIE 6942.

Problem-solving, leadership, and analytical skills.

#### **DIE 6942: Dietetic Internship I**

**Credits: 8-12    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* DIE 6242.    *Corequisite:* DIE 6938.

Internship in dietetics in affiliated institutions offering core rotations in community nutrition, food systems management, and clinical dietetics. Emphasizes applying theory to practice.

#### **DIE 6944: Dietetic Internship II**

**Credits: 4-8    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* DIE 6942.

Internship in affiliated institutions offering elective and/or specialty rotations (e.g., nutrition support, diabetes, pediatrics, sports nutrition, wellness, advanced food systems, and staff experience). Emphasizes skill development for entry-level practice.

#### **DIE 6949: Dietetic Internship in Sports Nutrition**

**Credits: 4    Max: 15                    Grading Scheme: S/U**

*Prerequisite:* admission to the sports nutrition emphasis of the combined Master of Science-Dietetic Internship (MS-DI) program.

Sports nutrition internship. Emphasizes developing competency in conducting, managing, and supervising nutrition care services for intercollegiate athletes.

#### **DIG 5555C: Digital Media Projection Design I**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Enrollment in the MA in DAS program or DAR program, or consent of Instructor.

Students will be learning theoretical, technical and historical production-oriented perspectives of using projections for a variety of events. Students collaboratively design, construct and present a digital projection media project. Students

work as "projection designer" on two main projects and write a research paper on an approved topic in projection design.

### **DIG 5931C: Special Topics**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* Admission in MA DAS program or consent of instructor.

Complements theory-based digital arts offerings with an up-to-the-minute examination of emergent cultural and technological events and developments.

### **DIG 6027C: Interactive Storytelling**

**Credits: 1-4    Max: 4            Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Integrates participation and storytelling as foundations of interactivity. Explores how storytelling is incorporated into contemporary interactive platforms including games and social networks, using online and open-source tools to create content, taking advantage of mobile hardware already in students' possession.

### **DIG 6028: Roots of Digital Culture**

**Credits: 1-3                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Interdisciplinary approach to technological and cultural underpinnings shaping current digital media (video games, the Internet, computer-animated movies, virtual reality and online social networking), exploring and presenting individuated perspectives in both written and digital media assignments.

### **DIG 6050C: Entertainment Technology**

**Credits: 1-4    Max: 4            Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Evolving digital entertainment technologies and techniques, providing a forum to discuss current and future multimedia and hybrid media technologies, including the completion of an original design, script or treatment for a digital entertainment artifact.



### **DIG 6125C: Digital Design & Visualization**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Creation of 2D and 3D content for large-scale visualization systems employed in the creative services and industrial design fields. Providing participatory experience in controlling multi-screen sound and visualization environments in both intermediate and large-scale display environments.

### **DIG 6126C: Interaction Design**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Extend theoretical and practical perspectives into several focused projects using interaction principles prevalent in the entertainment and simulation industries, by creating and evaluating solutions across iterative design and testing cycles researching usability and affective influence. Emphasizes principles of cognitive psychology, including mental models, targeting and interface metaphors.

### **DIG 6256C: Audio Design For Digital Production**

**Credits: 1-3                                Grading Scheme: Letter**

*Prerequisite:*

Admission into the M.A. in DAS program or consent of instructor.

Capturing, storing, processing, and retrieving audio in analog and digital domains for visual media and information systems. Recording, editing, processing, and mixing sound for 2-d and 3-d artifacts.

### **DIG 6288: Music and Sound Design for Digital Media**

**Credits: 3                                    Grading Scheme: Letter**

*Prerequisite:* graduate-level status or consent of instructor.

Techniques, tools, and current research in music and sound design for digital media. For digital arts and science non-music majors.

### **DIG 6358C: APPLIED 3D MODELING**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (MAJOR DAS OR DAR) & CLASS GE7

Creating digital 3D assets that accurately represent real world objects, produce digital 3D environments from concept to completion, develop digital 3D characters capable of interacting with their environments, and construct quality particle systems and post-process effects. Students learn to integrate these assets into real-time engines using industry standard practices and pipelines.

### **DIG 6556C: Digital Media Projection Design II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (MAJOR DAS OR DAR) & CLASS GE7 & DIG 5555C

Students will be completing a full Digital Media Projection Design working as "Lead Projection Designer" of a visual digital media presentation and prepare the design for live execution. This class requires attendance at all design, production and technological meetings pertaining to the project. This class applies skills added in Digital Media Projection Design 1 with LEAD DESIGNER project duties and responsibilities.

### **DIG 6589C: Digital Portfolio**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NONE.

Intended for NON-DAS majors

Providing students with technical and design skills for the creation of a digital portfolio with interactive media suitable for distribution including DVD and a portfolio website. It also covers techniques for using and linking social media, digital branding and personal marketing.

### **DIG 6719: Videogame Theory and Analysis**

**Credits: 2-4**    **Max: 4**                      **Grading Scheme:** Letter

*Prerequisite:* Admission into the MA in DAS program for either the 12-hour certificate or as a full-time Major or written consent of Instructor.

Surveying the emerging interdisciplinary study of videogames. Examine contemporary and historical scholarship on the medium. Focus on video games as socially-situated semiotic spaces that exist in dialogue with society at large.

### **DIG 6744C: Movement, Media and Machines**

**Credits: 1-4    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* Admission into the MA in DAS program as a full-time Major or written consent of Instructor.

Exploring existing and emergent relationships between human movement, interactive & post-produced media and various electro-mechanical and digital machines. Texts, techniques and presentations from the spectrum of movement-based inquiry provide an interdisciplinary forum for transdisciplinary investigation.

### **DIG 6746C: Graduate Seminar in Sensors and Electronics**

**Credits: 3                                    Grading Scheme: Letter**

*Prerequisite:* digital media art students only, DIG 3130 (or equivalent programming experience) or consent of instructor.

Explores how devices respond to and interact with human physical action. Students create artwork, exploring physical interfaces beyond mouse/keyboard/screen interactions through the use of microcontrollers and sensors.

### **DIG 6751C: Protocols for Multimedia Interfaces**

**Credits: 2-4    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* Admission into the MA in DAS program as a full-time Major or written consent of Instructor.

Covering protocols that control the interface components of a wide range of human-computer interaction devices including computers, mobile phones, multimedia players etc. Principles of interactive event handling and skills in coding touch screen interaction using contemporary platforms and mobile device environments, virtual world interaction, web-based interaction, as well as standard interaction methods for computer applications.

### **DIG 6788C: Digital Production & Game Design**

**Credits: 1-4    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* Admission in MA DAS program or consent of instructor.

Students form small production teams and collaborate on a semester-long project with appointed production milestones, exploring intermediate and advanced 2-D and 3-D game design and visualization paradigms.

### **DIG 6840C: Interdisciplinary Research Seminar in Digital Arts & Sciences**

**Credits: 1-4    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Virtual World Environments (VWEs) as venues for rapid-prototyping of ideas, inventions, and interactions, addressing the implications of VWEs for communications, ethics, and public policy, by creating avatars and exploring digital media venues inside an online 3-D environment.

### **DIG 6850C: Digital Arts & Sciences Convergence**

**Credits: 1-4    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Transformations resulting from the convergence of digital technologies and global cultures. Analyzes how film, video games, animation and the recording arts intersect in the creation of digital artifacts and cultural phenomena. Interdisciplinary teams study and undertake real-time international communications and collaborations.

### **DIG 6906: Independent Study - Graduate Level**

**Credits: 1-4    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* Consent of faculty member supervising the study.

Independent study of individual Digital Arts & Sciences projects and issues, under faculty supervision.

### **DIG 6950C: Digital Performance Production**

**Credits: 1-4    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* admission in MA DAS program or consent of instructor.

Provides instruction on the configuration, assembly and execution of events in venues using streaming technologies for a variety of entertainment, business and research applications. Students demonstrate individuated achievement in performance technologies and integrated techniques via a final event of their own design.

### **DIG 6971: Research for Master's Thesis**

**Credits: 1-3    Max: 6            Grading Scheme: S/U**

*Prerequisite:* CLASS GE7 & MAJOR DAR

### **DIG 6973: Capstone Project in Lieu of Thesis**

**Credits: 1-6    Max: 6            Grading Scheme: S/U**

*Prerequisite:* CLASS GE7 & MAJOR DAR

Submission of an original project based upon extended study of a topic within the field of Digital Arts & Sciences (DAS). DIG 6973 is the course for students interested in completing a capstone project in lieu of a Thesis for a Master's of Arts degree.

### **EAB 5436: Behavioral Pharmacology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* EAB 3002, STA 3023.

Experimental analysis of the mechanisms based on interactions of drugs with environmental variables controlling behavior.

### **EAB 6099: Survey of Behavior Analysis**

**Credits: 2-3    Max: 3            Grading Scheme: Letter**

*Prerequisite:* admission to graduate status or consent of instructor.

Survey of basic learning and motivational processes including operant and classical conditioning. Introduction to individual-subject research methods and to applied behavior analysis.

### **EAB 6118: Theoretical Foundations of Behavior Analysis**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Examination of current theoretical issues in behavior analysis, with emphasis upon systematic integration of behavior principles into general behavior theory.

### **EAB 6707: Applied Behavior I**

**Credits: 3**                      **Grading Scheme:** Letter

Research methods. Measurement, reliability, experimental design, extension of basic research to applied settings.

### **EAB 6712: Experimental Psychopathology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* A previous course in experimental or applied behavior analysis

Examining historical and contemporary research on the functional analysis of problem behavior. Assessment models, methodological variations, intervention strategies.

### **EAB 6716: Behavior Analysis in Developmental Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EAB 3764 and consent of instructor.

Behavioral approaches to study and treatment of mental retardation and developmental disabilities. Acquisition techniques, assessment, and treatment of behavior disorders, program evaluation, and management.

### **EAB 6719: Seminar: Strategies and Tactics of Human Behavioral Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EAB 6707.

Advanced study of a scientific approach to investigating human behavior in applied settings.

### **EAB 6750: Quantitative Methods**

**Credits: 3                      Grading Scheme: Letter**

Introduction to quantitative methods in single-case research.

**EAB 6780: Ethics and Professional Issues**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

Examines ethical decision making and regulatory standards in applied behavior analysis, ethics in research and publication, and professional issues arising in various settings.

**EAB 6937C: Seminar: Special Topics in Experimental Analysis of Behavior**

**Credits: 1-4    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* EAB 6099.

Current research, theory, and instructional techniques.

**EAB 6939: Seminar: Special Topics in Applied Behavior Analysis**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

Current research, technological developments, and professional issues.

**EAB 7089: Advanced Seminar: Experimental Analysis of Behavior**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Restricted areas of experimental analysis of behavior such as schedules of reinforcement, stimulus control, current issues in research methods, and complex repertoires.

### **EAB 7090: Verbal Behavior**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* EAB 6118.

Current empirical and theoretical issues relevant to functional analysis of verbal behavior.

### **EAP 5835: Academic Spoken English I**

**Credits: 4**                      **Grading Scheme: S/U**

*Prerequisite:* for international graduate students, especially those who expect to become teaching assistants. No credit toward any graduate degree.

Intensive training in English, particularly English used in formal speaking and pedagogy.

### **EAP 5836: Academic Spoken English II**

**Credits: 2-3**                      **Grading Scheme: S/U**

*Prerequisite:* EAP 5835 or qualifying SPEAK score. Required for international graduate students who are teaching but have not satisfied Graduate School requirements for oral English communication. No credit toward any graduate degree.

TAs are videotaped biweekly in their classrooms. Weekly instruction addresses language, cultural, and pedagogical problems encountered in the classroom.

### **EAP 5837: Academic Spoken English Tutorial**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* EAP 5835 or qualifying SPEAK score. Designed for international graduate students. No credit toward any graduate degree.

Language and interpersonal communication skills needed for one-on-one exchanges. International students are matched with undergraduates seeking tutoring in the graduate student's area of expertise. Tutoring sessions are videotaped and analyzed.



### **EAP 5845: Academic Writing**

**Credits: 3                      Grading Scheme: S/U**

*Prerequisite:* for international students. No credit toward any graduate degree.

Organizational strategies and formats for writing graduate-level papers, theses, and dissertations. Emphasizes writing in the student's discipline. Offered fall and spring terms.

### **EAP 5846: Research and Technical Writing**

**Credits: 3    Max: 12                      Grading Scheme: S/U**

*Prerequisite:* for international and U.S. students. No credit toward any graduate degree.

The overall process of research writing, with assignments geared to the students' professional careers.

### **EAP 5937: Special Topics in Academic Spoken English**

**Credits: 2                      Grading Scheme: S/U**

*Prerequisite:* designed for international graduate students. No credit toward any graduate degree.

Overview of advanced oral English skills practiced intensively in other ASE courses for international students. Academic presentations and discussions, interpersonal communication strategies, cross-cultural issues, and accent modification.

### **EAS 5938: Special Topics in Aerospace Engineering**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

### **EAS 6135: Molecular Theory of Fluid Flows**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EGM 6812 or equivalent.

Introduction to the molecular dynamics of gases and liquids, the Boltzmann equation, Chapman-Enskog expansion and derivation of Euler and Navier-Stokes equations, and lattice Boltzmann methods; and application to gas, liquid, and multiphase flows.

### **EAS 6138: Gasdynamics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EAS 4103 or EML 5714.

Theory of sound waves, subsonic and supersonic flows, shockwaves, explosions and implosions.

### **EAS 6242: Advanced Structural Composites**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 3520.

Micro- and macro-behavior of a lamina. Stress transfer of short fiber composites. Classical lamination theory, static analysis of laminated plates, free-edge effect, failure modes.

### **EAS 6415: Guidance and Control of Aerospace Vehicles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EAS 4412 or equivalent.

Applying modern control theory to aerospace vehicles. Parameter identification methods applied to aircraft and missiles.

### **EAS 6905: Aerospace Research**

**Credits: 1-6**    **Max: 12 including EGM 5905 and EGM 6905**                      **Grading Scheme:** Letter

### **EAS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**EAS 6935: Graduate Seminar**

**Credits: 1    Max: 6            Grading Scheme: Letter, S/U**

**EAS 6939: Special Topics in Aerospace Engineering**

**Credits: 1-6    Max: 12            Grading Scheme: Letter**

Laboratory, lectures, or conferences covering selected topics in space engineering.

**EAS 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EAS 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EAS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**ECH 5708: Disinfection, Sterilization, and Preservation**

**Credits: 2**

**Grading Scheme: Letter**

Describes problems and the need for these treatments; causative agents and their nature; nature and the use of chemical and physical antimicrobial agents; specific problems and solutions.

**ECH 5938: Topics in Colloid Science**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PHY 2049 and 2056L, CHM 2046 and 2046L, MAC 2312 or equivalent.

Colloids and interfacial phenomena, colloid interaction forces, electrokinetic phenomena, transport phenomena influenced by colloidal forces, and electrokinetic phenomena. Examples and applications.

**ECH 6126: Thermodynamics of Reaction and Phase Equilibria**

**Credits: 3**

**Grading Scheme: Letter**

Methods of treating chemical and phase equilibria in multi-component systems through application of thermodynamics and molecular theory.

**ECH 6270: Continuum Basis of Chemical Engineering**

**Credits: 3**

**Grading Scheme: Letter**

Integrated introduction to transport processes in continuous media with emphasis on fluid mechanics and heat and mass transfer.

### **ECH 6272: Molecular Basis of Chemical Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Statistical mechanics and microscopic explanation of macroscopic laws of classical thermodynamics, transport phenomena, and chemical kinetics. Statistical mechanical theories that connect molecular structure to macroscopic properties.

### **ECH 6285: Transport Phenomena**

**Credits: 1-3**    **Max: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECH 6270.

### **ECH 6326: Computer Control of Processes**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to digital computers, sampled data systems and Z-transforms, control of multiple input-multiple output systems, optimal control, state estimation and filtering, and self-tuning regulators.

### **ECH 6506: Chemical Engineering Kinetics**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamental aspects of chemical reactors, including collision theory, transition rate theory, unimolecular rate theory, homogeneous gas and liquid phase kinetics, and heterogeneous kinetics.

### **ECH 6526: Reactor Design and Optimization**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamentals of heterogeneous reactor design including the characterization of catalytic reactions and support, the development of global rate of the intrinsic reaction affected by chemical and physical deactivation of catalyst, intraphase and interphase mass and heat transfer, and the design and optimization of various types of heterogeneous reactors.

#### **ECH 6709: Electrochemical Engineering Fundamentals and Design**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamentals of electrodicts and ionics applied to systems of interest in electrochemical engineering.

#### **ECH 6726: Interfacial Phenomena I**

**Credits: 2**                      **Grading Scheme:** Letter

Air-liquid and liquid-liquid interfaces; surface-active molecules, adsorption at interfaces, foams, micro- and macro-emulsions, retardation of evaporation and damping of waves by films, surface chemistry of biological systems.

#### **ECH 6727: Interfacial Phenomena II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046 and 2046L.

Solid-gas, solid-liquid, solid-solid interfaces. Adsorption of gases and surface-active molecules on metal surfaces, contact angle and spreading of liquids, wetting and dewetting, lubrication, biolubrication, flotation, adhesion, biological applications of surfaces.

#### **ECH 6843: Experimental Basis of Chemical Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Statistical design of experiments and treatment of data including regression analysis, interpolation, and integration. Introduction to analytical techniques including electron and photon spectroscopes, chromatography, and mass spectrometry.

### **ECH 6847: Mathematical Basis of Chemical Engineering**

**Credits: 3                      Grading Scheme:** Letter

Methods of linear systems, chemical engineering applications in finite and infinite dimensional spaces, concepts of stability, application to transport phenomena.

### **ECH 6851: Impedance Spectroscopy**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* familiarity with applications of differential equations.

Intended for chemists, physicists, materials scientists, and engineers with an interest in applying electrochemical impedance techniques to study a broad variety of electrochemical processes.

### **ECH 6905: Individual Work**

**Credits: 1-6    Max: 12                      Grading Scheme:** Letter

Individual engineering projects suitable for a nonthesis Master of Engineering degree.

### **ECH 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

### **ECH 6926: Graduate Seminar**

**Credits: 1    Max: 10            Grading Scheme: Letter**

**ECH 6937: Topics in Chemical Engineering I**

**Credits: 1-4    Max: 9            Grading Scheme: Letter**

Separations processes, reactor design, applied molecular and kinetic theory, thermodynamics, particulate systems. Properties of chemical substances, transport phenomena, non-Newtonian fluid dynamics, turbulence, applied mathematics, computer science, biochemical and electrochemical engineering.

**ECH 6939: Topics in Chemical Engineering III**

**Credits: 1-4    Max: 9            Grading Scheme: Letter**

**ECH 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ECH 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**ECH 7938: Advanced Special Chemical Engineering Topics for Doctoral Candidates**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**



**ECH 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ECH 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****ECO 5715: Open Economy Macroeconomics****Credits: 2****Grading Scheme: Letter**

*Prerequisite:* ECP 5702. Designed primarily for M.B.A. students.

International linkages arising from capital flows and exchange rates as well as comparison on macroeconomic policies and performance across countries. Effect of macroeconomic events on international business environment.

**ECO 6075: Economics/Consumer Education****Credits: 3****Grading Scheme: Letter**

Objectives, content, resource materials, and methods of teaching economic/consumer education in the elementary and secondary schools.

**ECO 6407: Game Theory and Competitive Strategy: Theory and Cases**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Designed primarily for M.B.A. students.

Analysis of business problems with small number of decision makers. Oligopoly competition and coordination, entry deterrence reputation, and other problems. Problems and cases to illustrate principles using strategic analysis.

#### **ECO 6409: Game Theory Applied to Business Decisions**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ECP 5702 or equivalent. Designed primarily for MBA students.

Business settings analyzed wherein a few decision makers profoundly affect one another's well being. Oligopoly competition and coordination, nonprice choices, entry deterrence, reputation formation, contract design, and management of work teams.

#### **ECO 6716: International Macroeconomics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ECP 5705. Designed primarily for M.B.A. students. Not designed for doctoral students in economics.

Macroeconomic policies and their effects on the international business environment.

#### **ECO 6906: Individual Work in Economics**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

#### **ECO 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

#### **ECO 6936: Special Topics**

**Credits: 1-4    Max: 16                    Grading Scheme: Letter**

**ECO 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**ECO 6957: International Studies in Economics**

**Credits: 1-4    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and permission of department.

**ECO 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ECO 7113: Information Economics**

**Credits: 1-2    Max: 2                    Grading Scheme: Letter**

*Prerequisite:* ECO 7115 and ECO 7408.    *Corequisite:* ECO 7404.

Analysis of information problems, remedies through contracting or adoption of different procedures and organization when complete contracting is infeasible.

**ECO 7115: Microeconomic Theory**

**Credits: 3                    Grading Scheme: Letter**

*Corequisite:* ECO 7408 or equivalent.

Analysis of optimization applied to consumer and product theory including comparative statistics and duality.

### **ECO 7118: Markets and Institutions**

**Credits: 1-2    Max: 2            Grading Scheme:** Letter

Partial equilibrium analysis of four basic market structures: competition, monopoly (monopsony), oligopoly, and monopolistic competition. Topics include pricing strategies, vertical integration, and bilateral monopoly. Examination of policy implications.

### **ECO 7119: Information, Incentives, and Agency Theory**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* ECO 7115.

Recent theoretical work in literature on design of incentive schemes in presence of limited information. Mathematical modeling and proof techniques emphasized.

### **ECO 7120: General Equilibrium and Welfare Economics**

**Credits: 1-2    Max: 2            Grading Scheme:** Letter

*Prerequisite:* ECO 7115.    *Corequisite:* ECO 7406.

Introduction to general equilibrium analysis, including existence of equilibrium, core convergence, and fundamental theorems of welfare economics.

### **ECO 7206: Macroeconomic Theory I**

**Credits: 3                    Grading Scheme:** Letter

*Coreq:* ECO 7115, ECO 7408. Classical, Keynesian, and new classical aggregate income and employment analysis. Demand for money. Inflation and unemployment. Monetary policy and stabilization. Time series and rational expectations models.

### **ECO 7272: Economic Growth I**

**Credits: 1 or 2                      Grading Scheme: Letter**

*Prerequisite:* ECO 7115 and ECO 7415.    *Corequisite:* ECO 7406.

Introduction and overview of theoretical and empirical developments in determinants of long-run standards of living.

### **ECO 7404: Game Theory for Economists**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* ECO 7115 and ECO 7408.

Introduction to modern game theory as used in economics. Emphasis on use of techniques in simple applications.

### **ECO 7405: Mathematical Economics: Game Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ECO 7404 and ECO 7408 or consent of instructor.

Advanced game theory including incomplete information games with application to economics.

### **ECO 7406: Dynamic Economics: Theory and Applications**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* ECO 7115 and ECO 7408.

Review of techniques and applications of dynamic optimization and growth with introduction to modern dynamic techniques to analyze growth, resource management, stabilization policy, capital accumulation, asset pricing, search behavior, and incentive contracting.

### **ECO 7408: Mathematical Methods and Applications to Economics**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

Mathematical techniques used in graduate work in economics and finance. Linear algebra and differential equations, with emphasis on results used in economic theory and econometrics.

**ECO 7415: Statistical Methods in Economics**

**Credits: 3**                      **Grading Scheme:** Letter

*Coreq:* ECO 7408. Introduction to fundamental statistical concepts: estimation, hypothesis testing, linear regression, and analysis of variance.

**ECO 7424: Econometric Models and Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 7415.

Introduction to classical econometric theory, linear models, and estimation methods.

**ECO 7426: Econometric Methods I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 7424 or departmental approval.

Stochastic models. The general linear model and problems associated with its use in econometric research. Theory of the simultaneous equation approach, model construction, and estimation techniques.

**ECO 7427: Econometric Methods II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ECO 7424 or AEB 7571.

Advanced econometric theory with applications to topics such as nonlinear estimation, limited dependent variable models, time-series analysis, and specification testing.

### **ECO 7452: Best Empirical Practices in Economics**

**Credits: 1-2    Max: 2                    Grading Scheme: Letter**

Analysis of empirical papers to develop skills for evaluating and conducting empirical testing of economic theory.

### **ECO 7516: Tax Theory and Public Policy**

**Credits: 1-2    Max: 2                    Grading Scheme: Letter**

*Prerequisite:* ECO 7525.

Survey of economics of taxation. Optimal commodity and income taxation for efficiency and redistribution, tax incidence, capital taxation, and uncertainty and taxes.

### **ECO 7525: Welfare Economics and The Second Best**

**Credits: 1-2                                Grading Scheme: Letter**

*Prerequisite:* ECO 7115

Introduction and overview of public sector economics. Basic welfare economics, optimal commodity and income taxation, and public goods and welfare.

### **ECO 7534: Empirical Public Economics I**

**Credits: 1-2    Max: 2                    Grading Scheme: Letter**

*Prerequisite:* ECO 7424 and 7525.

Taxation, expenditures, marketplace of local governments, federalism and sources of inefficiency in government, voter turnout.

### **ECO 7535: Empirical Public Economics II**

**Credits: 1-2    Max: 2            Grading Scheme: Letter**

Education, welfare policy, health policy, and environmental policy.

**ECO 7536: Theoretical Public Economics**

**Credits: 1-2    Max: 2            Grading Scheme: Letter**

*Prerequisite:* ECO 7115.

The course is concerned primarily with public goods and their provision.

**ECO 7706: Theory of International Trade**

**Credits: 3                    Grading Scheme: Letter**

Historical and economic background of foreign trade; theory of international trade; fundamentals of international exchange; international commercial policies and international trade; exchange fluctuations and their control; international monetary institutions.

**ECO 7707: International Economic Relations**

**Credits: 3                    Grading Scheme: Letter**

International trade and income distribution, international technology diffusion, foreign direct investment and multinational enterprise, formation and reform of trade and investment policy.

**ECO 7925: Research Skills Workshop**

**Credits: 3                    Grading Scheme: S/U**

*Prerequisite:* passed written qualifying exams.

Transition from learning about work of others to doing research. Selecting area of research, surveying literature,



narrowing to specific topic, formulating model, collecting data if appropriate, working through theoretical or empirical analysis, and writing first draft.

**ECO 7938: Advanced Economics Seminar**

**Credits: 1-4    Max: 8                    Grading Scheme: Letter**

*For advanced graduate students in economics. Student must have completed graduate core program and have preliminary dissertation topic.*

**ECO 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ECO 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**ECP 5415: Antitrust Policy and Managerial Decisions**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* ECP 5702. Designed primarily for M.B.A. students.

Overview of antitrust laws and review of their implementation. Examination of civil remedies available to injured persons. Evaluation of specific damage models.

**ECP 5702: Managerial Economics**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Designed primarily for M.B.A. students.

Microeconomic forces that influence decisions made by firms. Cost concepts, pricing strategies, capital investment, human resource management, innovation, and the influence of the competitive environment of firms.

#### **ECP 5705: Economics of Business Decisions**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Designed primarily for M.B.A. students.

Synthesis and application of microeconomic theory and related business administration principles to managerial decision making through a problem-solving orientation.

#### **ECP 6407: Economics for Managing Information for Electronic Commerce**

**Credits: 2                      Grading Scheme: Letter**

Special economic issues pertaining to commerce in information age. Questions relating to pricing of information services, protection of intellectual property, evaluation of information quality and accuracy, and design of markets to facilitate information flows.

#### **ECP 6417: Public Policy and Social Control**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Designed primarily for M.B.A. students.

Problems in developing and applying concepts of public interest in a market economy. Relationships among industrial structure, business conduct, and economic performance. Measurement of concentration and evaluation of performance.

#### **ECP 6701: Competitive Strategies in Expanding Markets**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ECP 5702; MBA and other master's students.

Identify and analyze strategies in expanding markets created by technological change and accelerated globalization.

### **ECP 6708: Cases in Competitive Strategy**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* ECO 6409. Designed for MBA students.

Current and recent cases to illustrate practical principles using strategic analysis. Class discussions of cases comprise first part; student presentations comprise second part. Practical business lessons from applying strategic methodology.

### **ECP 7407: Theory of Industrial Organization:Product Differentiation and Strategy**

**Credits: 1-2    Max: 2                      Grading Scheme:** Letter

*Prerequisite:* ECO 7115, ECO 7404, ECO 7118

Models of oligopoly with differentiated products, modern monopolistic competition models, and strategic moves in oligopoly.

### **ECP 7408: Empirical Industrial Organization**

**Credits: 1-2    Max: 2                      Grading Scheme:** Letter

*Prerequisite:* ECO 7424 required; ECO 7426 recommended or consent of instructor.

Empirical examination of current issues. Returns to scale, market structure, entry and exit, technological progress, and examination of particular regulated industries.

### **ECP 7418: Economics of Regulation**

**Credits: 1-2    Max: 2                      Grading Scheme:** Letter

Theory and practice of regulatory institutions, with focus on pricing and incentive issues. Analysis of alternatives to traditional regulatory policy.

**ECP 7419: Current Research in Regulation**

**Credits: 1-2    Max: 2            Grading Scheme: Letter**

Explores current research topics in regulation. Emphasizes energy, environment, telecommunications, and water, with an objective of preparing students to contribute to this research.

**EDA 5938: Special Topics**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

Explores current topics of special interest.

**EDA 6061: Educational Organization and Administration**

**Credits: 3                    Grading Scheme: Letter**

Basic concepts and practices in local, state, and federal organizations and administration.

**EDA 6107: Leading Change in Educational Organizations**

**Credits: 3                    Grading Scheme: Letter**

Organizational dynamics, and leadership theory and practice, and their roles in promoting successful change.

**EDA 6192: Educational Leadership: The Individual**

**Credits: 3                    Grading Scheme: Letter**

The individual as a leader and the role of educational leaders in group development.

**EDA 6193: Educational Leadership: Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

Examination and analysis of role in curriculum change and school improvement.

**EDA 6195: Educational Policy Development**

**Credits: 3**                      **Grading Scheme:** Letter

Contemporary research on political power in policy decision making and role of educational leaders in policy development.

**EDA 6215: Communications in Educational Leadership**

**Credits: 3**                      **Grading Scheme:** Letter

School/community relations and communication implications for educational leaders.

**EDA 6222: Administration of School Personnel**

**Credits: 3**                      **Grading Scheme:** Letter

Problems of the professional school staff and administration of staff personnel in public schools.

**EDA 6225: Labor Relations in Public Education**

**Credits: 3                      Grading Scheme: Letter**

Various aspects of employee, union, and management relationships in public education.

**EDA 6232: Public School Law**

**Credits: 3                      Grading Scheme: Letter**

The law as it affects public school operation in America. Religion; desegregation; compulsory attendance; torts; curriculum; student control and discipline; and teacher freedoms, employment, and dismissal.

**EDA 6242: Public School Finance**

**Credits: 3                      Grading Scheme: Letter**

State, local, and federal financing of education.

**EDA 6271: Technology Leadership for Educational Administrators**

**Credits: 3                      Grading Scheme: Letter**

Application of computer technology to leadership and management of educational enterprise.

**EDA 6423: Data-Driven Decision Making in Educational Organizations**

**Credits: 3                      Grading Scheme: Letter**

Analytical and leadership issues related to conducting data-driven decision making in a professional, legal, ethical, and methodologically sound manner.

### **EDA 6503: The Principalship**

**Credits: 3                      Grading Scheme: Letter**

Organization and administration of the school; emphasis on competencies necessary for leadership and management of the school center, both elementary and secondary.

### **EDA 6905: Individual Work**

**Credits: 1-6    Max: 12 including EDG 6905                      Grading Scheme: Letter**

*Prerequisite:* students must have approval of proposed project before registering.

For advanced students who wish to study individual problems under faculty guidance.

### **EDA 6931: Special Topics**

**Credits: 1-5    Max: 10                      Grading Scheme: Letter**

### **EDA 6935: Problems in School Administration and Supervision**

**Credits: 1-15    Max: 15                      Grading Scheme: S/U**

In-service training through regularly scheduled on-campus work conferences open only to superintendents and supervisors; or a problems course, offered through extension or on campus, for superintendents, supervisors, principals, junior college administrators, and trainees for such positions.

### **EDA 6948: Supervised Practice in School Administration**

**Credits: 1-15    Max: 15                      Grading Scheme: S/U**

*Prerequisite:* open only to advanced students.

Opportunity to perform administrative duties under supervision.

**EDA 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**EDA 7206: Organizational Leadership in Education**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* EDA 6192.

Developing concepts and refining skills associated with planning and organizing in educational institutions.

**EDA 7945: Practicum in Supervision and Administration**

**Credits: 1-15    Max: 15**

**Grading Scheme: S/U**

A seminar and an internship in administration and supervision.

**EDA 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EDA 7980: Research for Doctoral Dissertation**



**Credits: 1-15**

**Grading Scheme: S/U**

**EDA 7985: Research Design in Educational Administration**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* EDF 7486 or equivalent. Open only to advanced graduate students.

Conceptualizing problems in administration and determining appropriate research procedures.

**EDE 5940: Integrated Teaching and Learning**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* admission to the master's certification program in elementary education plus 15 credits, EDF 6113, and RED 5316 or RED 5355.

Student interns develop general pedagogical competencies and skills necessary to successful teachers.

**EDE 6225: Practices in Childhood Education**

**Credits: 3**

**Grading Scheme: Letter**

*Corequisite:* EDE 6948.

Elementary school practices related to the fundamental principles of curriculum development; selecting, organizing, and developing effective teaching-learning situations.

**EDE 6266: Teaching and Learning in Elementary Classrooms**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* admission to the master's certification program in elementary education.

Introduction to the program.

**EDE 6325: Teacher Inquiry/Action Research**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EDE 6948.

Purpose, goals, and processes of teacher inquiry and application of this methodology in the classroom.

**EDE 6905: Individual Work**

**Credits: 1-5    Max: 12 including ESE 6905                      Grading Scheme:** Letter

For advanced students who wish to study individual problems in childhood education and/or early childhood education under faculty guidance.

**EDE 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

**EDE 6932: Special Topics**

**Credits: 1-5    Max: 10                      Grading Scheme:** Letter

*Prerequisite:* consent of department chair.

**EDE 6948: Internship in Elementary Schools**

**Credits: 3-12    Max: 12                      Grading Scheme:** Letter

*Prerequisite:* consent of the department.    *Corequisite:* EDE 6225.

Supervised teaching in elementary grades K-6.

## EDE 7047: Issues in Teacher Education

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Current issues and theory in teacher education and teacher education reform.

## EDE 7935: Seminar in Curriculum & Instruction

**Credits: 1-6    Max: 6    Grading Scheme: Letter**

Current research and an overview of the total program.

## EDF 5441: Assessment in General and Exceptional Student Education

**Credits: 3**      **Grading Scheme: Letter**

*Prerequisite:* STA 3122.

Basic measurement concepts, designing classroom assessments, and interpreting results from traditional or alternative assessments; using these to plan instruction and evaluate student performance.

## EDF 5552: Role of School in Democratic Society

**Credits: 3**                      **Grading Scheme: Letter**

Common conceptions of democracy, equality, freedom, liberty, and equality and what these conceptions imply for educational aims and practice.

## EDF 6113: Educational Psychology: Human Development

**Credits: 3**                      **Grading Scheme: Letter**

Current research and theories in the area of human development.

**EDF 6211: Educational Psychology: General**

**Credits: 3**                      **Grading Scheme:** Letter

Basic principles, techniques, and research; designed for graduate students preparing to teach who have a minimal background in psychology.

**EDF 6215: Educational Psychology: Learning Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Logic and methodologies of theories of learning.

**EDF 6232: Principles of Learning and Instructional Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Topics include transfer of training, reinforcement, forgetting, and problem solving.

**EDF 6400: Quantitative Foundations of Education Research Overview**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023, STA 2122 or equivalent.

Overview of quantitative methods: validity, reliability, research design, and inferential statistics.

**EDF 6401: Educational Statistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023. Primarily for Ed.D. candidates.

Application to educational data and problems.

#### **EDF 6402: Quantitative Foundations in Educational Research: Inferential Statistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6400.

Analysis of variance: One-way ANOVA, two-way ANOVA, ANOVA, repeated measures, and split plot.

#### **EDF 6403: Quantitative Foundations of Educational Research**

**Credits: 6**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023, 2122, or equivalent.

Integrated coverage of fundamentals in the general field of education research. Includes statistics, experimental design, and data processing.

#### **EDF 6434: Educational Measurement**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate statistics course.

Overview of educational measurement and testing, emphasizing cognitive ability and achievement testing.

#### **EDF 6436: Theory of Measurement**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023; EDF 4430.

Introductory study of true score models, reliability, validity, norms, scaling, item analysis, and basic elements of instrument construction.

### **EDF 6464: Reading and Designing Qualitative Research**

**Credits: 3**

**Grading Scheme:** Letter

Introduces students to basic concepts and theories in qualitative research to enable them to design and conduct qualitative studies. Examples of different types of qualitative research designs and approaches are analyzed in relation to specific evaluative criteria.

### **EDF 6471: Survey Design and Analysis in Educational Research**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* EDF 6403.

Development and analysis techniques for surveys and questionnaires. Techniques of protocol development, data collection, analysis, and reporting.

### **EDF 6475: Qualitative Foundations of Educational Research**

**Credits: 4**

**Grading Scheme:** Letter

Introduction to philosophical, historical, sociological, and other methodologies as aspects of qualitative educational research.

### **EDF 6481: Quantitative Research Methods in Education**

**Credits: 4**

**Grading Scheme:** Letter

*Prerequisite:* STA 2023, 2122 or equivalent.

Design and data analysis for educational research.

### **EDF 6520: History of Education**

**Credits: 3                      Grading Scheme: Letter**

Salient issues in education from the Reformation to the present.

**EDF 6544: Philosophical Foundations of Education**

**Credits: 3                      Grading Scheme: Letter**

Philosophical bases for democracy and education.

**EDF 6606: Socioeconomic Foundations of Education**

**Credits: 3                      Grading Scheme: Letter**

Sociological analysis of democratic educational aims, the school as a social system, interest groups, the teaching profession, and economic stratification in America.

**EDF 6616: Education and American Culture**

**Credits: 3                      Grading Scheme: Letter**

Graduate-level introduction to the social foundations of education (history, philosophy, and sociology).

**EDF 6630: Educational Sociology**

**Credits: 3                      Grading Scheme: Letter**

Sociological theory and research with direct relevance to the study of education.

**EDF 6812: Comparative Education**

**Credits: 3                      Grading Scheme: Letter**

Relationships of school and society in different cultural areas of the world.

**EDF 6820: Education in Latin America**

**Credits: 3                      Grading Scheme: Letter**

Traditions and contemporary social, political, and cultural aspects.

**EDF 6905: Individual Study**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* consent of department chair.

For advanced students who wish to study individual problems in psychological, social, or philosophical foundations of education, or research and measurement under faculty guidance.

**EDF 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* consent of department chair.

**EDF 6938: Special Topics**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* consent of department chair.



**EDF 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of department chair.

**EDF 6941: Practicum in Educational Research**

**Credits: 2-9    Max: 9            Grading Scheme: Letter**

*Prerequisite:* EDF 6403. Arrangements must be made with instructor before registration.

Experience in conducting various phases of quantitative or qualitative educational research under individual supervision.

**EDF 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EDF 7117: Affective Development and Education**

**Credits: 3            Grading Scheme: Letter**

*Prerequisite:* EDF 6113 or equivalent.

Application of theory and research.

**EDF 7405: Advanced Quantitative Foundations of Educational Research**

**Credits: 4    Max: 8            Grading Scheme: Letter**

*Prerequisite:* EDF 6403.

Integrated coverage of important approaches to educational research. Includes application of experimental design, regression analysis, and computer processing to selected educational research problems.

### **EDF 7412: Structural Equation Models**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6436, EDF 7405.

Confirmatory factor analysis and causal models.

### **EDF 7413: Advanced Topics in Structural Equation Modeling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 7412

Methods for conducting methodological research about structural equation modeling (SEM) and advanced techniques in SEM: multilevel SEM, mixture models, latent variable interactions, advanced latent growth models and SEM with complex survey data.

### **EDF 7435: Rating Scale Design and Analysis in Educational Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6403 and EDF 6434 or EDF 6436.

Development and analysis techniques for questionnaires and rating scales. Applications of psychometric models to item, scale, and rater evaluation; bias detection; factor analysis; and measurement of change.

### **EDF 7439: Item Response Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6436.

Psychometric models for test scores; estimation of ability and item parameters; applications of and current issues in IRT.

### **EDF 7474: Multilevel Models**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6403 or EDF 6481 and EDF 7405.

Models and methods for analysis of multilevel data.

### **EDF 7479: Qualitative Data Analysis: Approaches and Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6475.

Theories, approaches, and techniques of qualitative data analysis.

### **EDF 7482: Quasi-experimental Design and Analysis in Educational Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 7405 : Advanced Quantitative Foundations of Educational Research

Examining quasi-experimental educational research designs and methods for data analysis for treatment comparisons that do not use random assignment of participants to conditions. Topics include matched designs, regression discontinuity designs, and control of selection bias using propensity scores, instrumental variables, and fixed effects.

### **EDF 7483: Qualitative Data Collection: Approaches and Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6475.

### **EDF 7486: Methods of Educational Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023. Primarily for Ed.D. candidates.

Examination of research methodologies. Problem identification as well as organization and presentation of data.

### **EDF 7491: Evaluation of Educational Products and Systems**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EDF 6403 or equivalent.

Models and methods for formative and summative evaluation of educational products and programs.

### **EDF 7555: Values and Ethics in Education**

**Credits: 3                      Grading Scheme:** Letter

The conception and role of values in education, with special emphasis on moral values (ethics).

### **EDF 7639: Research in Educational Sociology**

**Credits: 3                      Grading Scheme:** Letter

Research techniques in educational sociology, emphasis on ethnography.

### **EDF 7931: Seminar in Educational Research**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

*Prerequisite:* EDF 6403.

In-depth examination of specific methodological approaches to educational research.

### **EDF 7932: Multivariate Analysis in Educational Research**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EDF 6403 and EDF 7405.

Review of selected studies, focusing on methods of data analysis. Emphasis on using multivariate techniques.

**EDF 7934: Seminar in Educational Foundations**

**Credits: 3    Max: 12            Grading Scheme: Letter**

Advanced study in historical, philosophical, social, and comparative foundations.

**EDF 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EDF 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**EDG 5666: Knowing and Learning in STEM**

**Credits: 3                    Grading Scheme: Letter**

Examining theoretical bases for the processes of knowing and learning in STEM disciplines (science, technology, engineering, and mathematics), supporting development of appropriate instructional strategies. Topics include knowledge and memory structure, early learning foundations, problem solving, reasoning, regulatory processes, representation, and how symbolic thinking emerges from the learner's community.

**EDG 6017: Writing for Academic Purposes**

**Credits: 3**

**Grading Scheme:** Letter

Enhancing the capacity of doctoral students from all academic disciplines to write for academic purposes. Focusing on exploring the ways in which language is used as a creative resource for presenting information, structuring text, embedding perspectives, developing arguments, referencing sources, and addressing audience needs in academic writing.

**EDG 6047: Teacher Leadership for Educational Change**

**Credits: 3**

**Grading Scheme:** Letter

Understanding teachers' roles in the educational change and improvement process.

**EDG 6207: Transforming the Curriculum**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* EDE 6325.

Design more rigorous and engaging curriculum leading to increased student understanding and mastery of subject matter. Examine different ways of assessment.

**EDG 6225: Global Studies Methods in K-12 Education**

**Credits: 3**

**Grading Scheme:** Letter

Overview of current issues and strategies for incorporating them into the K-12 curriculum. Intended for non-education majors.

**EDG 6226: Foundations of Research in Curriculum & Instruction**

**Credits: 3**

**Grading Scheme:** Letter

Introduction to research in curriculum and instruction, scholars in the field, and expectations of the professoriate. Students will explore Boyer's domains of scholarship that serve as a framework for STL doctoral programs.

#### **EDG 6250: The School Curriculum**

**Credits: 3**                      **Grading Scheme:** Letter

*Required in all graduate programs in curriculum and instruction.* Theoretical and research bases underlying the development of the total school program from kindergarten through community college. Basic curriculum course for graduate students.

#### **EDG 6285: Evaluation in the School Program**

**Credits: 3**                      **Grading Scheme:** Letter

Procedures and techniques of evaluation in school programs. Emphasizes needs assessment, school self-study, and course evaluation.

#### **EDG 6348: Instructional Coaching for Enhanced Student Learning**

**Credits: 3**                      **Grading Scheme:** Letter

This course is designed as a graduate study of instructional coaching, a form of job-embedded professional development focused on improving teaching practice in order to improve student learning. It is designed for educators at all levels and in all roles.

#### **EDG 6356: Teaching, Learning and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

Historical and in-depth exploration of assessment practices related to curricular issues.

### **EDG 6378: Learning Science with Technology**

**Credits: 3**                      **Grading Scheme:** Letter

Studies the integration of technology into the learning and teaching of science in grades 7-12. The course addresses the use of a broad range of technology to investigate theoretical principles and models of learning and teaching, available tools, practical applications, and relevant literature.

### **EDG 6415: Culturally Responsive Classroom Management**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the role culture plays in teaching and learning. Explores what is needed to establish a culturally responsive classroom in which all students can succeed.

### **EDG 6445: Meeting the Educational Needs of Students Living in Poverty**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDE 6325 Teacher Inquiry/Action Research

Enhancing knowledge of the impact of poverty on children, and improve their instructional and management strategies to better meet the needs of children living in poverty.

### **EDG 6905: Individual Work**

**Credits: 1-6**    **Max: 12 including EDA 6905**                      **Grading Scheme:** Letter

*Prerequisite:* student must have approval of proposed project before registering.

For advanced students who wish to study individual problems under faculty guidance.

### **EDG 6910: Supervised Research**



**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**EDG 6931: Special Topics**

**Credits: 1-4    Max: 12 including EDA 6905                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**EDG 6940: Supervised Teaching**

**Credits: 1    Max: 2                    Grading Scheme: S/U**

*Prerequisite:* adviser's consent.

For graduate students serving as teaching assistants under the supervision of a faculty member.

**EDG 6953: TLSI Online Portfolio Preparation**

**Credits: 1-3    Max: 3                    Grading Scheme: Letter**

*Prerequisite:* EDE 6325.

Development of portfolio artifacts. Preparation for defense of program portfolio.

**EDG 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**EDG 6973: Project in Lieu of Thesis**

**Credits: 1-9                    Grading Scheme: S/U**

Developing, testing, and evaluating original educational technology, curricular materials, or an intervention program.

**EDG 7222: Curriculum: Theory and Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDG 6250.

Theories of curriculum organization and a survey of curriculum research and patterns of curriculum.

**EDG 7224: Critical Pedagogy**

**Credits: 3**                      **Grading Scheme:** Letter

Core concepts and practice of critical educational theory.

**EDG 7252: Perspectives in Curriculum, Teaching, and Teacher Education**

**Credits: 3**                      **Grading Scheme:** Letter

Issues related to curriculum, teaching, and teacher education.

**EDG 7303: Teacher Learning and Socialization in High Poverty Schools**

**Credits: 3**                      **Grading Scheme:** Letter

Explores theory and research related to teacher learning, focusing on high-poverty schools.

**EDG 7326: Differentiated Supervision and Teacher Professional Development**

**Credits: 3                      Grading Scheme: Letter**

Study of teacher professional development and supervision at both the theoretical and practical levels.

**EDG 7359: Professional Development and Teacher Learning**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EDG 6226 : Foundations and Research in Curriculum & Instruction

Examining teacher learning within professional development, the essential elements of high quality professional development, how to measure the impact of professional development, and multiple ways in which professional development is being played out in the district, state, and national contexts.

**EDG 7665: Bases of Curriculum and Instruction Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EDG 6250 or equivalent.

Applies behavioral science theory and research to the development of curriculum and instruction theory. Topics include social forces, human development, and learning theories.

**EDG 7941: Field Experience in Curriculum and Instruction**

**Credits: 1-4    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* open only to advanced graduate students.

Supervised experiences appropriate to the student's professional goals.

**EDG 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the

field of study or students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EDG 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**EDG 7982: Practitioner Research: Theory & Practice**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Intended for doctoral students.

Develops a strong theoretical understanding of the purposes of practitioner inquiry, as a form of educator professional development, while helping students to translate this knowledge into practices that support school improvement.

**EDH 6040: Theory of College Student Development**

**Credits: 3**                      **Grading Scheme: Letter**

Examination of theories describing patterns of growth and development during college years.

**EDH 6046: Diversity Issues in Higher Education**

**Credits: 3**                      **Grading Scheme: Letter**

Models, theories, and skills for understanding multicultural students at the postsecondary level.

**EDH 6049: Domestic and International College Student Services**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of higher education student services in the United States and international institutions.

**EDH 6051: Educational Outcomes of American Colleges and Universities**

**Credits: 3**                      **Grading Scheme:** Letter

Exploration of impact of postsecondary educational institutions and barriers to student development.

**EDH 6053: The Community Junior College in America**

**Credits: 3**                      **Grading Scheme:** Letter

Programs, issues, and problems.

**EDH 6066: American Higher Education**

**Credits: 3**                      **Grading Scheme:** Letter

History, philosophy, and policies, with emphasis on current practices and problems.

**EDH 6067: Seminar: International Higher Education**

**Credits: 3**                      **Grading Scheme:** Letter

Characteristics of selected foreign higher education systems with emphasis on history and philosophy, access, curriculum and instruction, student and faculty characteristics, governance, management, and finance.

**EDH 6305: College and University Teaching**

**Credits: 3**                      **Grading Scheme:** Letter

Contemporary issues, problems, and research related to the role of the college faculty member and the teaching-learning process.

**EDH 6360: Foundations and Functions of College Student Personnel**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to history, roles, and functions.

**EDH 6361: Theories and Assessment of Higher Educational Environments**

**Credits: 3**                      **Grading Scheme:** Letter

Examines theoretical approaches that define and describe various elements of higher educational environments.

**EDH 6503: Resource Development in Higher Education**

**Credits: 3**                      **Grading Scheme:** Letter

Exploration of financial resource development in higher education institutions and organizations.

**EDH 6632: Current Issues in Community College Leadership**

**Credits: 3**                      **Grading Scheme:** Letter

Case-based approach to examining current issues on community college campuses.

**EDH 6637: Crisis Management in Higher Education**

**Credits: 3                      Grading Scheme:** Letter

Introduction to real crisis situations. Students form emergency plans based on different crisis response models.

**EDH 6931: Special Topics in Higher Education**

**Credits: 1-3    Max: 10                      Grading Scheme:** Letter

**EDH 6935: Seminar in College Student Personnel Administration**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Culminating seminar integrating core curriculum and practitioner experience.

**EDH 6945: Practicum in College Teaching I**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* prior arrangements must be made with the coordinating professor of the College of Education.

Provision made for the student to teach under the supervision of a professor at either the community college, four-year college, or university level. Seminars cover topics related to improvement of college teaching.

**EDH 6946: Practicum in College Teaching II**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* prior arrangements must be made with the coordinating professor of the College of Education.

Provision made for the student to teach under the supervision of a professor at either the community college, four-year college, or university level. Seminars cover topics related to improvement of college teaching.

**EDH 6947: Practicum in Student Personnel**

**Credits: 3    Max: 6            Grading Scheme: S/U**

*Prerequisite:* adviser's consent, and written application to practicum coordinator.

**EDH 7225: Seminar: Curriculum in Higher Education**

**Credits: 3                    Grading Scheme: Letter**

Issues and problems in college and university curricula. Curriculum planning, implementation, and evaluation.

**EDH 7405: The Law and Higher Education**

**Credits: 3                    Grading Scheme: Letter**

The legal structure of higher education, religion, academic freedom of faculty, employment, due process, students' rights of speech and expression, search and seizure, desegregation, and tort liability.

**EDH 7505: The Financing of Higher Education**

**Credits: 3                    Grading Scheme: Letter**

Junior college through university. Theoretical basis for use of tax funds for education, student fees and tuition, state methods for financing, planning, cost benefit, budgeting, federal role, and capital outlay.

**EDH 7631: Administration of Instruction in Higher Education**



**Credits: 3                      Grading Scheme: Letter**

Skills and knowledge for current and future college leaders.

**EDH 7634: Student Affairs Administration in Higher Education**

**Credits: 3                      Grading Scheme: Letter**

Major issues. Purposes, structure, program evaluation, and budgeting.

**EDH 7635: Higher Education Administration**

**Credits: 3                      Grading Scheme: Letter**

Educational policies, functions, and practices.

**EDH 7916: Contemporary Research on Higher Education**

**Credits: 3                      Grading Scheme: Letter**

Examination and analysis of research related to higher education. Implications for application of findings for improvement of colleges and universities.

**EDH 7942: Group Supervision in Student Personnel**

**Credits: 1    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* written application to internship coordinator before registration.

**EDH 7948: Internship in Student Personnel**

**Credits: 5                      Grading Scheme: S/U**

*Prerequisite:* adviser's consent; and written application to internship coordinator before registration.

**EDM 6005: The Emergent Middle School**

**Credits: 3                      Grading Scheme: Letter**

Program, organization, and rationale of the newly emerging middle school in American school districts.

**EDM 6235: Interdisciplinary Planning, Teaching, and Assessment**

**Credits: 3                      Grading Scheme: Letter**

Interdisciplinary team organization, integrated curriculum, team planning, collaboration consultation, and strategies for assessment.

**EDP 6052: Cognitive Psychology Applied to Education**

**Credits: 3                      Grading Scheme: Letter**

Introduction to cognitive-psychological research and applications to education.

**EDS 6140: Supervision of Instruction**

**Credits: 3                      Grading Scheme: Letter**

Systematic approaches to supervising instructional personnel including observation and programs of continuing professional development.

### **EEC 6205: Early Childhood Curriculum**

**Credits: 3                      Grading Scheme:** Letter

Students develop and/or implement instructional strategies consistent with their personal philosophies of early childhood education.

### **EEC 6304: Creativity in the Early Childhood Curriculum**

**Credits: 3                      Grading Scheme:** Letter

Techniques for teaching all areas of the early childhood curriculum to support the development of children's creativity with an emphasis on art and music.

### **EEC 6525: Issues in Child Care Administration**

**Credits: 3                      Grading Scheme:** Letter

Child care background, curriculum, organization, staffing, training of staff, parent education and involvement, funding, and research.

### **EEC 6615: Early Childhood Education: Background and Concepts**

**Credits: 3                      Grading Scheme:** Letter

Trends in the teaching of nursery and kindergarten children as shown in past and current educational theory.

### **EEC 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme:** Letter

*Prerequisite:* Consent of department chair, approval of proposed project, and completion of at least 9 hours of graduate work.

Individual study conducted under the supervision of a faculty member.

**EEC 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**EEC 6933: Special Topics**

**Credits: 1-12    Max: 12            Grading Scheme: Letter**

*Prerequisite:* Consent of instructor.

Selected topics in the theory and practice of early childhood education not included in the established curriculum.

**EEC 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**EEC 6946: Practicum in Early Childhood Education**

**Credits: 1-6    Max: 11            Grading Scheme: Letter**

Supervised experience in a variety of early childhood settings with weekly seminars.

**EEC 7056: Early Childhood Policy and Advocacy**

**Credits: 3            Grading Scheme: Letter**

*Prerequisite:* Intended for doctoral students only

Focuses on understanding, analyzing, and evaluating early childhood policies at federal, state, and local levels and internationally. Analyzes relationships among early childhood policies, research, and practices.

### **EEC 7617: Early Childhood Assessment & Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EDF 6400 and EDF 6402; or EDF 6403; or consent of instructor

Doctoral students will explore in depth the role of assessment and evaluation in research, practice, and policy as it relates to the field of early childhood studies.

### **EEC 7666: Theory and Research in Early Childhood Studies**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Intended for doctoral students; permission of instructor.

Reading, evaluating, synthesizing, and discussing early childhood theory and applied early childhood research. Discussions of commonly encountered issues related to the ethical conduct of research in applied contexts.

### **EEC 7979: Advanced Research**

**Credits: 1-12**    **Max: 12**                      **Grading Scheme:** S/U

*Prerequisite:* Designed for students with a masters' degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

Research for doctoral students before admission to candidacy.

### **EEE 5317C: Introduction to Power Electronics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3396, EEE 3308C.    *Corequisite:* EEL 4657.

Components and circuits for power applications. Switched-mode power supplies.

### **EEE 5320: Bipolar Analog IC Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3308C

Amplifier stages, active loads, output stages, op-amps, feedback, frequency response, compensation.

### **EEE 5322: VLSI Circuits and Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3396 and EEE 3308C

Introduction to VLSI circuit technology and manufacturing. Fabrication, device models, layout, parasitics, and simple gate circuits.

### **EEE 5354L: Semiconductor Device Fabrication Laboratory**

**Credits: 3**                      **Grading Scheme:** Letter

This course will be offering hands-on experience in semiconductor material characterization and device fabrication techniques.

### **EEE 5364: Fundamentals of Data Converters**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3308C or consent of instructor

Exploring different data conversion techniques with an emphasis on IC implementation. Discussion of circuit building blocks and the effects of their non-idealities in the overall system performance will be analyzed.

### **EEE 5400: Future of Microelectronics Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3396 or equivalent.

Survey of state-of-the-art microelectronics technology and prospects for future technologies. Nanoscale MOSFETs, strained Si, high-K gate dielectrics, carbon nanotubes, molecular electronics, and single-electron devices.

### **EEE 5405: Microelectronic Fabrication Technologies**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3396.

Principles of microelectronic device fabrication. Emphasis on fundamentals of microfabrication processing and microelectronic device process flows. Computerized process simulation.

### **EEE 5426: Introduction to Nanodevices**

**Credits: 3**                      **Grading Scheme:** Letter

Physical principles of modern solid-state devices and their applications; quantum mechanics; fundamentals of nanoelectronics.

### **EEE 5502: Foundations of Digital Signal Processing**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis and design of digital filters for discrete signal processing, spectral analysis, and fast Fourier transform.

### **EEE 5544: Noise in Linear Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Passage of electrical noise and signals through linear systems. Statistical representation of random signals, electrical noise, and spectra.

### **EEE 5556: Electronic Countermeasures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4516 or EEE 5544.

Analysis of electronic countermeasures for radar systems. Pulsed and spread spectrum detection; barrage, incoherent, and coherent jammers; burn through analysis; autocorrelation receiver structures.

### **EEE 6287: Brain Machine Interface Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 3135, EEE 5502

Overviewing the recent field of Brain Machine Interfaces and neurotechnology with an emphasis on the engineering aspects of the problem (signal processing, and neurotechnology). The student will have the opportunity to work with brain signals and develop and test algorithms for BMIs.

### **EEE 6321: MOS Analog IC Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5320 .

Design of analog circuits in CMOS IC technology. MOS switches, MOS op amp circuits, circuit simulation using SPICE.

### **EEE 6323: Advanced VLSI Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5322 .

Advanced very large scale integrated circuit design, testability, and performance evaluation. Use of industrial VLSI software. Building an advanced CMOS VLSI circuit.

### **EEE 6325: Computer Simulation of Integrated Circuits and Devices**

**Credits: 3**                      **Grading Scheme:** Letter



*Prerequisite:* graduate standing.

Basic methods of numerical simulation of semiconductor devices and electronic circuits with reference to PISCES and SPICE. PDE discretization; numerical integration, Newton/iterative linearization, linearized system solution.

### **EEE 6328C: Microwave IC Design**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamentals of microwave integrated circuit design. Use of computer software to design simple microwave circuits. Microwave circuit testing.

### **EEE 6374: Radio Frequency (RF) Integrated Circuits and Technologies**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 4306C, EEE 5322 .

Requirements for RF integrated circuits. Design and implementation. Interdependence of RF circuit performance with devices, parasitics, packages, and process technology.

### **EEE 6382: Semiconductor Physical Electronics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 4420, EEE 5426 .

Crystal structure and symmetry, carrier statistics, lattice dynamics, energy band theory, equilibrium properties of semiconductors, recombination-generation and trapping processes, electronic transport phenomena, scattering mechanisms, and optical properties.

### **EEE 6390: VLSI Device Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 4420, EEE 5426 , EEE 5400 .

Criteria and tradeoffs in designing high-performance semiconductor devices in scaled (VLSI) Si-based integrated-circuit technologies.

### **EEE 6397: Semiconductor Device Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 4420, EEE 5426 .

Semiconductor device physics, equilibrium and non-equilibrium processes, pn junctions, BJT operation, charge-control modeling, and high-current and heavy-doping effects.

### **EEE 6402: Nonclassical Si-Based Nanoscale CMOS Devices**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 6390 , EEE 6397 .

Physics underlying novel devices for extreme CMOS scaling. Unique effects in fully depleted SOI MOSFETS, multi-gate MOSFETS, FinFETS. Simulation-based project using a physics/process-based compact model for double-gate FETs.

### **EEE 6428: Computational Nanoelectronics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 4420/ EEE 5426 or EEL4329/ EEL 5400.

Using nanotechnology simulation tools to study nanoscale devices; band structure, transport; molecular transistors, nanowires, nanotransistors, and quantum dots.

### **EEE 6431: Carbon Nanotubes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5400.

Basic semiconductor and solid-state physics of carbon nanotubes, nanotube geometrical and electronic structure, and current nanotube research.

### **EEE 6460: Advanced Microsystem Technology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEL 5225.

Advanced micro-fabrication technologies, micro-system design, interface circuits, and MEMS packaging. CMOS, Optical, and RF MEMS.

### **EEE 6465: Design of MEMS Transducers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEL 5225, and EEL 4331 or EEL 5331.

Design of MEMS transducer systems with physical, technological and economic constraints.

### **EEE 6503: Digital Filtering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* analysis and design of digital filters.

Introduction to number transforms, complexity of algorithms, and finite fields. Development of transforms and digital filter using algebraic operators and finite fields plus the technological consideration of DSP system and system integration.

### **EEE 6504: Adaptive Signal Processing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEE 5502 , EEE 5544.

Theory of adaptation with stationary signals; performance measures. LMS, RLS algorithms. Implementation issues and applications.

### **EEE 6512: Image Processing and Computer Vision**

**Credits: 3                      Grading Scheme: Letter**

Pictorial data representation; feature encoding; spatial filtering; image enhancement; image segmentation; cluster seeking; two-dimensional z-transforms; scene analysis; picture description language; object recognition; pictorial database; interactive graphics; picture understanding machine.

### **EEE 6586: Automatic Speech Processing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5502 .

Various models of speech production and perception. Operation of speech synthesizers. Discussion of speech recognition. Mathematical models of speech signals.

### **EEE 6715: Computational Aspects of Cyber-Physical Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5718 and graduate standing

Fundamental and practical issues in designing and analyzing cyber-physical systems including system design, middleware design, monitoring, scheduling, management and control issues in the full life-cycle of CPS design and implementation. Applications of CPS will be studied, including mobile computing, mobile social networks, smart grid, and cloud of things.

### **EEL 5182: State Variable Methods in Linear Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4657.

Linear algebra and state variable methods for design and analysis of discrete and continuous linear systems.

### **EEL 5225: Principles of Micro-Electro-Mechanical Transducers**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 3396 or consent of instructor.

Introduction to principles of micro-electro-mechanical devices and systems.

**EEL 5400: Airborne Sensors and Instrumentation**

**Credits: 3**                      **Grading Scheme:** Letter

Remote sensing problems formulated in terms of information extraction to decide what sensors and algorithms are needed for a given application.

**EEL 5401: Airborne Laser Scanning: Data Processing and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Acquisition, processing, and analysis of laser ranging data, utilizing it for several earth science applications.

**EEL 5441: Fundamentals of Photonics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 3396 and EEL 3472.

Review of electromagnetic fields and waves, energy bands in semiconductors, p-n junctions and optical properties of semiconductors. Fundamentals of optical modulators and switches, laser theory, laser characteristics, photodetectors, optical waveguides, and photonic applications.

**EEL 5447: Laser Theory and Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (EEL 4473 and EEL 4458) or consent of instructor.

Study of lasers from basic principles to operational characteristics.

### **EEL 5462: Advanced Antenna Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL3472

Electromagnetic field theory and its application to antenna design.

### **EEL 5490: Lightning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 3472.

Introduction to lightning discharge processes. Electromagnetics relevant to lightning measurements. Applications for determining lightning charge, current, location, and characteristics. Lightning protection.

### **EEL 5547: Introduction to Radar**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4516 or EEE 5544.

Basic principles of cw and pulsed radar; angle, range, and doppler tracking; accuracy and resolution; signal design.

### **EEL 5666C: Intelligent Machines Design Laboratory**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4744C.

Design simulation, fabrication, assembly, and testing of intelligent robotic machines.

### **EEL 5718: Computer Communications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4514.

Design of data communication networks: modems, terminals, error control, multiplexing, message switching, and data concentration.

### **EEL 5721: Reconfigurable Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL4712C or EEL 5764 or consent of instructor.

Fundamental concepts at introductory graduate level in reconfigurable computing based upon advanced technologies in field-programmable logic devices. Topics include general concepts, device architectures, design tools, metrics and kernels, system architectures, and application case studies.

### **EEL 5737: Principles of Computer System Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4712 or equivalent; EEL 3834 or equivalent. The project's programming component primarily uses a scripting language (Python) and requires basic understanding of data structures, algorithms, and Unix.

This class will be providing a broad introduction to the main principles and abstractions for engineering hardware and software systems, and in-depth studies of their use on computer systems across a variety of designs, be it in operating system, a client/server application, a database server, or a fault-tolerant disk cluster.

### **EEL 5764: Computer Architecture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 4713C, 4744C, or equivalents.

Fundamentals in design and quantitative analysis of modern computer architecture and systems, including instruction set architecture, basic and advanced pipelining, superscalar and VLIW instruction-level parallelism, memory hierarchy, storage, and interconnects.

### **EEL 5840: Elements of Machine Intelligence**

**Credits: 3**                      **Grading Scheme:** Letter

Engineering and hardware concepts pertaining to design of intelligent computer systems.

**EEL 5905: Individual Work**

**Credits: 1-4    Max: 6            Grading Scheme: Letter**

*Prerequisite:* consent of adviser.

Selected problems or projects.

**EEL 5934: Special Topics in Electrical Engineering**

**Credits: 1-3    Max: 8            Grading Scheme: Letter**

**EEL 6065: Electrical & Computer Engineering Technical Writing**

**Credits: 3                      Grading Scheme: Letter**

A specialized technical writing course for Electrical and Computer Engineering graduate students.

**EEL 6264: Advanced Electric Energy Systems I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Energy systems planning and operation with emphasis on advanced analysis methodologies and computer simulation.

**EEL 6265: Advanced Electric Energy Systems II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEL 6264.



Continuation of EEL 6264 with additional emphasis given to the new electric energy technologies.

### **EEL 6443: Integrated and Fiber Optics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5441.

Review of electromagnetic waves. Dielectric interfaces, propagation in graded-index media, slab waveguides, coupled waveguides, waveguide fabrication and characterization.

### **EEL 6486: Electromagnetic Field Theory and Applications I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate course in fields and waves.

Advanced electrostatics, magnetostatics, time-varying electromagnetic fields, wave propagation, waveguides.

### **EEL 6487: Electromagnetic Field Theory and Applications II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 6486.

Electromagnetic radiation, antennas, wave propagation in anisotropic media.

### **EEL 6507: Queuing Theory and Data Communications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5544.

Introduction to basic queuing models; performance analysis of multiple access protocols; error control strategies.

### **EEL 6509: Wireless Communication**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEE 5544.

Introduction. Satellite and cellular systems, propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

### **EEL 6528: Digital Communications with Software-defined Radios**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEL4514, EEL 3834, and (EEL 6535 or EEL 6509)

Basics of software-defined radios; Introduction to USRP radios and GNU Radio software platform; Practical communication algorithms and designs; Implementation of communication systems in USRP radios.

### **EEL 6532: Information Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEE 5544 or equivalent.

Applications of information theory to communications and other related areas.

### **EEL 6533: Statistical Decision Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEE 5544.

Hypothesis testing of signals in the presence of noise by Bayes, Neyman-Pearson, minimax criteria; estimation of signal parameters.

### **EEL 6535: Digital Communications**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEE 5544.

Digital modulation techniques; analysis of digital communication systems in presence of noise; optimum principles; synchronization; equalization.

### **EEL 6537: Spectral Estimation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5544, EEE 5502 .

Measurement and analysis of signals and noise. Digital filtering and spectral analysis; fast Fourier transform.

### **EEL 6550: Error Correction Coding**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 5544 or equivalent.      *Corequisite:* EEE 5544 or 4516.

Introduction to abstract algebra, block coding and decoding, convolutional coding and decoding, trellis coded modulation, and run-length-limited codes.

### **EEL 6555: Signal Processing for Active Sensing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 6537 or equivalent.

Theoretically developing an active sensing system by taking into account the probing waveform synthesis considerations under various spectrum restrictions, as well as the sophisticated receiver statistical and array signal processing methodologies to combat diverse adverse effects such as interference and jamming.

### **EEL 6588: Wireless Ad Hoc Networks**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5718, Graduate student standing.

Advanced research-oriented course covering various topics relevant to a cutting-edge technology, namely wireless ad hoc networks, mobile ad hoc networks, wireless sensor networks, and/or wireless mesh networks.

### **EEL 6591: Wireless Networks**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5718 and knowledge of probability and statistics.

Design and analysis of wireless networks including channel characteristics, physical layer, cellular concepts, multiple access control protocols, FEC and ARQ protocols, resource allocation, and wireless standards.

### **EEL 6614: Modern Control Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5182.

Optimization of systems using the calculus of variations, dynamic programming, and the maximum principle. Extensive study of the linear plant with a quadratic performance index. Observers and dynamic compensators.

### **EEL 6617: Linear Multivariable Control**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 4105, EEL 5182.

Transfer matrix theory of systems, emphasis on feedback, internal stability, model matching, and assignment of invariant factors.

### **EEL 6619: Robust Control Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5182.

Analysis and design of multivariable control systems in presence of uncertainties.

### **EEL 6686: Embedded Systems Seminar**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 3701C, EEL 3834, COP 3530, EEL 4713C, CDA 5636 , knowledge of Basic UNIX/LINUX OS, compiler, and Assembly language

An embedded system is any computing system other than traditional computer systems. Examples include set-top boxes, digital cameras, alarm systems, automotive systems, aerospace systems, and cell phones. Structured as a seminar course and will review cutting-edge publications with student presentations.

### **EEL 6706: Fault-Tolerant Computer Architecture**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EEL 5764 or CDA 5155.

Design and quantitative analysis of fault-tolerant architectures and dependable systems including fundamental issues, redundancy techniques, evaluation methods, design methodology, and applications.

### **EEL 6761: Cloud Computing and Storage**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EEL 3834 or equivalent, COP 2800, COP 3530, EEL 5764 , or consent of instructor

Provides a broad introduction to the fundamentals in cloud computing and storage, and an in-depth investigation on system architecture, programming models, algorithmic design, and application development.

### **EEL 6763: Parallel Computer Architecture**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EEL 5764.

Advanced architecture emphasizing design and quantitative analysis of parallel architecture and systems, including theory, hardware technologies, parallel and scalable architectures, and software constructs.

### **EEL 6769: Hardware-Software Interactions: Nonnumeric Processing**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EEL 6767 or COP 5725 or consent of instructor.

Information representations; content and context search methods; associative memories, retrieval language mapping; parallel processing; hardware and software garbage collections.

#### **EEL 6814: Neural Networks for Signal Processing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEE 6504.

Optimal filters in vector spaces. Linear machines and discriminant functions. Gradient descent learning in additive neural model. Performance measures of multilayer perceptions and Hopfield. Dynamic neural networks and issues of short term memory; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.

#### **EEL 6825: Pattern Recognition and Intelligent Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.

#### **EEL 6841: Machine Intelligence and Synthesis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5840.

Theory of machine intelligence applied to general problem of engineering intelligent computer systems and architecture. Applications emphasized.

#### **EEL 6871: Software Defined Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEL 5737 or EEL 6892

Introducing beginning graduate students to autonomic computing and networking (AC) systems. AC systems are IT systems capable of self-management, self-healing, self-tuning, self-configuration and self-protection. Introduction to

the defining characteristics of AC, why it is necessary, foundational AC principles based on control theory, artificial intelligence and systems concepts.

### **EEL 6892: Virtual Computers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEL 5764 or COP 5615 or equivalent.

Techniques for virtualization of networked computer systems. Virtual machines (classic VMs, application binary interface VMs, para-virtualization), virtual distributed file systems (file system proxies, call-forwarding), and virtual networks (tunneling, virtual private networks).

### **EEL 6905: Individual Work**

**Credits: 1-4    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* consent of adviser.

Selected problems or projects.

### **EEL 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **EEL 6933: Electrical and Computer Engineering Graduate Seminar**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

*Prerequisite:* Graduate student status

Exploring ECE research through presentations by faculty members, graduate students, and invited speakers.

### **EEL 6935: Special Topics in Electrical Engineering**

**Credits: 1-4    Max: 12 including EEL 5905 and EEL 6905**

**Grading Scheme: Letter**

**EEL 6940: Supervised Teaching**

**Credits: 1-5    Max: 5**

**Grading Scheme: S/U**

**EEL 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**EEL 6972: Research for Engineer's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**EEL 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EEL 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**



### **EES 5105: Advanced Wastewater Microbiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

The role of microorganisms and other biota in major environmental problems, wastewater processes, and natural bodies of water.

### **EES 5107: Ecological and Biological Systems**

**Credits: 3**                      **Grading Scheme:** Letter

System dynamics, fundamental microbiological principles, and general ecological principles and structure and function of ecosystems.

### **EES 5207: Environmental Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046.

Survey of principles of chemistry with applications to water, emphasizing properties, composition, redox equilibria, and complexation; environmental organic chemistry; earth's atmosphere with emphasis on chemical composition, gaseous inorganic pollutants and oxides, and photochemical smog.

### **EES 5245: Water Quality Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046, EES 4201, or EES 6208, or consent of instructor.

Applying the principles of analytical chemistry to determine the chemical composition of natural waters and wastewaters. Emphasizes methods used routinely to determine water and wastewater quality and to interpret data.

### **EES 5305C: Ecological and General Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302 or equivalent.

Systems ecology, including examples, languages, theoretical formulations, and models for designing, synthesizing, and predicting systems of man and nature.

### **EES 5306: Energy Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Energetics of systems of environment and economics; energy analysis of environmental systems, agroecosystems, regional and national economies; energy evaluation of public policy.

### **EES 5307: Ecological Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices in designing and managing the environment with society. Systems concepts for organizing humanity, technology, and nature.

### **EES 5315: Ecology and the Environment**

**Credits: 2**                      **Grading Scheme:** Letter

Applying ecological principles to environmental problems and management.

### **EES 5415: Environmental Health**

**Credits: 3**                      **Grading Scheme:** Letter

Effects of environment pollution on health. Methods of evaluating, treating, and preventing pollutants of health significance.

### **EES 6007: Advanced Energy and Environment**

**Credits: 3**                      **Grading Scheme:** Letter

Energy basis for a system of humanity and nature, including principles of systems ecology, ecological economics, and public policy.

### **EES 6009: Ecological Economics**

**Credits: 2**                      **Grading Scheme:** Letter

Examines new research areas; models and mathematical theories common to ecology and economics, interfaces between ecology and economics, and relationships of energy and money.

### **EES 6026C: Environmental Systems Dynamics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CGS 2425 or equivalent.

Feedback principles and methods introduced and used to develop and test hypotheses of causes of dynamics in environmental systems. Hypotheses tested through computer modeling.

### **EES 6028: Spatial Modeling Using Geographic Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced applications of GIS and principles of spatial analysis and modeling in environmental engineering sciences.

### **EES 6051: Advanced Environmental Planning and Design**

**Credits: 3**                      **Grading Scheme:** Letter

Sustainable communities and regions. Quantitative methods for evaluating environmental impacts and carrying capacity. Theories of spatial and temporal organization of systems of humanity and nature.

### **EES 6135: Aquatic Microbiology**

**Credits: 3**                      **Grading Scheme:** Letter

Behavior of microorganisms in freshwater, marine and soil environments. Stress of pollution on microbial communities. Adsorption of microorganisms to surfaces.

### **EES 6136: Aquatic Autotrophs**

**Credits: 3**                      **Grading Scheme:** Letter

The function of algae and macrophytes in lake systems. Environmental problems associated with excessive growth of algae and macrophytes, and methods for their control.

### **EES 6137: Aquatic Heterotrophs**

**Credits: 3**                      **Grading Scheme:** Letter

The role of zooplankton, benthic invertebrates, and fish in freshwater systems. Emphasizes trophic-level interactions, nutrient cycling, and the potential of each group for predicting water quality.

### **EES 6140: Biology of Exotic Species**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EES 4103.

Examines case histories of species' introduction worldwide and the mechanisms responsible for establishment and dominance of native communities by exotic taxa.

### **EES 6208: Principles of Water Chemistry I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046 or consent of instructor.

Applying chemical principles to aqueous reactions. Emphasizes thermodynamics, kinetics, and aqueous equilibria including acid-base, solubility, complexation, precipitation, and redox.

### **EES 6209: Principles of Water Chemistry II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EES 4201 or EES 6208, or consent of instructor.

Application of chemical principles to reactions and composition of natural waters; emphasis on organic compounds, chemical models, and fate of organic contaminants.

### **EES 6225: Atmospheric Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4101 or consent of instructor.

Nature, sources, and sinks of fixed and variable constituents of atmosphere. Chemical changes occurring. Influences and properties of atmospheric components of natural and anthropogenic origin.

### **EES 6246: Advanced Water Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EES 4200, EES 5245, or consent of instructor.

Advanced chemical procedures used in water chemistry research. Applying instrumental methods for determining trace inorganic and organic natural water constituents.

### **EES 6301: Comparative Approaches in Systems Ecology**

**Credits: 3**

**Grading Scheme:** Letter

Alternative approaches for understanding ecological interactions. Prediction after ecosystem perturbations and optimal design with nature are evaluated in the context of natural selection and thermodynamics. Static, dynamic, deterministic, and stochastic study of energy flow, element cycling, and information feedback.

### **EES 6308C: Wetland Ecology**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* BSC 2005 or EES 4103.

Defining and classifying major wetland ecosystems, formation of wetlands, wetland functions and values; wetlands ecological engineering and management; and integrating wetlands into developing landscape. Emphasizes several field trips to natural and altered wetlands.

### **EES 6309: Wetland Treatment Systems**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* EES 6308C: Wetland Ecology or permission of instructor

Applied and theoretical aspects of wetlands use for water quality management; natural and constructed treatment wetlands; engineering and ecology of wetland systems; design for sustainability and ancillary benefits.

### **EES 6318: Principles of Industrial Ecology**

**Credits: 3**

**Grading Scheme:** Letter

Linkage of industry activity with environmental and social sciences. Corporate environmental management and environmental ethics. Resources, laws, and economics. Environmental accounting. Industrial products and processes, and life cycle assessments. Case studies of corporate environmental policies.

**EES 6335: Springs Ecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

Applied and theoretical aspects of the ecology and management of Florida's artesian springs.

**EES 6356: Estuarine Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Coastal ecosystems: their components, processes, systems, models, and management including tropical, arctic, and man-affected types. Field trip and literature review.

**EES 6371: Environmental Meteorology and Oceanography**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302 and PHY 2049.

Principles of meteorology and oceanography and interactions of atmosphere and oceans with human economy.

**EES 6405: Environmental Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BSC 2005 or EES 4102, or consent of instructor.

Effects of environmental toxicants on humans, animals, and the environment.

**EEX 5940: Supervised Student Teaching in Special Education**

**Credits: 9**                      **Grading Scheme:** Letter

Intensive field experience while working with students with disabilities.

### **EEX 6053: Foundations of Special Education**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an overview of special education, students with disabilities, and students at risk of being identified with disabilities including those who are culturally or linguistically diverse or otherwise disadvantaged. It is appropriate for students preparing to work in high need schools, inclusive settings, and school programs serving K-12 students. Advanced issues in identification of students with disabilities and delivery of services to meet their academic, developmental, and functional needs.

### **EEX 6072: Accessing Academic and Social Communities for Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

Information and expertise related to meeting effectively academic and social needs of full range of students in inclusive settings.

### **EEX 6098: Students with Disabilities in Higher Education**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing participants to the nature and needs of students with disabilities in higher education settings. The focus of this course will be on the effects of various types of disabilities on learning. Relevant laws and issues of compliance and professional ethics will also be addressed.

### **EEX 6125: Interventions for Language and Learning Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter



Language development and disorders and their impact on learning for students with (or at risk for) disabilities. Classroom-based intervention strategies for promoting language and literary development.

**EEX 6219: Reading Assessment and Intervention for Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

The reading process and dyslexia; particularly the special educator's role in preventing and remediating reading disabilities.

**EEX 6222: Evaluation in Special Education**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* or coreq: prior experience with exceptional students; introductory courses in measurement, statistics.

Issues and practices related to educational assessment of students with special needs.

**EEX 6233: Designing Instruction for Inclusive Classrooms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* admission to graduate status.

Providing students with theoretical background and practical strategies needed to successfully teach students with disabilities and other learning needs across the continuum of services in various K-12 settings. Particular focus is placed on the classroom environment and individualizing assessment and instruction to meet a range of learner needs.

**EEX 6234: Assessment, Curriculum, and Instruction for Students with Severe Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* unified elementary courses 4th year.

Providing educational services for students with severe disabilities.

### **EEX 6249: Advanced Strategies for Teaching Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

Designed to assist students in acquisition, proficiency, and application of best practices for teaching students with disabilities.

### **EEX 6269: Academic Strategies for Postsecondary Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEX 6098 Students with Disabilities in Higher Education  
EEX 6299 Understanding Assessment for Postsecondary Students with Disabilities

Using and developing appropriate academic strategies for postsecondary students with disabilities. The course will include strategies for learning new content, retaining information, expressing knowledge, and appropriate use of technology to support students' academic needs. Participants will learn to effectively match strategies to students' needs.

### **EEX 6296: Differentiated Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status or consent of instructor.

Provides teachers, administrators, and other professionals with information and expertise related to differentiating instruction to effectively meet the academic needs of the full range of students in their schools in inclusive settings.

### **EEX 6299: Understanding Assessment for Postsecondary Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEX 6098 Students with Disabilities in Higher Education

Introducing participants to the role of assessment in identification and intervention for students with disabilities in higher education. Participants will learn about various approaches to diagnosis and types of assessments commonly used. One focus of the course is on the interpretation of assessment reports for developing accommodations and interventions.

### **EEX 6661: Teaching and Managing Behavior for Student Learning**

**Credits: 3**                      **Grading Scheme:** Letter

Practical strategies and techniques for teaching children and youths with behavioral problems.

### **EEX 6750: Families and Transition for Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

Information and strategies for using family-centered approach to planning and implementing transitions for students with disabilities.

### **EEX 6777: Organizational and Life Skills for Postsecondary Students with Disabilities**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EEX 6098 Students with Disabilities in Higher Education  
EEX 6299 Understanding Assessment for Postsecondary Students with Disabilities

Addressing the skills necessary for academic and life success for postsecondary students with disabilities and the challenges these students face. Participants will learn to help students develop self-determination and self-advocacy skills, as well as organization and time management. Strategies for developing communication skills will also be addressed.

### **EEX 6785: Introduction to Education-Healthcare Transition**

**Credits: 3**                      **Grading Scheme:** Letter

An increased number of youth with special healthcare needs (SHCN), including chronic illness and disability, are transitioning from school to the workplace, post-secondary education and the community. Throughout the course collaborative efforts between the education and medical fields focused on supporting the transition of youth with SHCN will be studied.

### **EEX 6786: Transdisciplinary and Transition Services in Special Education**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEX 6863.

Collaboration, transition planning, and professional development for serving children and youths with disabilities.

**EEX 6788: Methods for Integrating Education-Health Care Transition**

**Credits: 3                      Grading Scheme: Letter**

Teaching evidence-based practices in Education-Healthcare Transition (E-HCT) supporting youth with chronic illness as they transition from school to the workplace, post-secondary education, the community and into adult healthcare. Participants will apply their knowledge innovative methods to promote E-HCT.

**EEX 6789: Legal Aspects and Policy in Education-Healthcare Transition**

**Credits: 3                      Grading Scheme: Letter**

Increasing knowledge of laws and policies that impact education and healthcare transition for youth with special healthcare needs. As more educational and medical systems are working together to assist youth with SHCN, personnel must become familiar with legal mandates that impact Education-Healthcare Transition.

**EEX 6817: Seminar in Education-Healthcare Transition (E-HCT)**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EEX 6785: Introduction to Education-Healthcare Transition  
EEX 6789 EEX 6789: Legal Aspects and Policy in Education-Healthcare Transition  
EEX 6788 EEX 6788: Methods for Integrating Education-Health Care Transition

Developing an action research project based on the integration of education and healthcare transition to support youth with chronic illness transition from school to the workplace, post-secondary education, the community and adult healthcare. Students will plan and execute an action research project.

**EEX 6835: Practicum in Special Education: Severe Disabilities**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* unified elementary courses 4th year.

Field-based experience in educational settings that serve students with severe disabilities.

**EEX 6841: Practicum in Special Education: Mild Disabilities**

**Credits: 1-6    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* Admission to graduate status in special education

Providing opportunities for practical experiences with K-12 students identified with disabilities or other learning and/or behavior problems. Students will select, design, and/or implement assessment and instructional strategies intended to improve learning outcomes for struggling learners.

**EEX 6863: Supervised Practice in Special Education**

**Credits: 1-6    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* Approval of special education faculty and Office of Student Services

Supervised teaching in selected school settings designed to serve children and youths who have been classified as having behavioral and/or learning problems. Seminars and continuous evaluation of teaching experiences.

**EEX 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* consent of department chair, approval of proposed project, and completion of at least 9 hours of graduate work.

**EEX 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**EEX 6936: Special Topics**

**Credits: 1-3    Max: 12            Grading Scheme: Letter**

*Prerequisite:* consent of department chair.

**EEX 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**EEX 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EEX 6973: Project in Lieu of Thesis**

**Credits: 1-9            Grading Scheme: S/U**

Development, testing, and evaluation of original educational technology, curricular materials, or intervention program.

**EEX 7303: Inquiry in Special Education: Analysis of the Literature**

**Credits: 3            Grading Scheme: Letter**

*Prerequisite:* EDF 6403.

Designed to assist in solidifying knowledge of research design acquired through course work in educational foundations by applying that knowledge to special education literature.

**EEX 7304: Introduction to Field of Inquiry in Special Education**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EDF 6403; coreq: EDF 6475.

Acquisition, organization, and interpretation of information about research. Nature of inquiry and process of generating questions about a broad array of disability-related research topics. Critical analysis of research outcomes.

#### **EEX 7428: Teacher Education in Special Education**

**Credits: 3                      Grading Scheme: Letter**

Preparation for teaching preservice teachers and practicing professionals. Effective teaching practices, collaborative models of teacher education, role of field experiences, and student advisement. Teacher education research literature reviewed and problems of conducting research with teachers and trainees discussed.

#### **EEX 7526: Grant Writing Seminar in Education**

**Credits: 3                      Grading Scheme: Letter**

Developing basic skills in writing grant proposals for research, training, and/or model demonstration.

#### **EEX 7709: Social-Emotional Learning & Play in Early Childhood**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Critical examination of the research and theoretical literature on social-emotional learning and play in the early childhood years. Special attention to implications for practice, policy and professional development.

#### **EEX 7787: School Improvement for All Students**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* advanced graduate status or consent of instructor.

Seminar addressing research and professional literature on changing schools to improve academic and behavioral outcomes for all students.

**EEX 7865: Internship: Special Education**

**Credits: 1-12    Max: 12            Grading Scheme: Letter**

**EEX 7934: Seminar: Trends in Special Education**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* admission limited to advanced degree students in special education.

Emphasis on trends in special education and future considerations for research, and local, state, and federal priorities.

**EEX 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EEX 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**EGI 6051: Education of the Gifted Child**

**Credits: 3                    Grading Scheme: Letter**



Definitions of giftedness, characteristics of gifted children, and outside-of-school influences which affect achievement of gifted children.

#### **EGI 6245: Program Development for the Gifted**

**Credits: 3**                      **Grading Scheme:** Letter

School programs for the gifted. Educational provisions for the achieving and underachieving gifted individual.

#### **EGM 5005: Laser Principles and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Applications of lasers for lidar aerodynamic and structural testing and for cutting and welding of materials.

#### **EGM 5111L: Experimental Stress Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 3520.

Introduction to techniques of experimental stress analysis in static systems. Lecture and laboratory include applications of electrical resistance strain gauges, photoelasticity, brittle coatings, moire fringe analysis, and X-ray stress analysis.

#### **EGM 5121C: Data Measurement and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Tools for random data analysis (including types of random data, mean values, mean-square values, probability density and distribution functions, moments and characteristic functions, and spectral and correlation analysis); bias and random error estimates in data measurements; input-output system models; and measurement examples.

### **EGM 5423: High Strain Rate Behavior of Materials**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM3520 or equivalent

Dynamic behavior of materials, comparison of material response between quasistatic and extremely high strain rates, deformation mechanisms, microstructural evolution at high strain rate, dynamic fracture, constitutive modeling, mechanical properties.

### **EGM 5533: Applied Elasticity and Advanced Mechanics of Solids**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 3520.

Bars, beams, thin-walled structures, and simple continua in the elastic and inelastic range. Virtual work approaches, elastic energy principles, plastic limit theorems, and creep deformation procedures. Introduction to instability and fracture mechanics. Design applications.

### **EGM 5584: Biomechanics of Soft Tissue**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGN 3353C and EGM 3520.

Introduction to solid and fluid mechanics of biological systems. Rheological behavior of materials subjected to static and dynamic loading. Mechanics of cardiovascular, pulmonary, and renal systems. Mathematical models and analytical techniques used in biosciences.

### **EGM 5816: Intermediate Fluid Dynamics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGN 3353C (or CWR 3201), MAP 2302.

Basic laws of fluid dynamics. Introduction to potential flow, viscous flow, boundary layer theory, and turbulence.

### **EGM 5933: Special Topics in Engineering Science and Mechanics**

**Credits: 1-4    Max: 8                    Grading Scheme: Letter**

**EGM 6006: Laser-Based Diagnostics**

**Credits: 3                    Grading Scheme: Letter**

Introduction to laser-based measurement techniques. Emphasizes light scattering, raman spectroscopy, plasma spectroscopy, and fluorescence, including the underlying physics and also practical implementations.

**EGM 6321: Principles of Engineering Analysis I**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* EGM 4313 or MAP 4305.

Solution of linear and nonlinear ordinary differential equations. Methods of Frobenius, classification of singularities. Integral representation of solutions. Treatment of the Bessel, Hermite, Legendre, hypergeometric, and Mathieu equations. Asymptotic methods including the WBK and saddle point techniques. Treatment of nonlinear autonomous equations. Phase plane trajectories and limit cycles. Thomas-Fermi, Emden, and van der Pol equations.

**EGM 6322: Principles of Engineering Analysis II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* EGM 4313 or MAP 4341.

Partial differential equations of first and second order. Hyperbolic, parabolic, and elliptic equations including the wave, diffusion, and Laplace equations. Integral and similarity transforms. Boundary value problems of the Dirichlet and Neumann type. Green's functions, conformal mapping techniques, and spherical harmonics. Poisson, Helmholtz, and Schroedinger equations.

**EGM 6323: Principles of Engineering Analysis III**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* EGM 4313 or MAP 4341.

Integral equations of Volterra and Fredholm. Inversion of self-adjoint operators via Green's functions. Hilbert-Schmidt theory and the bilinear formula. The calculus of variations. Geodesics, Euler-Lagrange equation and the brachistochrone problem. Variational treatment of Sturm-Liouville problems. Fermat's principle.

### **EGM 6341: Numerical Methods of Engineering Analysis I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 4313 or equivalent.

Finite-difference calculus; interpolation and extrapolation; roots of equations; solution of algebraic equations; eigenvalue problems; least-squares method; quadrature formulas; numerical solution of ordinary differential equations; methods of weighted residuals. Use of digital computer.

### **EGM 6342: Fundamentals of Computational Fluid Dynamics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 6341 and EGM 6813 or consent of instructor.

Fundamentals of computational fluid dynamics. Spatial discretisations, semi-discretisations, time-integration methods, full discretisations.

### **EGM 6352: Advanced Finite Element Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 6351.

The discontinuous Galerkin method applied to transient problems. Optimization theory applied to formulating mixed FEM; treatment of constraints (e.g., incompressibility). General shape functions. Electromagnetics, heat, fluids, and solids. Other advanced topics.

### **EGM 6365: Structural Optimization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4500, EGM 4350, EML 5526, or EGM 6451.

Structural optimization via calculus of variations. Applying techniques of numerical optimization to design trusses,

frames, and composite laminates. Calculating the sensitivity of structural response. Approximation and fast reanalysis techniques. Optimality criteria methods.

### **EGM 6570: Principles of Fracture Mechanics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 6611.

Introduction to the mechanics of fracture of brittle and ductile materials. Linear elastic fracture mechanics; elastic-plastic fracture; fracture testing; numerical methods; composite materials; creep and fatigue fracture.

### **EGM 6611: Continuum Mechanics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 3520.

Tensors of stress and deformation. Balance and conservation laws, thermodynamic considerations. Examples of linear constitutive relations. Field equations and boundary conditions of fluid flow.

### **EGM 6671: Inelastic Materials**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGM 6611.

Virtual work, stability, extremum principles. Applications on the microscale, miniscale, and macroscale. Thermodynamics, internal variables, damage parameters, and time and temperature effects. Fracture mechanics. Finite elastoplasticity.

### **EGM 6812: Fluid Mechanics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGN 3353C.

Flow kinematics. Fundamental laws and equations in integral and differential forms. Potential flows. Introduction to laminar flows in simple geometries, laminar and turbulent boundary layer flows. External flows. One-dimensional compressible flows.

### **EGM 6813: Fluid Mechanics II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EGM 6812.

Mathematical and physical structures of the Navier-Stokes equation. Exact solutions of the Navier-Stokes equation for viscous flows. Low Reynolds number flows. Incompressible and compressible laminar boundary layer flows. Free shear flows. Energy equation and heat transfer. Unsteady flows. Instability. Turbulence.

### **EGM 6855: Bio-Fluid Mechanics and Bio-Heat Transfer**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* undergraduate fluid mechanics.

Biothermal fluid sciences. Emphasizes physiological processes occurring in human blood circulation and underlying physical mechanisms, from an engineering perspective.

### **EGM 6905: Individual Study**

**Credits: 1-6    Max: 12 including EGM 5905 and EAS 6905                      Grading Scheme: Letter**

### **EGM 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **EGM 6934: Special Topics in Engineering Mechanics**

**Credits: 1-6    Max: 12                      Grading Scheme: Letter**

**EGM 6936: Graduate Seminar**

**Credits: 1    Max: 6                    Grading Scheme:** Letter, S/U

Discussions and presentations in the fields of graduate study and research.

**EGM 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme:** S/U

**EGM 7819: Computational Fluid Dynamics**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* EGM 6342 and EGM 6813 or equivalent.

Finite difference methods for PDE. Navier-Stokes equations for incompressible and compressible fluids. Boundary fitted coordinate transformation, adaptive grid techniques. Numerical methods and computer codes for fluid flow problems.

**EGM 7845: Turbulent Fluid Flow**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* EGM 6813 or equivalent.

Definition of turbulence, basic equations of motion. Instability and transition. Statistical methods, correlation and spectral functions. Experimental methods, flow visualization. Isotropic homogeneous turbulence. Shear turbulence, similitude, the turbulent boundary layer, rough turbulent flow. Jets and wakes. Heat convection, thermally driven turbulence.

**EGM 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EGM 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**EGN 5010L: NRF Training Lab**

**Credits: 1**

**Grading Scheme: Letter**

This course will be teaching Nanoscale Research Facility (NRF) cleanroom users the fundamental and practical aspects of various micro/nanofabrication processes via combination of classroom lectures and hands-on labs. Students will also receive training on one or more NRF tools.

**EGN 5949: Practicum/Internship/Cooperative Work Experience**

**Credits: 1-6    Max: 6**

**Grading Scheme: S/U**

*Prerequisite:* graduate student.

Practical cooperative engineering work under approved industrial and faculty supervision.

**EGN 6039: Engineering Leadership**

**Credits: 3**

**Grading Scheme: Letter**

Concepts, theory and practice of engineering leadership; effective written and oral communications and



presentations; engineering leadership characteristics, individual differences and self-awareness; developing and building teams; managing change, conflicts, and crises; and understanding real-world ethics and core values.

### **EGN 6640: Entrepreneurship for Engineers**

**Credits: 3                      Grading Scheme: Letter**

Introduction to entrepreneurship, idea generating and feasibility analysis, and business planning. Lectures, case studies, student-led discussions, team business plans, and investor presentations.

### **EGN 6642: Engineering Innovation**

**Credits: 3                      Grading Scheme: Letter**

Concepts of innovative thinking and innovation practices. Using lectures, case studies, team exercises, and guest speakers, the course teaches life skills in innovative thought and action that students can use in careers ranging from starting companies to executing R&D projects in large companies.

### **EIN 6227: Advanced Quality Management and Engineering for Business Processes**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* introductory statistics or consent of instructor.

Philosophy of continuous improvement and methodology for applying team problem solving to manufacturing and service industries. Hands-on application of basic statistical quality tools; introduction to quality function deployment; concurrent engineering; business process reengineering; process analysis; benchmarking. Team project.

### **EIN 6336: Advanced Production and Inventory Control**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ESI 6314 & ESI 6321

Production planning and control; problem identification and formulation. Mathematical theory of single- and multicommodity inventory systems; problem solving using dynamic programming and Markov chains.

### **EIN 6357: Advanced Engineering Economy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 4321.

Economic analysis of capital expenditure decisions. Financial mathematics and microeconomics. Decision under risk and uncertainty. Game theory and utility theory.

### **EIN 6367: Facilities Layout and Location**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ESI 6417.

Planar and discrete layout problems and locations problems; network location problems. Single- and multi-objectives. Industrial and public sector applications.

### **EIN 6392: Manufacturing Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ESI 6314 and undergraduate probability and statistics.

Variety and importance of management decisions. Total quality management, just-in time manufacturing, concurrent engineering, material requirements planning, production scheduling, and inventory control.

### **EIN 6905: Special Problems**

**Credits: 1-6    Max: 9                      Grading Scheme: Letter**

Laboratory, lecture, field work, or conferences.

### **EIN 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**EIN 6918: Graduate Seminar**

**Credits: 1    Max: 15            Grading Scheme: S/U**

**EIN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**EIN 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EIN 6972: Research for Engineer's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EIN 7933: Special Problems**

**Credits: 1-6    Max: 12            Grading Scheme: Letter**

Laboratory, lecture, field work, or conferences.

### **EIN 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **EIN 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

### **EMA 5008: Particle Science and Technology: Theory and Practice**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PHY 2049/2049L or equivalent and CHM 2046/2046L or equivalent.

Introduction to field by surveying theoretical and practical aspects. Particulate preparation, particle characterization, surface modifications, particulate systems, and technological applications.

### **EMA 5095: Critical Analysis of Research in Materials Science & Engineering**

**Credits: 3**

**Grading Scheme: Letter**

*Corequisite:* EMA 6313

Critical methods for reviewing technical papers, for writing effective technical papers, and for developing meaningful research projects, in the field of materials science and engineering.

### **EMA 5108: Vacuum Science and Technology**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* CHM 2045, PHY 3101, MAP 2302, or equivalents, or consent of instructor.

Introduction to the generation and use of vacuum for scientific research and industrial production. Kinetic theory of gases discussed as necessary to understand vacuum phenomena. Description of components and materials, vacuum systems design and uses in metallurgy, electronics, physics, and chemistry.

### **EMA 5365: Biomimetic Synthesis**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EMA 3010 or equivalent.

Investigation of processes utilized by organisms to control mineralization of their hard parts, to gain understanding of mechanisms used by them to obtain precise control over size, shape, texture, orientation, and composition.

### **EMA 6001: Properties of Materials - A Survey**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree in physics, chemistry, or engineering.

Review of physical properties of materials such as mechanical, electrical, optical, magnetic, and thermal properties.

### **EMA 6005: Thin and Thick Films**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* (EMA3010 & CHM2046 & PHY2048) or equivalents

Techniques for depositing thin metallic semiconductor and dielectric films. The relationships between deposition technique and thin film properties. Properties unique to thin films.

### **EMA 6105: Fundamentals and Applications of Surface Science**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* (CHM2045 & MAP2302) or equivalents or consent of instructor

Fundamental and experimental description of phenomena occurring at surface of solids, including structure,

composition, atomic and molecular processes, and electronic properties. Experimental approaches and data used to support theoretical models.

### **EMA 6106: Advanced Phase Diagrams**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (EMA4120 & EMA4224) or equivalents

Phase diagrams considering systems with as many as four components; emphasis on pressure temperature composition diagrams.

### **EMA 6107: High Temperature Materials**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (EMA4120 & EMA4224) or equivalents

Physical and mechanical metallurgy. Principles of strengthening alloys, alloy and process selection, alloy development, and design principles for elevated temperature applications.

### **EMA 6109: Physical Chemistry of High Temperature Materials**

**Credits: 3**                      **Grading Scheme:** Letter

Interrelated aspects of solid state chemistry critical to materials science and chemical education. Science behind adapting inorganic materials for specific purposes making matter do what is wanted by positioning atoms in their proper structures

### **EMA 6110: Electron Theory of Solids for Materials Scientists I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (EMA3010 & MAP2302 & PHY2049) or equivalents

Wave equation and its application to free electrons, bound electrons, and electrons in crystals. Electron-band theory and its applications. Electrical properties of metals, alloys, and semiconductors, heat capacity and thermal properties.

## **EMA 6111: Electron Theory of Solids for Materials Scientists II**

**Credits: 3**                      **Grading Scheme:** Letter

Atomistic (classical) and electron theory of optical properties of metals, alloys, and dielectrics. Nonlinear optics, lasers. Raman-spectra.

## **EMA 6114: Advanced Materials Principles 2**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA 6313.

Structure, properties, processing, and applications of semiconductors, metals, ceramics, polymers, and biomaterials. Structure and properties of thin films, surfaces, and interfaces.

## **EMA 6128: Materials Microstructures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA 6316 or equivalent.

Geometry of microstructures: kinematics and kinetics of microstructural evolution in materials processing.

## **EMA 6136: Diffusion, Kinetics, and Transport Phenomena**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA 4125 or equivalent.

Physical basis, equation, and theories of diffusion, tracer, chemical, multicomponent, and multiphase diffusion in general force fields.

## **EMA 6165: Polymer Physical Science**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA3066 or equivalent

Solid state properties of amorphous and semi-crystalline polymers.

### **EMA 6166: Polymer Composites**

**Credits: 3**                      **Grading Scheme:** Letter

Physical and mechanical properties of polymers and polymer composites as related to preparation and microstructure.

### **EMA 6226: Synthesis and Properties of Metallic Nanostructures**

**Credits: 3**                      **Grading Scheme:** Letter

Up-to-date review of metallic nanostructures including fabrication techniques, thermal stability, phase transformation, mechanical properties, magnetic properties, and applications.

### **EMA 6227: Advanced Mechanical Metallurgy II**

**Credits: 3**                      **Grading Scheme:** Letter

Continuation of EMA 6226.

### **EMA 6265: Mechanical Properties of Polymers**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA 3066 or equivalent.

Linear and nonlinear viscoelastic behavior of polymers with emphasis on molecular and microstructure aspects.

### **EMA 6313: Advanced Materials Principles I**



**Credits: 3                      Grading Scheme: Letter**

Crystal structure, bonding, order and disorder in solids. Phase diagrams and phase transitions. Mechanical, optical, and electrical properties.

**EMA 6315: Colloidal Hydrodynamics**

**Credits: 3                      Grading Scheme: Letter**

Background on physical side of flow of colloidal dispersions for graduate students from different engineering disciplines. Low Reynolds number hydrodynamics and role of surface forces on stability of rheology of colloidal dispersions.

**EMA 6316: Materials Thermodynamics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EMA4314 or equivalent

Thermodynamics of materials systems, surfaces in solids, irreversible processes.

**EMA 6319: Applied Colloid and Interfacial Chemistry for Engineers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EMA 6316 or equivalent.

Principles used to disperse powders in liquids with practical examples relating to ceramic and metal particle processing properties.

**EMA 6412: Synthesis and Characterization of Electronic Materials**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* (EMA3413 & EMA4314) or equivalents

Principles of materials growth and characterization in electronic and photonic industries. Bulk and epitaxial growth technologies, corresponding characterization methods for evaluation and quality control. Theoretical bases for these techniques.

#### **EMA 6416: Organic Electronics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EMA3413 or equivalent

Basics of semiconductors, electronic structures, charge transport properties, and optoelectronic devices based on organic semiconductors.

#### **EMA 6445: Electroceramics**

**Credits: 3                      Grading Scheme: Letter**

Basic physical, chemical and mathematical principles of ceramic conductors, dielectrics and ferroelectrics and their applications are discussed. Emphasizes structure-processing-microstructure property relationships.

#### **EMA 6446: Solid State Ionics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EMA 6316 or equivalent, or consent of instructor.

Defect solid state and its relation to electronic properties of ceramic materials; defect equilibria and transport; influence of chemical and electric potentials and interfaces; and application of ionically conducting solids in solid-state electrochemical transducer systems and devices.

#### **EMA 6448: Ceramic Processing**

**Credits: 3                      Grading Scheme: Letter**

Introduction to the science of ceramic processing, with emphasis on theoretical fundamentals. Examples of state-of-the-art industrial processes discussed.

### **EMA 6461: Polymer Characterization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA3066 or equivalent

Use of a broad variety of spectroscopic and other scattering phenomena in polymer research.

### **EMA 6507: Scanning Electron Microscopy and Microanalysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA3010 or equivalent

Principles and theories of microscopy with an emphasis on scanning electron microscopy (SEM). Provides the necessary theoretical background to become an effective user of MAIC SEM facilities.

### **EMA 6507L: Scanning Electron Microscopy and Microanalysis Lab**

**Credits: 1**                      **Grading Scheme:** Letter

*Corequisite:* EMA 6507.

Practical training to become a proficient user of MAIC SEM facilities, leading to an authorization as a JEOL SEM-6400 user at the MAIC.

### **EMA 6510: Survey of Materials Analysis Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA3010 or equivalent

Principles and techniques used in characterization of materials. Chemical, microstructural, and surface analysis of materials; metals, ceramics, polymers, and semiconductor systems.

### **EMA 6512C: X-ray Scattering for Thin Film Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Theoretical basis of x-ray scattering from thin films, multilayers and single crystals for characterizing their thickness, mass density, surface and interface morphology, structural quality, and orientation.

### **EMA 6518: Transmission Electron Microscopy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EMA 3513C or equivalent.

Instrumentation associated with transmission electron microscopy. Kinematical and dynamical theories of diffraction contrast and their application. Diffraction analysis in TEM for structural determination. Analytical techniques for obtaining structural and compositional information at high spatial resolution. Phase contrast and high resolution electron microscopy.

### **EMA 6518L: Transmission Electron Microscopy Laboratory**

**Credits: 1                      Grading Scheme: Letter**

Specimen preparation for analysis in TEM. Demonstration of principles of contrast theories. Specialized methods for characterizing structure and composition of materials at high spatial resolution.

### **EMA 6519L: Specialized Research Techniques in Materials Science**

**Credits: 1-2    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* EMA 6507C or equivalent.

Utilizing primarily STEM, TEM, SEM, EMP, FIM, and optical metallography.

### **EMA 6540: Fundamentals of Crystallography**

**Credits: 3                      Grading Scheme: Letter**

The course will cover the derivation and analysis of structure-property relationships in common electroceramic material systems based on their crystal structure, symmetry and anisotropy.

#### **EMA 6541: Applied Crystallography and Powder Diffraction**

**Credits: 3**                      **Grading Scheme:** Letter

Explores crystal structures, microstructures, and diffraction. Emphasizes the determination of structure from diffraction patterns. Hands-on and practical applications directly related to graduate student research are integrated components of the course.

#### **EMA 6580: Science of Biomaterials I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (CHM2045 or CHM2095) or equivalent

Introduction to variables that control compatibility and performance of biomaterials, including physical and chemical properties, corrosion, fatigue, and interfacial histochemical changes.

#### **EMA 6581: Polymeric Biomaterials**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ((CHM2045 or CHM2095) & EMA3066) or equivalents

Biomedical implant and device applications of synthetic and natural polymers. Biocompatibility and interfacial properties of polymers in physiological environment, especially concerning short-term devices (catheters) and long-term implants (intraocular lenses, vascular and mammary prostheses, etc.).

#### **EMA 6589: Mechanical Behavior of Biomaterials**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA 4223 or equivalent.

Basis for elastic and viscoelastic response of biological materials to stress and strain. Foundation for composite

behavior of organic-organic and organic-inorganic materials. Description of modeling biological structures to achieve mechanical optimization.

#### **EMA 6590: Advances in Biomaterials and Tissue Engineering for Healthcare**

**Credits: 3**                      **Grading Scheme:** Letter

Use of new bioactive and bio-nano structures, surfaces and properties for healthcare applications, including tissue engineering, regenerative medicine, stem cell engineering, protein therapeutics, and bio-photonics testing of cell-material interactions. Socio-economic issues affecting cost and availability of new materials and technologies for healthcare.

#### **EMA 6591: Clinical Applications of Biomaterials and Tissue Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

Biomaterials, implants, devices, and new concepts in regenerative medicine and tissue engineering. Current technologies for replacement of tissues and organs, with emphasis upon case histories of specific medical and dental clinical applications, including economic and ethical concern analyses.

#### **EMA 6616: Advanced Electronic Materials Processing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EMA3413 or equivalent

Materials requirements for high speed devices and processing modules needed for their fabrication. Examples of current industrial processes.

#### **EMA 6625: Advanced Metals Processing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (EMA4120 & EMA4224) or equivalents

Advanced treatment of solidification phenomena during metals processing. Topics to include nucleation, kinetics, solidification structure, segregation, and effects of processing variables on structure and properties.

### **EMA 6667: Polymer Processing**

**Credits: 2-3    Max: 3                    Grading Scheme: Letter**

*Prerequisite:* EMA 3066 or equivalent.

Major processing methods for polymers and polymeric composites as related to the rheological behavior of these systems. Synthesis of polymers via industrial processes.

### **EMA 6715: Fracture of Brittle Materials**

**Credits: 3                                  Grading Scheme: Letter**

*Prerequisite:* EMA 4223, EGM 3520, or equivalent.

Latest concepts in deformation, fracture, and toughening of brittle materials. Application of fracture mechanics and fractals to failure of brittle materials. Development of an approach to failure analysis for brittle materials.

### **EMA 6803: Classical Methods in Computational Materials Science**

**Credits: 3                                  Grading Scheme: Letter**

Proficiency developing and using common tools for computational materials research at the atomic level.

### **EMA 6804: Quantum Methods in Computational Materials Science**

**Credits: 3                                  Grading Scheme: Letter**

*Prerequisite:* EMA 6313, C/C++, Fortran, or other suitable scientific programming language.

Theory, methods, and application of common quantum mechanical software (GAUSSIAN and VASP) for computational study of materials.

### **EMA 6805: Mathematical Methods in Materials Science I**

**Credits: 2                      Grading Scheme: Letter**

Review of mathematical methods with emphasis upon applications in materials science and engineering.

**EMA 6806: Mathematical Methods in Materials Science II**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* EMA 6805 or equivalent.

Applications of advanced differential equations, transform methods, and computational analysis.

**EMA 6808: Error Analysis and Optimization Methodologies in Materials Research**

**Credits: 3                      Grading Scheme: Letter**

Statistical approach to materials research, basic and relevant statistical concepts, error analysis, factorial matrices, reducing variance, nested designs and sampling plans, mixture designs, optimization techniques, response surface method, and Taguchi method.

**EMA 6905: Individual Work in Materials Science and Engineering**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

**EMA 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**EMA 6936: Seminar in Materials Science and Engineering**



**Credits: 1    Max: 14            Grading Scheme: S/U**

Offered in fall and spring. Required of all students.

**EMA 6938: Special Topics in Materials Science and Engineering**

**Credits: 1-4    Max: 6            Grading Scheme: Letter**

**EMA 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**EMA 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EMA 7980: Research for Doctoral Dissertation**

**Credits: 1-15            Grading Scheme: S/U**

**EME 5054: Foundations of Educational Technology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

History, foundations, and literature in educational technology.

### **EME 5207: Designing Technology-Rich Curricula**

**Credits: 3                      Grading Scheme: Letter**

Extensive work in curriculum development utilizing instructional technologies. Contrasting views of curriculum development.

### **EME 5315: Communicating with Technology**

**Credits: 3                      Grading Scheme: Letter**

Explores the communication process and how factors related to technology enhance or hinder this process.

### **EME 5316: Educational Technology Management Issues**

**Credits: 3                      Grading Scheme: Letter**

Explores classroom management issues through appropriate uses of educational technology.

### **EME 5403: Instructional Computing I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* baccalaureate degree.

Explores uses of educational technologies and learning environments.

### **EME 5404: Instructional Computing II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EME 5403.

Overview of educational technologies in teaching and learning. Developing meaningful and engaging learning environments that foster critical inquiry in students.

### **EME 5405: Internet in K-12 Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EME 5403 or 4406.

Preparing preservice teachers, in-service teachers, and teacher educators to use the Internet.

### **EME 5431: Integrating Technology in the Mathematics Classroom**

**Credits: 3**                      **Grading Scheme:** Letter

Examines technology in use. Multiple methodologies in which technology can be used to create and enhance appropriate learning environments.

### **EME 5432: Integrating Technology into Social Science Classroom**

**Credits: 3**                      **Grading Scheme:** Letter

Educational technology tools available for integrating into curriculum. Multiple methods using technology to create and enhance appropriate learning environments.

### **EME 5433: Integrating Technology into Science Classroom**

**Credits: 3**                      **Grading Scheme:** Letter

Examines technology use. Applications in learning theory; philosophy of science instruction; computer applications in science; integration of science with other subject areas; assessment.

#### **EME 6059: Blended Learning Environments**

**Credits: 3**                      **Grading Scheme:** Letter

Exploring blended learning from perspectives of theory and practice. The course is designed for educators and instructional designers in K-12, higher education, corporate environments, and other professional settings.

#### **EME 6065: Human-Computer Interaction and the Learner**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the interface between pedagogy, educational technology, cognitive science, graphic design, and software engineering, and define effective human-computer interaction. We will discuss relevant methods and seminal research, and deduce implications for learning and design of human computer interfaces such as digital games, mobile applications, and adaptive learning systems.

#### **EME 6066: Issues and Trends in Educational Technology Research**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an overview of the "what" and "how" in educational technology research. Having knowledge of the conceptual frameworks and research design paradigms in the field enables students to evaluate the rigor of educational technology research and think more critically about their own research efforts.

#### **EME 6076: Virtual School Philosophy and Pedagogy**

**Credits: 3**                      **Grading Scheme:** Letter

Providing educators with experience and skill with online-teaching approaches known to be effective for K-12 learning. Students examine models of virtual schooling, their underlying philosophies, and their implications on teaching.

### **EME 6156: Games and Simulations for Teaching and Learning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

The characteristics and terminology of games and simulations; development life cycles; design principles; evaluation; and an emphasis on connecting principles of learning to the design of games and simulations.

### **EME 6205: Digital Photography and Visual Literacy**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the main aspects of digital photography and the importance of students being visually literate.

### **EME 6208: Designing Integrated Media Environments I**

**Credits: 3**                      **Grading Scheme:** Letter

Design traditional multimedia environments and learn advanced techniques for creating presentation. Importance of cognitive processes and their relationships to design and instruction.

### **EME 6209: Designing Integrated Media Environments II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EME 6208.

Project based. Applying skills Studying the development and problem-solving as applied to real world educational problems with solutions designed and implemented in various programming and scripting languages. Topics include design principles, testing, and debugging. Prior programming experience is not required.and theories learned previously. Real-world problems.

### **EME 6235: Managing Educational Projects**

**Credits: 3**                      **Grading Scheme:** Letter

Examining principles of planning, scheduling, allocating resources, budgeting, proposals preparation, cost control, risk assessment and personnel management for instructional projects. Students negotiate an effective design project plan, how to implement the plan, and how to control and monitor project activities.

### **EME 6236: Distance Education Leadership and Management**

**Credits: 3**                      **Grading Scheme:** Letter

Examining the roles and responsibilities of leaders and managers in distance education programs. Focuses on contributors to quality program delivery in K-12, higher education, corporate, healthcare, and international contexts.

### **EME 6405: Educational Technology and Teaching**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* EME 5403.

Developing knowledge of computer technology in education and using that knowledge to solve educational problems. Gain experience working with computer systems.

### **EME 6458: Distance Teaching and Learning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EME 5403.

Topics assist educators who teach at distance in synchronous time. Effective teaching methodologies, along with various theories about distance learning, examined.

### **EME 6505: Educational Television Design and Production**

**Credits: 4**                      **Grading Scheme: Letter**

Learn to plan, produce, use, and evaluate videotape programs for educational purposes. Learn to operate the major components of a small, nonbroadcast television studio.

**EME 6602: Human-Computer Interactivity and the Learner**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* EME 6208, EME 6405.

Interaction and educational principles driving research. Elements of user interface, user behavior and systems monitoring that behavior, intelligent artifacts, hypermedia, and distributed information systems.

**EME 6606: Advanced Instructional Design**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* EME 6609.

Focuses on the student who is becoming an instructional design (ID) Professional by refining skills and adding to the skills learned in the beginning Instructional Design course, building on the foundational knowledge about the practice of ID, and encouraging the development of communication skills through formal project management.

**EME 6609: Instructional Design**

**Credits: 3**                      **Grading Scheme: Letter**

Focuses on the application of instructional design principles to the development of instruction. Topics include contemporary issues and trends in instructional design, foundations in learning research, requirements for instruction, task and needs analysis, learning situations and instructional models, learner characteristics, hardware and software innovations, assessing instructional outcomes, and factors affecting utilization.

**EME 6716: Organization and Administration of Educational Media Centers**

**Credits: 3**                      **Grading Scheme: Letter**

Principles of organizational and administrative theory and procedures and issues related to selecting instructional materials used to operate EMCs at all levels of education.

**EME 6935: Seminar: Distance Education Issues and Applications**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Mechanisms and logistics that support distance education development and delivery.

**EME 6945: Practicum in Educational Media and Instructional Design**

**Credits: 3-8    Max: 8            Grading Scheme:** Letter

Supervised experiences appropriate to the student's professional goals.

**EME 7938: Seminar in Educational Media and Instructional Design**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Seminar for advanced degree graduate students.

**EML 5045: Computational Methods for Design and Manufacturing**

**Credits: 3            Grading Scheme:** Letter

*Prerequisite:* EML 3023 or consent of instructor.

Geometric and solid modeling, feature-based design, and parametric models. Applications to product design, rapid prototyping, and manufacturing.



### **EML 5104: Classical and Statistical Thermodynamics**

**Credits: 3**                      **Grading Scheme:** Letter

First and second laws of thermodynamics. Free energy and chemical equilibrium. Micro- and macroscopic states. Fermi-Dirac and Bose-Einstein statistics. Partition functions.

### **EML 5124: Two-Phase Flow and Boiling Heat Transfer**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* introductory-level fluid mechanics and heat transfer.

Basic principles, mathematical modeling, and applications of two-phase flow, boiling heat transfer, and evaporation and condensation.

### **EML 5131: Combustion**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 3101 or consent of instructor.

Chemical thermodynamics, chemical kinetics, flame propagation, detonation and explosion, combustion of droplets and spray.

### **EML 5215: Analytical Dynamics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* dynamics.

Analytical methods of statics and dynamics. Principle of virtual work, holonomic and nonholonomic constraints. Lagrange equations for constrained and unconstrained systems, conservation laws, stability analysis by perturbation about steady state, Jacobi first integral, generalized impulse and momentum.

### **EML 5223: Structural Dynamics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4220.

Vibration analysis and synthesis of continuous and multidegree-of-freedom lumped-parameter systems. Computational and experimental techniques in modal analysis.

### **EML 5224: Acoustics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENG 3353C, EGM 4313, or consent of instructor.

Theory of sound. Plane waves and three-dimensional acoustic fields. Sound transmission and reflection. Dissipation, radiation, and scattering.

### **EML 5233: Failure of Materials in Mechanical Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 6EG, 7EG, 8EG, 9EG, or EML3005

Evaluation of fatigue life of machine elements and aerospace structures. Steady and alternating multi-axial stress. High cycle fatigue and low cycle fatigue.

### **EML 5311: Control System Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Analyzing dynamic mechanical engineering control systems. Introduction to classical, digital, and state space techniques. Modeling, stability, transient response, and frequency response. Considers implementation.

### **EML 5318: Computer Control of Machines and Processes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CGS 2425 or consent of instructor.

Basic concepts, including hardware and software. Modeling of machines, processes, and their controllers.

### **EML 5455: Clean Combustion Technology**

**Credits: 2**                      **Grading Scheme:** Letter

Latest developments in combustion of solid fuels, cocombustion of fuels, fluidized bed combustion, and gasification for combustion turbine applications.

### **EML 5465: Energy Management for Mechanical Engineers**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Energy use analysis in building envelopes, mechanical systems, and industrial processes. Energy conservation strategies and design techniques. Alternative energy applications.

### **EML 5515: Gas Turbines and Jet Engines**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EGN 3353C or equivalent

Theory and analysis of gas turbine engines and major components.

### **EML 5516: Design of Thermal Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4141 and 4702 or equivalent.

Modeling of thermal equipment; system simulation; optimization, search methods, thermal system design and optimization using dynamic, geometric, and linear programming; simulation of large systems, vector and reduced gradient searches.

### **EML 5526: Finite Element Analysis and Application**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EML 3520 or consent of instructor.

Fundamentals, including discrete system analysis, dynamic analysis of structures, steady state and transient heat transfer analysis, and incompressible fluids analysis. Modeling, analysis, and design using FEA software.

### **EML 5595: Mechanics of the Human Locomotor System**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EGM 3401, 3520.

Analyzing the human musculoskeletal system as sensors, levers, and actuators. Joint articulations and their mechanical equivalents. Kinematic and kinetic analysis of human motion. Introduction to modeling human body segments to analyze human activities.

### **EML 5598: Orthopedic Biomechanics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* mechanics of materials.

Mechanical properties of the human body's hard and soft tissues. Mechanical and biological considerations for repair and replacement of soft and hard tissues and joints. Fracture fixation, orthopedic implants for hip and knee, and orthotic and prosthetic devices.

### **EML 5605: Advanced Refrigeration**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EML 4601.

Analysis and design considerations for vapor compression, absorption, steam-jet, thermoelectric, and air refrigeration systems.

### **EML 5714: Introduction to Compressible Flow**

**Credits: 3                      Grading Scheme: Letter**

One-dimensional and quasi-one-dimensional compressible fluid flows. Mach waves, normal shocks, oblique shocks, Prandtl-Meyer expansions, isentropic flow with area change, Fanno flow, Rayleigh flow.

#### **EML 6146: Microscale Heat Transfer**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4141.

Kinetic theory and transport phenomena; fundamentals of statistical mechanics; microscale heat conduction, convection and radiation; applications.

#### **EML 6154: Conduction Heat Transfer**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302, EML 4141.

Heat conduction in homogeneous, heterogeneous, isotropic, anisotropic, stationary, and moving bodies; in Cartesian, cylindrical and spherical systems. Examines exact and approximate solutions.

#### **EML 6155: Convective Heat Transfer I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4702, 4141.

Applying equations of motion and energy to forced and free convection with laminar and turbulent flow. Solution techniques to include simplification to ordinary differential equations, boundary layer approximations, similarity transformations, and integral approximations. Phenomenological treatment of turbulent transport.

#### **EML 6156: Multiphase Convection Heat Transfer**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 6155.

Detailed coverage of advanced convection heat transfer topics: boiling and condensation, high-velocity convection, transpiration cooling, convection around bodies, free jet flow, oscillating fluids, and microelectronic cooling.

### **EML 6157: Radiation Heat Transfer**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302, EML 4141.

Theory and analysis of radiation exchange in transparent and absorbing, and emitting and scattering media.

### **EML 6216: Analytical Dynamics II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 5215 or consent of instructor.

Continuation of Analytical Dynamics I. Vector and analytical dynamics in three dimensions. Rotational kinematics, particle and rigid-body motion, moments of inertia. Comparing Lagrangian techniques with the vector methods of Euler and Newton; vibrations, Euler's angles, gyroscope motion, and axially symmetric bodies.

### **EML 6229: Introduction to Random Dynamical Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Knowledge of functional analysis and MATLAB or similar programming language.

Analysis of stochastic systems found in science and engineering applications. Practical application of uncertainty analysis in nonlinear dynamical systems.

### **EML 6267: Structural Dynamics of Production Machinery**

**Credits: 3**                      **Grading Scheme:** Letter

Reviews mechanical vibrations with two degrees of freedom. Natural and forced vibrations of multi-degree-of-freedom systems. Experimental and computational modal analysis and synthesis. Vibrations of machine tools, rolling mills, robots.

### **EML 6278: Advanced Rotor Dynamics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EML 4220 and consent of instructor.

Analyzing dynamic stability, critical speeds, and unbalance response of rotor-bearing systems. Special problems encountered in modern applications operating through and above the critical speeds.

### **EML 6281: Geometry of Mechanisms and Robots I**

**Credits: 3                      Grading Scheme: Letter**

Developing applications to basic theory of the mathematics required to design spatial mechanisms and robot arms. Examples include mathematical description of the elements of mechanisms and robot arms (namely linkages and joints); their mobility and their analysis.

### **EML 6282: Geometry of Mechanisms and Robots II**

**Credits: 3                      Grading Scheme: Letter**

Applying the theory of screws to determine stationary and uncertainty configurations of mechanisms and robot arms. Dexterity and workspace of robot arms.

### **EML 6323: Nontraditional Manufacturing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing

Focusing on nontraditional additive and subtractive manufacturing processes using electrical, chemical, ultrasonic, magnetic, and photonic energy - including processes and equipment.

### **EML 6324: Fundamentals of Production Engineering**

**Credits: 3                      Grading Scheme: Letter**

Fundamentals of metal cutting, metal forming, and welding. Accuracy and rigidity of machine tools. Automation, numerical control, adaptive control.

**EML 6350: Introduction to Nonlinear Control**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to nonlinear analysis and control systems theory. Lyapunov-based analysis and design techniques.

**EML 6351: Nonlinear Control II: Adaptive Control**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 6350

Control methods for uncertain nonlinear systems. Lyapunov-based robust, adaptive, learning, and estimation-based methods.

**EML 6352: Optimal Estimation and Kalman Filtering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EML 5311 or EEL 5182 or Equivalent

Methods of estimating parameters and random variables from noisy measurements with applications. State estimation of linear and non-linear dynamic systems with Kalman filtering and extended Kalman filtering, with mechanical and aerospace engineering applications such as target tracking.

**EML 6365: Robust Control Synthesis**

**Credits: 3**                      **Grading Scheme:** Letter

Application of uncertainty modeling and robust controls to dynamic systems for both analysis and synthesis.



### **EML 6417: Solar Energy Utilization**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Solar energy; its characteristics and availability; collection and storage; conversion and use as heat, refrigeration, thermal electric and power, photovoltaic conversion; and other applications.

### **EML 6451: Energy Conversion**

**Credits: 3                    Grading Scheme: Letter**

Converting available forms of energy into mechanical and electrical forms; energy conversion schemes, including conventional cycles in unusual environments. MHD, photovoltaics, thermionic and thermoelectric conversion and fuel cells.

### **EML 6606: Advanced Air Conditioning**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* EML 4600.

Air-conditioning system selection and system design; air-handling techniques including noise control, cleaning, and temperature and humidity control; modern technological development and economic analysis.

### **EML 6905: Individual Projects in Mechanical Engineering**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

### **EML 6934: Special Topics in Mechanical Engineering**

**Credits: 1-4    Max: 12            Grading Scheme: Letter**

**EML 6936: Nonthesis Project**

**Credits: 1-4    Max: 6                    Grading Scheme: S/U**

An in-depth project for graduate students not pursuing a thesis master's degree.

**EML 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**EML 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EML 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**ENC 5236: Advanced Business Writing for Accounting**

**Credits: 4                    Grading Scheme: Letter**

Practice in and examination of theories of professional writing.

**ENC 5319: Scholarly Writing for Publication**

**Credits: 3                      Grading Scheme: Letter**

Being able to employ the correct forms, to interpret and synthesize the literature, and to present research to various audiences will help position graduate students in a competitive job market. Students transform research into publishable articles, drafting, editing, and revising their work with the guidance of instructor and peer feedback.

**ENC 6428: Digital English**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

Digital technologies, media, and programs related to the discipline of English. Scholarship and theory about (and production of work in) such media (web, MOO).

**ENG 6016: Psychological Approaches to Literature**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

**ENG 6075: Literary Theory: Issues**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

**ENG 6076: Literary Theory: Theorists**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

**ENG 6077: Literary Theory: Forms**

**Credits: 3    Max: 12            Grading Scheme: Letter**

Forms of theory studies (e.g., "schools," writing practices, assemblages of theoretical issues).

**ENG 6137: The Language of Film**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENG 6138: Studies in the Movies**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENG 6906: Individual Work**

**Credits: 1-3    Max: 12            Grading Scheme: Letter**

**ENG 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ENG 6932: Film and Video Production**

**Credits: 3    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* None.

A variable-topics film and video production seminar.

**ENG 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ENG 7939: Seminar in Variable Topics**

**Credits: 1-5    Max: 12                    Grading Scheme: Letter**

**ENG 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ENG 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**ENL 6206: Studies in Old English**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6216: Studies in Middle English**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6226: Studies in Renaissance Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6236: Studies in Restoration and 18th-Century Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6246: Studies in Romantic Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6256: Studies in Victorian Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENL 6276: Studies in 20th-Century British Literature**

**Credits: 3    Max: 12            Grading Scheme: Letter**

**ENT 5275: Family Business Management**

**Credits: 2                    Grading Scheme: Letter**

Crucial aspects of managing small business enterprises. Identifying and analyzing characteristic operating problems of small firms and techniques for solving them. Strategic operating and psychological issues associated with running a privately-held or family firm.

**ENT 6006: Entrepreneurship**

**Credits: 2                    Grading Scheme: Letter**

Practical, hands-on understanding of the stages of the entrepreneurial process. Focuses on the decision-making process in a start-up company.

**ENT 6008: Entrepreneurial Opportunity**

**Credits: 2                    Grading Scheme: Letter**

Introduces non-business graduate students to entrepreneurship and the entrepreneurial process.

**ENT 6016: Venture Analysis**

**Credits: 2                    Grading Scheme: Letter**

Explores and critiques real-world examples of how new business ventures were conceived, started, and run.

### **ENT 6116: Business Plan Formation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Professional development and preparation of a company business plan. Full analysis of the plan and outside evaluation and ranking.

### **ENT 6416: Venture Finance**

**Credits: 2**                      **Grading Scheme:** Letter

Capital structure and financing needs of start-up companies. Valuation of nonpublicly traded companies. Intellectual property.

### **ENT 6506: Social Entrepreneurship**

**Credits: 2**                      **Grading Scheme:** Letter

Process of starting, financing, assessing and managing succession of mission-based for-profit and not-for-profit ventures.

### **ENT 6616: Creativity in Entrepreneurship**

**Credits: 2**                      **Grading Scheme:** Letter

Explores the fundamental tools used to make both individuals and organizations more creative and innovative.

### **ENT 6706: Global Entrepreneurship**



**Credits: 2                      Grading Scheme: Letter**

Consideration of global market context in starting entrepreneurial ventures internationally.

**ENT 6905: Individual Work in Entrepreneurship**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

Individual work in an Entrepreneurship related topic.

**ENT 6930: Special Topics**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

Rotating topics in special topics in entrepreneurship-related fields of study.

**ENT 6933: Entrepreneurship Lecture Series**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

Explores opportunity recognition, business planning, capital sourcing, growth and harvest. Provides a background necessary for students interested in careers in start-up ventures, high-growth firms, business consulting or venture capital. Introduces students to resources in the entrepreneurial arena and provide a forum for networking and career development.

**ENT 6946: Entrepreneurial Consulting Project**

**Credits: 2                      Grading Scheme: Letter**

To teach entrepreneurship by working the through real problems of real companies. To teach team dynamics, goal

setting, and project management in an unscripted environment. To aid the economy by producing value-adding solutions to business problems.

### **ENT 6950: Integrated Technology Ventures**

**Credits: 1-4    Max: 8                    Grading Scheme:** Letter

Teams of engineering, business, and law students work together to commercialize UF developed technology. Objectives include commercialization of University of Florida technology through teaching entrepreneurship while attempting to commercialize a real technology, teaching team dynamics, goal setting, and project management.

### **ENT 6957: International Studies in Entrepreneurship**

**Credits: 1-4    Max: 8                    Grading Scheme:** Letter

Academic credit for courses taken overseas.

### **ENU 5142: Reliability and Risk Analysis for Nuclear Facilities**

**Credits: 3                                  Grading Scheme:** Letter

*Prerequisite:* ENU 4144 or 5005 and 4934 or ENU 6935.

Nuclear facilities' safety systems including reliability and probabilistic risk assessment.

### **ENU 5176L: Principles of Nuclear Reactor Operations Laboratory**

**Credits: 1                                  Grading Scheme:** Letter

*Prerequisite:* ENU 4144 or equivalent and consent of instructor.

Principles of reactor operations applied to startup, operation, and control of the training reactor to include performing reactor physics measurements and instrumentation and control calibrations.

### **ENU 5186: Nuclear Fuel Cycles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4104.

Fuel cycle from uranium mining through waste management. Reactor fuel cycle including economics and advanced fuel management. Nodal code evaluation of criticality, power peaking and power sharing through operating cycle, use of burnable poisons and reshuffle and reload for uranium and plutonium cycles.

### **ENU 5196: Nuclear Reactor Power Plant System Dynamics and Control**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4192 and EEL 4657 or EML 5311.

Control theory analysis applied to nuclear power reactor dynamic models with feedback and to integrated nuclear power plant dynamic models with feedback.

### **ENU 5516L: Nuclear Engineering Laboratory II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4612L or ENU 5615L and 4104 or ENU 6106.

Laboratory practice in neutron and gamma detection and analysis. Determination of basic neutron parameters in nonmultiplying and multiplying media.

### **ENU 5615C: Nuclear Radiation Detection and Instrumentation**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 3003 and EEL 3303L or equivalent.      *Corequisite:* ENU 6051; or prereq of ENU 4605 or equivalent.

Interaction of radiation with matter, radiation-detection systems, pulse shaping, amplification, amplitude and time-analyzing circuitry; counting and measuring devices and control systems for nuclear reactors.

### **ENU 5615L: Nuclear Radiation Detection and Instrumentation Lab**

**Credits: 1**                      **Grading Scheme:** Letter

Laboratory associated with ENU 5615C.

### **ENU 5626: Radiation Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* one year each of college biology, chemistry, and physics; permission of instructor.

Effects of radiation on biological molecules, cells, and man including cancer and mutagenesis; use of radiation in treatment of disease.

### **ENU 5658: Imaging System Analysis with Medical Physics Applications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Calculus 1-3 (MAC2311, MAC 2313 and MAC 2313) or Equivalent

The application of linear systems theory for the analysis of medical imaging systems with an emphasis on radiological imaging. Topics covered include the following: convolution, Fourier Transform, linear filtering, sampling theory, image reconstruction from projections and methods for image quality evaluation.

### **ENU 5705: Advanced Concepts for Nuclear Energy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4104, 4144 and EML 3100.

Plasmas and thermonuclear fusion; fast reactors, advanced LWRs, and other advanced fission reactors; nuclear pumped lasers; TE, TI, and MHD conversion and Stirling engines as applied to advanced reactor concepts.

### **ENU 6051: Radiation Interaction Basics and Applications I**

**Credits: 3**                      **Grading Scheme:** Letter

Interaction of X-rays, gamma rays, neutrons, and charged particles with matter; radioactive decay, nuclear moments, and nuclear transitions. Application to basic problems in nuclear engineering sciences.

### **ENU 6052: Radiation Transport Basics and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

Particle distribution functions. Elementary transport and statistical description of particulate matter. Development of transport relations and their solutions. Applications to basic problems in nuclear engineering sciences.

### **ENU 6053: Radiation Interaction Basics and Applications II**

**Credits: 3**                      **Grading Scheme:** Letter

Continuation of ENU 6051. Nuclear Structure, stability and models; nuclear reactions; ionization of matter by charged particles, neutrons, and electromagnetic radiation with application to basic problems in nuclear engineering sciences.

### **ENU 6061: Survey of Medical Radiological Physics**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate classical and modern physics, and differential equations.

An overview of the areas of medical radiological physics including diagnostic radiography, nuclear medicine, and radiation therapy. Basic radiation physics, biology, and safety.

### **ENU 6106: Nuclear Reactor Analysis I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 6051.

Nuclear criticality, neutron transport equation, multigroup neutron diffusion theory, and perturbation theory. Reactor kinetics: point model, reactivity feedback, and space-time models.

### **ENU 6107: Nuclear Reactor Analysis II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 6106.

Fast and thermal spectrum calculations for homogeneous and heterogeneous reactor cores. Nuclear reactor core design including nuclear and thermal hydraulic analyses. Core power distributions, composition changes, and reactivity control.

### **ENU 6126: Fundamentals of Reactor Kinetics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4001, ENU 4605, ENU 4103.

Nuclear reactor kinetics, including mathematics, transport and diffusion considerations, steady state and time dependent reactor physics, delayed neutron properties, photoneutrons, and neutron reactions, approximations and solutions to the kinetics equations, numerical solution methods using explicit, implicit, integral, marching, and finite difference solution methods.

### **ENU 6135: Nuclear Thermal Hydraulics**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* EML 4140 and (ENU 4133 or EGN 3353C)

Treatment of nuclear thermal sciences: thermodynamics, fluid mechanics, heat transfer, two-phase flow, boiling; sub-channel thermal hydraulics, steam generator design, balance of plant analysis.

### **ENU 6136: Advanced Nuclear Thermal Hydraulics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 4134 or EGM 6812 or EML 6155 or ENU 6135

Topics in advanced nuclear thermal hydraulics, fluid mechanics, and heat transfer including areas of ongoing research and applications to current and future nuclear fission reactors.

### **ENU 6623: Radiation Dosimetry**

**Credits: 3**                      **Grading Scheme:** Letter

Concepts, dosimetry quantities and units, calculations for external gamma, beta, and neutron radiation, calculation of dose from internal radioactivity, dose measurements concepts, gamma and beta dose measurements, dose assessment from survey and personnel monitoring.

### **ENU 6627: Therapeutic Radiological Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 5615C, ENU 6051.

Introduction to radiation therapy physics: teletherapy, brachytherapy, interstitial therapy. Production of photons and electrons for therapeutic use. Radiation measurement and dosimetry clinical applications. Radiation protection and quality assurance.

### **ENU 6636: Medical Radiation Shielding & Protection**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BME XXXX-Radiological Physics, Measurements and Dosimetry

Shielding design fundamentals. Methods of calculating gamma-ray attenuation, fast neutron penetration, effects of ducts and voids in shields, problems of heat generation and deposition in reactor components.

### **ENU 6651: Clinical Rotation in Radiation Therapy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* working knowledge of therapeutic radiological physics.

Experience in clinical therapeutic radiological procedures, patient dosimetry, and treatment planning.

### **ENU 6652: Clinical Rotation in Diagnostic Radiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* working knowledge of diagnostic radiological physics.

Experience in clinical diagnostic radiological procedures. Application of physical principles to imaging and the quality assurance of the imaging chain.

### **ENU 6655: Advanced Diagnostic Radiological Physics**

**Credits: 3**                      **Grading Scheme:** Letter

Applying advanced physical principles, image acquisition, and processing techniques to clinical imaging physics. Methods and principles of MRI and ultrasound imaging. Digital image archiving, transmission and processing standards, and networks.

### **ENU 6657: Diagnostic Radiological Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 5615C, ENU 6051, ENU 6053.

X- and gamma-ray production and spectra. Radiopharmaceuticals. Medical imaging concepts and hardware. Clinical overview of diagnostic x-ray and nuclear medicine. Application of radiation protection principles.

### **ENU 6659: Nuclear Medicine Instrumentation and Procedure**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENU 5615C or equivalent.

Theory, evaluation, applications of detecting and imaging systems in nuclear medicine including collimators, scintillation probes, cameras, data-processing devices; uses of radionuclides in medicine for radiopharmaceutical preparation.

### **ENU 6805: Introduction to Nuclear Reactor Materials**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the materials used in nuclear energy systems and their response to the reactor environment. The majority of materials related issues encountered in the nuclear power plants are discussed in this course.



**ENU 6835: Nuclear Fuels**

**Credits: 3                      Grading Scheme: Letter**

Survey of the nuclear fuels from ore to waste, including mining, pin design, fabrication, in-core performance, storage, disposal and fuel economics.

**ENU 6905: Individual Work**

**Credits: 1-6    Max: 12                      Grading Scheme: Letter**

Supervised study or research in areas not covered by other graduate courses.

**ENU 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**ENU 6935: Nuclear and Radiological Engineering Seminar**

**Credits: 1    Max: 3                      Grading Scheme: Letter**

Discussion of research, current trends in the nuclear related industry, government, and research establishments.

**ENU 6936: Special Projects in Nuclear and Radiological Engineering Sciences**

**Credits: 1-9    Max: 12                      Grading Scheme: Letter, H**

Nonthesis research projects.

**ENU 6937: Special Topics in Nuclear and Radiological Engineering Sciences**

**Credits: 1-9    Max: 12            Grading Scheme: Letter, H**

**ENU 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ENU 6972: Research for Engineer's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ENU 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ENU 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

### **ENV 5072: Pollution Control and Prevention**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046, PHY 2005.

Survey of engineering processes used to control pollutants in four environmental engineering systems: water, air, waste, and radioactive materials. Pollution prevention for a sustainable environment.

### **ENV 5075: Environmental Policy**

**Credits: 3**                      **Grading Scheme:** Letter

Policy analysis, making, and implementation. Analytical methods for evaluating alternative policies. Legal, social, political, and economic patterns and processes that shape the climate in which environmental policy is made.

### **ENV 5105: Foundations of Air Pollution**

**Credits: 3**                      **Grading Scheme:** Letter

Principal types, sources, dispersion, effects, and physical, economic and legal aspects of control of atmospheric pollutants.

### **ENV 5305: Advanced Solid Waste Treatment Design**

**Credits: 3**                      **Grading Scheme:** Letter

Review of solid and hazardous waste treatment processes, including thermal, biological, chemical, and mechanical treatment. Analysis of existing operations.

### **ENV 5306: Municipal Refuse Disposal**

**Credits: 3**                      **Grading Scheme:** Letter

Quantities and characteristics of municipal refuse and hazardous materials. Collection methods, transfer stations, equipment and costs. Refuse disposal practices, regional planning and equipment.

### **ENV 5518: Field Methods in Environmental Hydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 5125 or equivalent.

Field methods for characterizing sites for environmental and hydrologic evaluation. Focuses on subsurface systems and ground water interactions.

### **ENV 5520: Fluid Flow in Environmental Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046, PHY 2005.

Fundamentals of fluid flow and their relation to environmental systems such as surface water, ground water, and engineering systems.

### **ENV 5555: Wastewater Treatment**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4514C or equivalent.

In-depth study of the physical, chemical, and biological processes used to treat wastewater. Emphasizes cause and effect of physical and biological actions.

### **ENV 5565: Hydraulic Systems Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR3201.

Hydraulic design of water distribution systems, wastewater collection and disposal systems, and water and wastewater treatment plants.

### **ENV 6050: Advanced Pollutant Transport**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 3040, 4501, or consent of instructor.

Quantifying physical, biological, and chemical processes occurring in natural freshwater ecosystems. Mathematical analysis of the effects of conservative and nonconservative pollutant loadings to lakes and rivers. Detailed study of dissolved oxygen mass balance modeling and eutrophication.

### **ENV 6052: Immiscible Fluids in Porous Media**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Mechanics of immiscible fluids in porous media. Static fluid distributions, and steady and unsteady multiphase flow. Remediation of sites contaminated with nonaqueous phase liquids.

### **ENV 6116: Air Pollution Sampling and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4101 or consent of instructor.

Determining the concentration of normally encountered ambient pollutants. Practical experience in ambient air and indoor sampling.

### **ENV 6126: Air Pollution Control Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4101 or consent of instructor.

Design, analysis, operational limitations, cost and performance evaluation of control processes and equipment. Field visits to and inspection of industrial installations.

### **ENV 6130: Aerosol Mechanics**

**Credits: 3                      Grading Scheme: Letter**

Generating, collecting, and measuring aerosols. Theory of fluid dynamic, optical, electrical, inertial, and thermal behavior of gas-borne particles.

**ENV 6146: Atmospheric Dispersion Modeling**

**Credits: 3                      Grading Scheme: Letter**

Predicting downwind pollutant concentrations from point, line, and areal sources.

**ENV 6215: Health Physics**

**Credits: 3                      Grading Scheme: Letter**

Techniques of hazard evaluation and radiation control; monitoring methods; survey techniques; biological sampling; instrument calibration; exposure standards and radiation protection regulation; on-site radiation safety surveys and evaluation.

**ENV 6216: Radioactive Wastes**

**Credits: 3                      Grading Scheme: Letter**

Source, treatment, and disposal. Emphasizes preventing environmental contamination.

**ENV 6301: Advanced Solid Waste Containment Design**

**Credits: 3                      Grading Scheme: Letter**

Current practice in designing solid and hazardous waste landfills, waste piles, monofills, and surface impoundments. Regulations, siting, sizing, liners, leachate and gas management, operations, closure, and post-closure.

### **ENV 6416: Advanced Stormwater Control Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EES4201 or equivalent water chemistry  
ENV4514C or equivalent water & wastewater treatment

Chemical, physical, biological and hydrologic aspects of rainfall-runoff; and control through unit operations and processes (UOP); interactions between hydrologic processes; water chemistry, sediment transport, infrastructure materials and UOPs; constituent physical properties, chemistry and loads related to design of UOPs for control, treatment and/or reuse.

### **ENV 6435: Advanced Water Treatment Process Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4514C, EES 4201

Design of selected water treatment processes including disinfection, air stripping, adsorption, ion exchange and membrane processes.

### **ENV 6435C: Advanced Water Treatment Process Design**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046, EES 4201 or 6208, ENV 4514C.

Designing water treatment processes including air stripping disinfection, activated carbon adsorption, ion exchange, membrane processes, and ozonation. Predesigning laboratory studies to select appropriate process parameters.

### **ENV 6435L: Water Treatment Process Design Laboratory**

**Credits: 1**                      **Grading Scheme:** Letter

*Corequisite:* ENV 6435

Development of water treatment design parameters by performing bench scale and pilot scale experiments on selected treatment processes.

### **ENV 6437: Advanced Wastewater System Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENV 4514C or equivalent.      *Corequisite:* ENV 4561 or equivalent.

Layout and design of sanitary sewage systems, pumping stations, force mains, wastewater treatment plants, and methods of effluent disposal. Emphasizes preparing design drawings and estimating costs.

### **ENV 6438: Advanced Potable Water Systems Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* EES 4201 or EES 6208, and ENV 4514C.

Design of water treatment operations, including coagulation, flocculation, mixing, sedimentation, filtration, softening, corrosion control, and sludge management. Design costs.

### **ENV 6439: Activated Carbon: Environmental Design and Application**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and application of manufacturing activated carbon, its use in water treatment/remediation (i.e., design of activated carbon systems), and thermal reactivation.

### **ENV 6441: Water Resources Planning and Management**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practice of water resource planning and management. Protocols used at local, state, federal, regional, and international levels. Plan formulation, evaluation, and implementation. Stakeholder involvement in planning processes. Analytical tools. Case studies.

### **ENV 6508: Wetland Hydrology**



**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* basic fluid flow course or consent of instructor.

Water flow and chemical transport in wetlands. Surface water and ground water interaction in wetlands. Constructed wetlands for water treatment.

#### **ENV 6510: Groundwater Restoration**

**Credits: 3                      Grading Scheme: Letter**

Designing water treatment systems using aeration, activated carbon, reverse osmosis, and in situ bioremediation to restore contaminated groundwater.

#### **ENV 6511: Biological Wastewater Treatment**

**Credits: 3                      Grading Scheme: Letter**

Theory and current research associated with biological treatment processes.

#### **ENV 6556: Advanced Waste Treatment Operations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* course or professional experience in unit operations and processes of water and wastewater treatment.

Biological, physical, and chemical processes used in the advanced treatment of domestic and industrial wastewater. Reuse application and guidelines.

#### **ENV 6617: Principles of Green Engineering Design and Sustainability**

**Credits: 3                      Grading Scheme: Letter**

Principles of sustainability and methods to incorporate them into engineering design practices. Demonstration of tools such as sustainability metrics, life cycle assessment, sustainability auditing and carbon footprinting.

**ENV 6905: Individual Work**

**Credits: 1-4    Max: 8                    Grading Scheme:** Letter

Faculty-supervised individual research or study of material not covered in formal courses.

**ENV 6910: Supervised Research**

**Credits: 1-5    Max: 5                    Grading Scheme:** S/U

**ENV 6916: Nonthesis Project**

**Credits: 1-3    Max: 3                    Grading Scheme:** Letter

**ENV 6932: Special Problems in Environmental Engineering**

**Credits: 1-4    Max: 8                    Grading Scheme:** Letter

**ENV 6935: Graduate Environmental Engineering Seminar**

**Credits: 1    Max: 6                    Grading Scheme:** Letter, S/U

**ENV 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**ENV 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ENV 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**ENV 5006: Graduate Survey of Entomology**

**Credits: 2**

**Grading Scheme: Letter**

*Corequisite:* ENV 5006L.

Insect structure, function, development, classification, ecological niches, and control of those harmful to plants and animals.

**ENV 5006L: Graduate Survey of Entomology Laboratory**

**Credits: 1**

**Grading Scheme: Letter**

*Corequisite:* ENV 5006.

Practical experience working with insects, using laboratory equipment, dissecting insects, and preparing laboratory reports. Collection required.

**ENY 5031C: Insect Field Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*For nonmajors.* Role of insects in nature. Field exercises and experiments.

**ENY 5151C: Techniques in Insect Systematics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ENY 3005C.

Procedures and techniques used to study systematics of insects and related organisms.

**ENY 5160C: Survey of Science with Insects**

**Credits: 3**                      **Grading Scheme:** Letter

Interactions of insects with man and environment.

**ENY 5164: Graduate Survey of Invertebrate Field Biology**

**Credits: 3**                      **Grading Scheme:** Letter

Field-oriented survey of invertebrate biodiversity and conservation.

**ENY 5212: Insects and Wildlife**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENY 5006L or equivalent

Insects and other arthropods and their relationships with wild vertebrate animals.

**ENY 5223C: Biology and Identification of Urban Pests**

**Credits: 3**                      **Grading Scheme:** Letter

Biology, behavior, identification. Damage recognition of species that infest houses, damage structures, and affect pets and humans.

**ENY 5226C: Principles of Urban Pest Management**

**Credits: 3**                      **Grading Scheme:** Letter

Methods of controlling household, structural, and occasional pests. Chemical and nonchemical control of cockroaches, termites, and fleas.

**ENY 5236: Insect Pest and Vector Management**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices used in pest management, emphasizing arthropod pests affecting crop and ornamental plants, humans, and livestock.

**ENY 5241: Biological Control**

**Credits: 4**                      **Grading Scheme:** Letter

Principles involved in the natural and biological control of insects.

**ENY 5245: Agricultural Acarology**

**Credits: 2**                      **Grading Scheme:** Letter

Introduction to mites of agricultural importance, their biology, behavior, and control.

**ENY 5332: Graduate Survey of Urban Vertebrate Pest Management**

**Credits: 2**                      **Grading Scheme:** Letter

Biology, ecology, health risks, exclusion, and control of vertebrate pests in urban environment.

**ENY 5405: Insects as Vectors of Plant Pathogens**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ENY3005, ENY5006, or equivalent

This course will be presenting information on insect, other arthropod and nematode vectors of plant pathogens, and the role and management of these vectors in agricultural and environmental areas. Including material on identification and morphology of important vectors and how these features affect transmission of plant pathogens.

**ENY 5516: Turf and Ornamental Entomology**

**Credits: 3**                      **Grading Scheme:** Letter

Identification, biology, and integrated management of common arthropod families and species inhabiting turfgrasses and popular ornamental plants in the urban environment with emphasis on the Southeastern U.S.

**ENY 5566: Tropical Entomology**

**Credits: 3**                      **Grading Scheme:** Letter

Natural history, ecology, behavior, natural ecosystems, and agroecosystems of tropics.

**ENY 5567: Tropical Entomology Field Laboratory**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ENY 5566.

Field experience observing the natural history, ecology, and behavior of insects in natural ecosystems and agroecosystems in the tropics.

**ENY 5572: Advanced Apiculture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

The biology of honey bees and the craft of apiculture will be examined by exploring the natural history, biogeography and ecology of honey bees. Honey bee anatomy, physiology, colony social structure, pests/diseases, pollination ecology, management and current topics in beekeeping will be discussed.

**ENY 5611: Immature Insects**

**Credits: 4**                      **Grading Scheme:** Letter

Structure and identification of immature forms of insects, especially the Holometabola.

**ENY 5820: Insect Molecular Genetics**

**Credits: 3**                      **Grading Scheme:** Letter

Basics of DNA, RNA, gene transcription and translation, and tools used in molecular genetics of insects.

**ENY 6166: Insect Classification**

**Credits: 3**                      **Grading Scheme:** Letter

Classification of adult insects to family and of some to species level. Habitat, niche, and relationship to environment.

**ENY 6203: Insect Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* ENY 6203L

Advanced course on concepts in ecology with emphasis in insects; relationships with their biotic and physical environments and basics of ecological research.

**ENY 6203L: Insect Ecology Laboratory**

**Credits: 1**                      **Grading Scheme:** Letter

*Corequisite:* ENY 6203

Methodology and instrumentation used in ecological research with insects.

**ENY 6248: Termite Biology and Control**

**Credits: 2**                      **Grading Scheme:** Letter

Taxonomy, identification, behavior, ecology, and methods of control for the economically important termites of the New World.

**ENY 6401: Insect Physiology**

**Credits: 4**                      **Grading Scheme:** Letter

Physiology and biochemistry of insect development and adaptation for survival.



### **ENY 6401L: Insect Physiology Laboratory**

**Credits: 1**                      **Grading Scheme: Letter**

*Prerequisite:* ENY 3005 & BSC 2010 & BSC 2011

This graduate-level laboratory course complements the lecture course in Insect Physiology (ENY 6401). Students will learn internal and external anatomy of insects and gain proficiency in physiological, biochemical, and molecular biology techniques such as estimating respiratory gas exchange, protein purification and quantification, and estimating enzyme activity

### **ENY 6454: Behavioral Ecology and Systematics of Insects**

**Credits: 3**                      **Grading Scheme: Letter**

A theoretical and practical treatment of behavioral ecology and how phylogenetic methods can be employed to both develop and test hypotheses of how insect behavior has evolved.

### **ENY 6591C: Advanced Mosquito Identification**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* ENY 3005 or ENY 4161

Intensive, hands-on training on morphological features and the identification of adult and larval mosquitoes species that occur in North America, and discussions on historical and current issues in mosquito taxonomy.

### **ENY 6593: Advanced Mosquito Biology**

**Credits: 3**                      **Grading Scheme: Letter**

This course will be covering six critical areas of mosquito biology; classification, natural history and ecology, physiology, population dynamics, mosquito-borne diseases, and control of mosquitoes. Students will understand the fundamental processes governing mosquitoes and mosquito-borne diseases.

### **ENY 6651C: Insect Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

Chemistry, toxicity, mode of action, metabolism, and environmental considerations of insecticides and related compounds. Mechanisms of resistance to insecticides.

### **ENY 6665: Advanced Medical and Veterinary Entomology I**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* ENY 6665L.

Taxonomy, morphology, and biology of arthropods of medical and veterinary importance. A collection and project proposal will be required.

### **ENY 6665L: Advanced Medical and Veterinary Entomology Laboratory**

**Credits: 1**                      **Grading Scheme:** Letter

*Corequisite:* ENY 6665: Advanced Medical and Veterinary Entomology I.

Identification of mosquitoes, ticks, lice, fleas, and other disease vectors. Collection required.

### **ENY 6706: Forensic Entomology**

**Credits: 3**                      **Grading Scheme:** Letter

The role of arthropods in decomposition, in criminal and civil investigations and the increasing importance of science on society. The material discussed in this course deals with death and some may consider images and concepts disturbing.

### **ENY 6706L: Forensic Entomology Laboratory**

**Credits: 1**                      **Grading Scheme:** Letter

*Corequisite:* ENY 6706: Forensic Entomology.

Laboratory and field experiments designed to accompany ENY 6706 that will involve decomposing pig carcasses or other applied forensic applications.

### **ENY 6821: Insect Microbiology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Associations existing between insects and microorganisms including mutualistic relationships, commensalism, vector biology, and insect-pathogen interactions.

### **ENY 6822C: Molecular Biology Techniques with Invertebrates and Their Pathogens**

**Credits: 4                      Grading Scheme:** Letter

*Prerequisite:* basic course in genetics, biochemistry, or molecular biology.

Insects, nematodes, bacteria, viruses. Cloning of DNA, DNA blots, PCR, sequencing and analysis.

### **ENY 6905: Problems in Entomology**

**Credits: 1-4    Max: 12                      Grading Scheme:** Letter

Individual study under faculty guidance. Student and instructor to agree on problem and credits prior to registration.

### **ENY 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

Research for nonthesis M.S. students.

**ENY 6931: Entomology Seminar**

**Credits: 1    Max: 8            Grading Scheme: Letter, S/U**

Presentation and discussion of current research topics.

**ENY 6932: Special Topics in Entomology**

**Credits: 1-2    Max: 4            Grading Scheme: S/U**

Reports and discussions on selected topics announced in advance.

**ENY 6934: Selected Studies in Entomology**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**

Current issues. Subject matter variable, may be repeated with different subject each time.

**ENY 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**ENY 6942: Insect Diagnostics**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

Identifying insects and diagnosing plant damage caused by insects.

**ENY 6943: Entomology Internship**

**Credits: 1-3    Max: 6            Grading Scheme: S/U**

Diagnosing plant disorders caused by complex of insects and other factors.

**ENY 6944: Entomology Extension Internship**

**Credits: 1-3    Max: 6            Grading Scheme: S/U**

Diagnosing insect damage to plants in field and greenhouse. Learning to make control recommendations.

**ENY 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**ENY 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ENY 7980: Research for Doctoral Dissertation**

**Credits: 1-15            Grading Scheme: S/U**

### **EOC 5860: Port and Harbor Engineering**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EGN 3353C (or CWR 3201), MAP 2302 or equivalent.

Principles of port design; wave penetration; harbor oscillations; sediment movement and pollutant mixing; port structures, port operations; case studies.

### **EOC 6196: Littoral Processes**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* OCP 6165.

Shoreline developments; nearshore hydrodynamics; sediment transport phenomena by waves and wind; methods of determining littoral transport quantities; effects of groins, jetties, and other coastal structures on littoral processes.

### **EOC 6430: Coastal Structures**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* OCP 6165.

Planning and design for beach nourishment, breakwaters, jetties, seawalls and coastal protection structures.

### **EOC 6850: Numerical Simulation Techniques in Coastal and Ocean Engineering**

**Credits: 3                      Grading Scheme: Letter**

Numerical treatment of problems in ordinary and partial differential equations with application to incompressible geophysical fluid flows.

### **EOC 6905: Individual Study in Coastal and Oceanographic Engineering**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

**EOC 6932: Selected Field and Laboratory Problems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EGN 3353C (or CWR 3201), MAP 2302 or equivalent.

Field and/or laboratory investigations employing modern research techniques and instrumentation.

**EOC 6934: Advanced Topics in Coastal and Oceanographic Engineering**

**Credits: 1-6    Max: 9                      Grading Scheme: Letter**

Waves; wave-structure interaction; coastal structures; ocean structures; sediment transport; instrumentation; advanced data analysis techniques; turbulent flow and its applications.

**EOC 6939: Graduate Seminar**

**Credits: 1    Max: 6                      Grading Scheme: S/U**

Guest lecturers; lectures by COE faculty and students.

**EOC 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**EOC 6972: Research for Engineer's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**EOC 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**EOC 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**ESC 5211: Current Topics in Earth Science for Teachers**

**Credits: 3**

**Grading Scheme: Letter**

*Corequisite:* ESC 5211L recommended. May not be taken for major credit in earth sciences.

Basic principles and overview of recent advances in earth sciences, for secondary science teachers.

**ESE 6215: The Secondary School Curriculum**

**Credits: 3**

**Grading Scheme: Letter**

Scope, function, and types of secondary school curricula and ways of improving existing programs.

**ESE 6344: Classroom Practices and Assessment in Secondary Education**



**Credits: 3                      Grading Scheme: Letter**

Practical applications of recent research on effective classroom practices.

**ESE 6345: Effective Teaching and Classroom Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of departmental.

Advanced strategies for planning and presenting the general academic content of mathematics, science, foreign language, social studies, and English in the secondary school.

**ESE 6905: Individual Work**

**Credits: 1-4    Max: 12 including EDE 6905                      Grading Scheme: Letter**

**ESE 6939: Special Topics**

**Credits: 3    Max: 10                      Grading Scheme: Letter**

**ESE 6945: Student Teaching in Secondary School**

**Credits: 3-9    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Supervised teaching in the secondary school, Grades 6-12.

**ESI 5236: Reliability Engineering**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* ESI 4567C, STA 4322.

Mathematical models and methods of reliability engineering. Typical component failure distributions; system reliability as a function of component reliability. Reliability block diagrams and fault trees.

### **ESI 6162C: Advanced Industrial Applications of Microprocessors**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* CGS 2425.

Concepts of microprocessors; microcomputer architecture and languages. Interfacing and computational requirements. Applications to industrial and manufacturing systems. Emphasis on laboratory experiments and "hands-on" experience.

### **ESI 6314: Deterministic Methods in Operations Research**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* calculus through differential equations, knowledge of linear algebra, and experience using mainframes or PCs.

Introduction to basic models and their solution with modern computer packages. Emphasis on modeling, computer solution, and sensitivity analysis with minimal reference to model theory and development of algorithmic methods.

### **ESI 6321: Applied Probability Methods in Engineering**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* calculus, differential equations, undergraduate probability, and statistics.

Applied probability theory and statistics, reliability engineering, quality control, robust design, forecasting, Markov processes, and queuing theory.

### **ESI 6323: Models for Supply Chain Management**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* prior course work in linear programming, probability, and stochastic processes.

Essential elements including controlling and coordinating activities such as order processing, purchasing, material storage and handling, production scheduling, packaging, transportation, and setting customer service standards.

### **ESI 6341: Intro to Stochastic Optimization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Basic knowledge of calculus, statistics and linear programming.

Introduction to Stochastic Optimization is intended as a first introductory course for graduate students in such fields as engineering, operations research, statistics, mathematics, and business administration (in particular, finance or management science). 3 credits.

### **ESI 6355: Decision Support Systems for Industrial and Systems Engineers**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* programming course in C++ or Java and operations research.

Applications of decision support systems: developing and implementing systems arising in industrial and systems engineering using popular database management and spreadsheet software.

### **ESI 6417: Linear Programming and Network Optimization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* matrix theory.

Formulation and solution techniques for network flow and linear programming problems. Algorithms for network optimization. The simplex method, theory and computation. Duality theory, sensitivity analysis.

### **ESI 6418: Linear Programming Extensions and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ESI 6417, ESI 6429.

Extension of linear programming to large scale linear and nonlinear problems. Integer programming methods. Applications of the methodology to real world models.

## **ESI 6420: Fundamentals of Mathematical Programming**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Mathematical background, ability to proof mathematical statements and ability to write simple codes with Matlab or C.

Introducing mathematical programming with an emphasis on classical optimization concepts, models and solution techniques. Focus on convex analysis (convex sets, separation theorems, convex functions), optimality conditions (Fritz-John & Karush-Kuhn-Tucker), Lagrangian duality and iterative solution methods 9gradient, conjugate gradients & barrier methods.

## **ESI 6429: Introduction to Nonlinear Optimization**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ESI 6417 and multivariable calculus.

Nonlinear optimization models, convex sets and functions, optimality conditions, nonlinear algorithms, dynamic programming methods.

## **ESI 6448: Discrete Optimization Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* linear programming and nonlinear optimization or equivalent.

Modeling with integer variables; enumeration and cutting plane methods; decomposition algorithms; branch and bound methods; computational complexity and software issues; special combinatorial optimization problems; parallel algorithms for integer programming.

## **ESI 6449: Integer Programming**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ESI 6417 and ESI 6448

Advanced topics in the theory, algorithms and applications of integer programming. Focus on polyhedral approaches (cutting planes, integer polyhedra, primal algorithms), theory of lattices and algebraic geometry approaches (Gobner bases, generating functions, sos relaxations).

### **ESI 6470: Principles of Manufacturing Systems Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* calculus through differential equations.

Introduction to modern manufacturing systems. Components of product and process design, computer-integrated manufacturing and automation. Current areas of development and research.

### **ESI 6492: Global Optimization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* linear and nonlinear programming.

Properties of nonconvex functions, convex envelopes, and duality. Complexity issues, applications of global optimization and software issues. Algorithms for quadratic programming. Concave minimization, Lipschitz optimization, and nonconvex network flow problems.

### **ESI 6529: Digital Simulation Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* computer programming and probability theory.

Computer programming aspects of digital simulation. Deterministic simulation; stochastic simulation. Use of simulation languages.

### **ESI 6533: Advanced Simulation Design and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ESI 6546, and a graduate-level course in statistical inference.

Fundamental concepts and techniques for stochastic simulation and applications in communications, transportation and manufacturing systems, and financial engineering. Discrete-event systems and Monte-Carlo evaluation.

### **ESI 6546: Stochastic Modeling and Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6326.

Stochastic processes, with emphasis on model building and probabilistic reasoning. Review of elementary probability theory. Poisson process and renewal theory. Discrete and continuous time Markov chains. Brownian motions, random walks, and martingales. Applications in queuing, reliability, inventory theory, logistics, and finance.

### **ESI 6552: Systems Architecture**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* calculus, linear algebra, ESI 6553: Systems Design

Foundations for developing and evaluating architectures for systems of systems. Process for generating functional, physical, and operational architecture from a top-level operations concept.

### **ESI 6553: Systems Design**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* calculus, linear algebra, basics of statistics, ESI 6314.

Broad introduction to systems engineering and the structured approaches needed to design complex systems. Emphasizes formulation of systems problems and approaches to their solution. Introduces basic mathematical techniques for dealing with systems design.

### **ESI 6555: Systems Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* calculus, linear algebra, basics of statistics.

Introduction to the concepts of systems and the role of systems engineering in their development. Basic framework for planning and assessing system development, and how systems analysis methods and techniques are integrated into systems engineering processes.

### **ESI 6912: Advanced Topics in ISE**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Course work in specialized topics for graduate students.

**EUH 5195: The Archaeology of the Middle Ages**

**Credits: 3                      Grading Scheme:** Letter

Examining key issues in the theory and practice of medieval archaeology. Major themes include the relation between history and archaeology, nationalism in archaeology, urban centers, rural settlements, church and monastic archaeology, wetland archaeology, mortuary archaeology, crafts, social relations, power in the Middle Ages, gender, ethnicity, and state formation.

**EUH 5546: Topics in British History**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

**EUH 5934: Topics in European History**

**Credits: 3    Max: 15                      Grading Scheme:** Letter

**EUH 6126: Readings in Medieval History**

**Credits: 3                      Grading Scheme:** Letter

Major themes; readings combine classic studies that shaped the field with current work exploring issues like gender, textuality and historical memory, and popular religion.

**EUH 6174: Conversion in the Middle Ages**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the religious experience of the middle ages through reading and discussion of concepts such as conversion, martyrdom, sainthood, gender, and power.

**EUH 6175: Ethnicity in the Middle Ages**

**Credits: 3**                      **Grading Scheme:** Letter

Ethnicity as a form of social and political mobilization in the middle ages. Focuses on issues such as migration, ethnogenesis, medieval law, language and ethnic identity, kingdoms, and ethnic communities.

**EUH 6176: Villages and Peasants in the Middle Ages**

**Credits: 3**                      **Grading Scheme:** Letter

In-depth examination of such key concepts as manorialism, corvee, manumission, and using written and archaeological sources.

**EUH 6177: Economy and Society in Late Antiquity and the Early Middle Ages**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the processes by which land tenure, trade, and aristocratic demand interacted to become powerful forces in shaping political, social, and economic conditions of the transition from Antiquity to the Middle Ages (from Late Antiquity to the early Middle Ages).

**EUH 6213: Europe, 1500-1763**

**Credits: 3**                      **Grading Scheme:** Letter



**EUH 6289: Readings, Modern Europe**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

Major themes; readings combine classic studies that shaped the field with current works exploring a wide range of topics.

**EUH 6469: Modern German History**

**Credits: 3                    Grading Scheme:** Letter

Interpretations of and approaches to German history, and introduction to advanced research in the area.

**EUH 6935: Readings, Early Modern Europe**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

Major themes; readings combine classic studies that shaped the field with current works exploring a wide range of topics.

**EUH 6937: Readings in Mediterranean History**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

**EVR 5322: Scientific Processes in Conservation and Development**

**Credits: 2                    Grading Scheme:** Letter

*Prerequisite:* one ecology course.

Scientific bases and critical thinking focused on the interplay between environmental conservation and economic and social development.

### **EVR 5705: Natural Resources and Innovation Systems**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* Graduate standing

Natural resource science, technology, and the innovation process; cases in food, agriculture, forestry, water, urban environment, and energy, and their role in sustaining society.

### **EVR 6320: Sustainable Natural Resource Management**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* one ecology course.

Principles of interdisciplinary ecology and social-ecological systems applied to sustainable natural resource management in a time of rapid global change.

### **EVR 6933: Seminar**

**Credits: 1    Max: 4                      Grading Scheme:** S/U

### **EVR 6934: Internship**

**Credits: 3    Max: 6                      Grading Scheme:** S/U

Intensive workplace experience in business, government, or nongovernment organization related to a specific program of study.

### **EVR 6979: Nonthesis Master's Project**

**Credits: 1-2    Max: 2            Grading Scheme: S/U**

Creating a technical paper involving analysis and synthesis, but not necessarily generating new data.

**EXP 6099: Survey of Cognition and Sensory Processes**

**Credits: 2-3    Max: 3            Grading Scheme: Letter**

*Prerequisite:* graduate status.

Empirical and theoretical foundations.

**EXP 6609: Seminar: Cognition**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* EXP 3604 or consent of instructor.

Selected topics in the areas of thinking, problem solving, and reasoning.

**EXP 6939: Seminar: Current Issues in Cognition and Sensory Processes**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**FAS 5203C: Biology of Fishes**

**Credits: 4            Grading Scheme: Letter**

*Prerequisite:* BSC 2011/2011L or consent of instructor.

Emphasizes trends in evolution, integrative and sensory biology, physiology, feeding ecology, reproduction, growth, and population dynamics as they relate to fisheries. Offered fall term in odd-numbered years.

**FAS 5255C: Diseases of Warmwater Fish**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Intensive, 2-week course (80 contact hours) in methodology for diagnosing and treating parasitic, bacterial, viral, nutritional, and environmental diseases of warmwater food fish and aquarium species. Offered summer term in even-numbered years.

### **FAS 5276C: Field Ecology of Aquatic Organisms**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* FAS 4305C or consent of instructor.

Understanding principles of fish and shellfish ecology through field studies. Intensive study in lakes, rivers, and coastal marshes to gain understanding of how fish and shellfish interact with their environment. Requires extensive field trips. Offered summer term.

### **FAS 5335C: Applied Fisheries Statistics**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* FAS 5276C or consent of instructor.

Population sampling and estimation, statistical assumptions and robustness, mark-recapture, growth, and empirical modeling of populations. Offered fall term in even-numbered years.

### **FAS 5901: Scientific Thinking in Ecology**

**Credits: 2**                      **Grading Scheme: Letter**

General philosophical foundations of science and specific critiques and perspectives found in ecology and aquatic sciences. Offered fall term.

### **FAS 6154: Aquatic Invertebrate Ecological Physiology**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* undergraduate course in animal physiology.

Biochemical, physiological, behavioral, and ecological adaptations that allow animals to survive in particular environments.

### **FAS 6171: Applied Phycology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate chemistry or biochemistry.

Ecology, management, use, and control of freshwater and marine algae and aquatic microorganisms. Overview of associated products, processes, and problems and economic implications. Offered fall term in even-numbered years.

### **FAS 6176: Algae Biology and Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

Covers the biology and ecology of aquatic algae, including evolution, classification, structure, photosynthesis, growth, and reproduction. Emphasis on the ecological role of algae in different aquatic ecosystems (e.g. open ocean, estuaries, coral reefs, rocky intertidal), their impacts (e.g. harmful algae blooms, food webs), and their applications (e.g. food, biochemical).

### **FAS 6256: Fish and Aquatic Invertebrate Histology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Previous coursework in animal biology, or permission of the instructor.

Covering interpretations of the fixed tissue microanatomy and physiology of fish, bivalves, and corals, and introduces common histopathologic (disease) findings.

### **FAS 6272: Marine Ecological Processes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate student status

The ecological, biological, and environmental processes that drive patterns in productivity, behavior, population dynamics, and community structure in marine and estuarine ecosystems.

### **FAS 6337C: Fish Population Dynamics**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.

Analyzing fish populations for management purposes. Methods for estimating population parameters such as growth, recruitment, and mortality. Using population parameters and computer models to predict yield and catch composition, and bioenergetics approaches for fisheries management problems. Offered spring term in odd-numbered years.

### **FAS 6339C: Advanced Quantitative Fisheries Assessment**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* FAS 6337C Fish Population Dynamics

Covering topics related to fisheries stock assessment and management. Focusing on modern assessment techniques and their associated challenges.

### **FAS 6355C: Fisheries Management**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* FAS 5276C or consent of instructor.

Integrating scientific, social, political, and legal factors in fisheries management. Offered fall term in odd-numbered years.

### **FAS 6905: Individual Study**

**Credits: 1-6**    **Max: 10**                      **Grading Scheme:** Letter, H

Contemporary problem or topic.

**FAS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**FAS 6932: Special Topics in Fisheries and Aquatic Sciences**

**Credits: 1-4    Max: 10            Grading Scheme: Letter**

Fisheries biology, aquaculture, and associated aquatic sciences.

**FAS 6933: Graduate Symposium**

**Credits: 1    Max: 3            Grading Scheme: S/U**

**FAS 6935: Contemporary Problems in Fisheries and Aquatic Sciences**

**Credits: 2    Max: 10            Grading Scheme: Letter**

*Prerequisite:* graduate student standing.

Library research, oral reports, and discussions of scientific problems or topics announced in advance. Offered fall and spring terms.

**FAS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**FAS 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**FAS 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been admitted to a doctoral program. Not appropriate for students who have been admitted to candidacy.

**FAS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**FES 6705: Communications in Emergency Management**

**Credits: 3**

**Grading Scheme: Letter**

Discussing several aspects of communication: communication coordination among emergency responders and agencies; effective communication with the public, including education programs; and guidelines for media relations and the use of new and traditional media to communicate during a crisis

**FES 6724: Fire and Emergency Services Response Planning**

**Credits: 3**

**Grading Scheme: Letter**

Comprehensive response planning including theory and value of response planning are examined. Steps to develop a strategic response plan are examined and discussed.



### **FES 6726: Hazard Mitigation and Preparedness**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing major principles involved in preparing for and mitigating the impact of hazards in the context of ES/DM including key features and characteristics of both natural and man-made hazards, the risk assessment process that is used to determine community vulnerability, and in-depth discussion of hazard mitigation planning.

### **FES 6735: International Emergency/Disaster Management**

**Credits: 3**                      **Grading Scheme:** Letter

Applying science and technology, planning, risk analysis, and management in dealing with events that have the potential to kill and injure large numbers of people, do extensive property damage, and destroy our economic and physical infrastructure.

### **FES 6736: Homeland Security and Emergency Management**

**Credits: 3**                      **Grading Scheme:** Letter

Understanding of issues related to domestic and international terrorism, understanding of key terms and incidents, and development of practical plans for providing emergency services before, during, and after a terroristic incident.

### **FES 6786: Research Methods in FES**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Completion of 18 graduate credit hours in FES

Covering the research proposal development process and the statistical, computational, visualization, and presentation tools available to the researcher.

### **FES 6806: Disaster Response and Recovery**

**Credits: 3**

**Grading Scheme:** Letter

Exploring response and recovery operations in the emergency / disaster management profession. Typical challenges to be expected during response efforts along with tools and techniques to enhance the ability to protect lives, reduce property damage and minimize disruption through multi-organizational preparedness, coordination and improvisation will be examined.

**FES 6826: Emergency Services - Disaster Planning**

**Credits: 3**

**Grading Scheme:** Letter

Introducing the process and practice of emergency/disaster planning. The relationship between emergency planning and disaster management and the principles of social psychology, communication theory and approaches to public education are explored.

**FES 6827: Business Continuity and Disaster Planning**

**Credits: 3**

**Grading Scheme:** Letter

Addressing risks from cyber attacks, rioting, protests, product tampering, bombs, explosions, and terrorism. Extensive disaster planning and readiness checklists and developing alternate work and computing sites and emergency facilities.

**FES 6836: Impacts of Natural and Man-made Disasters on Buildings**

**Credits: 3**

**Grading Scheme:** Letter

Impacts of natural and man-made disasters, including terrorist attacks, on buildings.

**FES 6916: Research for Master's Report**

**Credits: 3**

**Grading Scheme:** Letter/ SU

*Prerequisite:* FES 6786: Research Methods in FES

Research for Masters Report

**FES 6940: Practicum in FES**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* Completion of 18 graduate credit hours in FES

Practicum in FES

**FIL 6061: History of Documentary Film I**

**Credits: 3                    Grading Scheme: Letter**

History of development from its roots in nineteenth-century art forms to its role in World War II. Styles and techniques of documentary. Contribution as persuasive means of communication to achieve social and political goals.

**FIL 6062: History of Documentary Film II**

**Credits: 3                    Grading Scheme: Letter**

History of development from end of World War II to present. Styles and techniques of documentary. Contribution as persuasive means of communication to achieve social and political goals.

**FIL 6101: Advanced Radio, Television, and Film Writing**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Forms, techniques, and types of writing as they apply to radio, television, and film.

**FIL 6315: Writing for Documentary I**

**Credits: 3**                      **Grading Scheme:** Letter

Elements of good documentary topic, role of drama in documentary writing, structure in documentary writing, story development in documentary, interviewing for documentary, basic tools of documentary writing, and law and ethics in documentary.

**FIL 6317: Producing and Writing the Documentary**

**Credits: 3**                      **Grading Scheme:** Letter

Fundamentals of producing, directing, and writing; and the business and aesthetic dimensions of documentary.

**FIL 6335: Business of Documentary**

**Credits: 1**                      **Grading Scheme:** Letter

Nonproduction aspects of documentary: fund raising, promotion, distribution, and film festivals.

**FIL 6340: Issues and Problems in Documentary**

**Credits: 3**                      **Grading Scheme:** Letter

Ethical and legal issues in documentary filmmaking.

**FIL 6365: Documentary Pre-Production Planning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Conceptualizing and developing television documentary. Components include the idea, funding, planning production, and producing the preview tape, and writing and presenting a proposal.

**FIL 6366: Documentary Procedures II**

**Credits: 3**                      **Grading Scheme:** Letter

Theoretical, aesthetic, and technical principles of nonlinear editing for documentary.

**FIL 6377: Documentary Field Production**

**Credits: 3**                      **Grading Scheme:** Letter

Basics of producing, shooting, lighting, sound gathering, and editing. Technical and creative aspects.

**FIL 6378: Documentary Research Methods**

**Credits: 3**                      **Grading Scheme:** Letter

Research process preceding the production of television documentary and the skills needed to construct an effective research strategy.

**FIL 6380: Advanced Post-Production Techniques**

**Credits: 2**                      **Grading Scheme:** Letter

Advanced technical, theoretical, and aesthetic principles of post-production process used in editing television documentaries. Emphasizes developing continuity, building sequences, refining dramatic structure, narrators, and special effects.

### **FIN 5405: Business Financial Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ACG 5065. Required of all MBA degree candidates who have had no basic business finance course.

Analysis of business financing and investing decisions.

### **FIN 5437: Finance I: Asset Valuation, Risk, and Return**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* must be M.B.A. student. Required of all M.B.A. students who lack basic business finance course.

Analysis of business financing and investing decisions. Selected financial tools and concepts. Risk analysis and capital budgeting.

### **FIN 5439: Finance II: Capital Structure and Risk Management Issues**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5437. Required of all M.B.A. students.

Continuation of FIN 5437. Focus on corporate financial decision making.

### **FIN 6108: Personal Financial Management**

**Credits: 1    Max: 2**                      **Grading Scheme:** Letter

*Prerequisite:* designed for students admitted in MBA program.

Personal financial planning, how to accumulate and preserve personal wealth, creating an integrated financial plan, financial modeling, tax planning, portfolio construction and the fundamentals of risk and insurance.

### **FIN 6246: Money and Capital Markets**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5405, college-level mathematics, and statistics.

Financial markets, with emphasis on flow of funds, interest rate determination, and allocation of resources.

### **FIN 6296: Capitalism**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

This course introduces the concept of capitalism including the evolution of capitalism and its role in a modern free market economy. The course places particular emphasis on securities markets covering the sources and users of capital. Each of these topics considers the interaction of government, financial markets and society.

### **FIN 6306: Investment Banking**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439. Designed for M.B.A. students.

Hands-on approach to various aspects of investment banking industry. Lectures and guest speakers from investment banking firms.

### **FIN 6418: International Cash Flow Management**

**Credits: 2**                      **Grading Scheme:** Letter

Working capital management and cash management with emphasis on international applications.

### **FIN 6425: Corporation Finance**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5405 or consent of instructor. Designed for MBA students.

Applying business finance problems. Students prepare written solutions to case problems.

### **FIN 6427: Measuring and Managing Value**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Applying basic financial theory to valuing companies and creating value through sound financial decision making.

#### **FIN 6429: Financial Decision Making**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Applying basic financial theory to help managers determine how to finance their businesses. Optimal debt policy, distribution of firm cash flow policies, equity issuance strategies, risk management, and using hybrid securities in financing business.

#### **FIN 6432: Asset Valuation and Corporate Finance**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Master of Business Administration students

Financial concepts and tools that are essential to managing a business. Financial information to succeed as general managers. Provide foundation for students planning to take further elective courses in finance.

#### **FIN 6434: Private Equity**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Overview of the private equity market and the role of intermediaries. How intermediaries add value in the private equity market.

#### **FIN 6438: Study in Valuation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.



Independent analysis of firms in industry. Assessment of relative investment attractiveness of these firms and industry. Projects presented and critiqued by investment professionals.

### **FIN 6465: Financial Statement Analysis**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Examination of fundamental analysis of corporate financial statements. Identification of reliable estimates of fundamental corporate earning power and earning risks.

### **FIN 6477: Entrepreneurial Finance**

**Credits: 2**                      **Grading Scheme:** Letter

Investigate conventional principles of corporate finance that can be used to analyze the financing needs of new ventures.

### **FIN 6489: Financial Risk Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5437 and FIN 5439 or enrolled in Master of Science-Finance Program.

This course is a practical introduction to the main concepts of managing risk, namely market, credit, liquidity, operational, legal and regulatory, business, strategic, and reputation risk. However, the bulk of the course will focus on financial market and credit risk. The course will make little use of mathematical formalism and will emphasize intuitive quantitative arguments. Students are expected to be comfortable with basic probability and statistics and be able to program either in a formal language such as MATLAB or in Excel.

### **FIN 6496: Mergers & Acquisitions**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 OR Enrolled in Master of Science-Finance Program.

The primary objective of this course is to survey the process of mergers and acquisitions ("M&A"), develop your skills

in the design and evaluation of these transactions, and expose students to the key tactical issues typically confronted in M&A transactions.

### **FIN 6518: Investment Concepts**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Survey of current theory and practice. Asset pricing theory and empirical test, bond and equity valuation, efficient markets, international management, and valuation and use of derivative securities.

### **FIN 6525: Asset Management Project**

**Credits: 1    Max: 2                      Grading Scheme:** Letter

Training in optimal portfolio allocation, measuring tracking error/value at risk and performance attribution. Group experience to manage and evaluate portfolios.

### **FIN 6526: Portfolio Theory**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Survey of modern approaches in security portfolio management. Two levels of examination: (1) management of owner's aggregate portfolio and (2) security selection strategies, such as mutual funds, followed by managers.

### **FIN 6528: Asset Allocation and Investment Strategy**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* FIN 5437 and FIN 5439 OR Enrolled in Master of Science-Finance students.

Providing an introduction to investment strategy as practiced by fund managers. Course content will include a review of the analytical tools and models typically used in asset allocation, but will also provide an appraisal of the successes and failures of the most common investment strategies. While there will be some treatment of stock selection, the main focus will be on strategies involving allocation across broad asset classes.

### **FIN 6537: Derivative Securities**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Principles of derivatives. Structure and operation of markets, theoretical foundations and valuation models for various securities, and practical applications in investments and risk management, and financial engineering.

### **FIN 6545: Fixed Income Security Valuation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439. Designed for M.B.A. students.

Basics of interest rate determination, forward rates, and effects of interest rate uncertainty on holding period returns. Also pricing of fixed income securities with attached options.

### **FIN 6547: Interest Rate Risk Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 6545.

Basic tools. Concepts of duration, immunization, and hedging with financial futures.

### **FIN 6549: Special Topics in Fixed Income Securities**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 6545.

Municipal bond markets and timing strategies; performance attribution and tracking error; and asset allocation for pensions and endowments.

### **FIN 6575: Emerging Markets Finance I**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FIN 5439 or students enrolled in the MSF program

This course provides an introduction to the economic and institutional context in which investing and finance occurs in developing countries. The objective is to equip students with the analytical tools and institutional knowledge that will be helpful in understanding emerging financial markets.

### **FIN 6576: Emerging Markets Finance II**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FIN 5439 or Master of Science-Finance students.

Introduction to the essential elements of investing and raising capital in the emerging markets. The main perspective is that of an investment manager. Focuses on valuation, investment strategies, and corporate finance in the emerging markets.

### **FIN 6585: Securities Trading**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FIN 5439 or students enrolled in the MSF program

This course focuses on the operations of securities markets and broker/dealer intermediaries. We will evaluate a spectrum of issues regarding the formulation of trading decisions, the design of market structures, and the regulation of securities trading. Trading simulation will be used to provide in-class demonstrations of relevant concepts and hands-on experience in making trading decisions in different market structures.

### **FIN 6595: Investment Analytics**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Master of Science-Finance students or MBA with concentration in Finance.

Examines the theory and the quantitative empirical tools that are necessary for global asset allocation in an institutional setting.

### **FIN 6596: Introduction to Computational Methods & Derivative Pricing**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5437 and FIN 5439 OR Master of Science-Finance Program.

Providing practical applications of MATLAB functions and programming to fundamental financial instruments, such as bonds and stocks, and their derivatives. Though this is an introductory course, where mathematical and programming tools will be kept at a basic level, students must be familiar with undergraduate calculus and be comfortable with elementary programming.

### **FIN 6608: Financial Management of the Multinational Corporation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 6638, FIN 5439 or M.S.-finance student or M.A.-international business students.

Issues unique to global operating environment or significantly different from their purely domestic counterparts. Use of different national as well as global capital markets to manage the finance function.

### **FIN 6626: International Finance**

**Credits: 3**                      **Grading Scheme:** Letter

Financial markets and institutions, and problems by corporations operating in the international environment.

### **FIN 6638: International Finance**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or Master of Science-Finance or Master of Arts-International Business students.

Introduction to markets. Focus on foreign exchange markets, international bond markets, and international equity markets.

### **FIN 6643: Project Analysis in a Global Environment**

**Credits: 2**                      **Grading Scheme:** Letter

Evaluation of long-term investment decisions. Analysis of foreign direct investment.

### **FIN 6727: Economic Organizations and Markets**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439. Designed for M.B.A. students.

Economics based approach to organizational issues including compensation, assignment of decision rights, and assessment of performance.

### **FIN 6728: Capitalism and Regulation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FIN 5439 or finance students pursuing a Master of Science.

Analyzes the role of capital markets in creating economic welfare. Examines the impact of regulations of capital markets. Students consider the rationality of certain financial market regulations in the context of traditional arguments for market regulation. Explores regulations across countries and over time impact financial market development and economic growth. Examines the political economy of the regulation of financial and product markets is examined.

### **FIN 6729: Economics Organizations and Markets**

**Credits: 3**                      **Grading Scheme:** Letter

Economics-based approach to organizational issues including compensation, assignment of decision rights, and assessment of performance. Examination of corporate governance issues, i.e., conflicts between stockholders and managers.

### **FIN 6785: Investment Banking and Corporate Financial Modeling I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Enrolled in Master of Science-Finance Program.

Giving the analytical foundations to assess financial transactions, with the emphasis on constructing integrated

spreadsheets to model firm financial statements and cash flows. The course has students develop models from scratch using source data to determine hypothetical valuations in an acquisition using discounted cash flows and multiples techniques.

### **FIN 6786: Investment Banking and Corporate Financial Modeling II**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FIN 6785 and Enrolled in Master of Science-Finance Program.

Extending the use of basic models developed in Investment Banking and Corporate Modeling I to mergers, IPOs, private equity placements, and LBOs. Modeling techniques go beyond traditional valuation techniques to also consider viability of the financial structures of these transactions and puts greater emphasis on assessing the impact of uncertainty.

### **FIN 6905: Individual Work in Finance**

**Credits: 1-4    Max: 7                      Grading Scheme: Letter**

*Prerequisite:* permission of department and Director of Graduate Studies.

Reading and/or research in finance as needed by graduate students.

### **FIN 6930: Special Topics in Finance**

**Credits: 1-4    Max: 16                      Grading Scheme: Letter**

Selected topics in financial research, theory, or of special current significance.

### **FIN 6935: Finance Professional Speaker Series**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

Rotating presentations by prominent finance professionals, providing informed perspective on career strategies, opportunities, and real-life applications.

### **FIN 6936: Special Topics In Investment Finance**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FIN 5437 & FIN 5439 OR Enrolled In Master of Science-Finance students.

Examining special investment topics pertaining to certain asset classes such as commodities, inflation protected bonds, and currencies and to provide a link between economic theory and live applications using the Bloomberg Professional Terminal. For each topic we will be covering the basic theoretical underpinnings and examine market/security structure, portfolio implications, and how Bloomberg data can be used to understand these implications.

### **FIN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **FIN 6957: International Studies in Finance**

**Credits: 1-4    Max: 12                      Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and permission of department.

### **FIN 6958: International Finance Study Tour**

**Credits: 2                      Grading Scheme: Letter**

Academic and practical exposure to international financial markets and international business practices.

### **FIN 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**



**FIN 7446: Financial Theory I**

**Credits: 4**                      **Grading Scheme:** Letter

The first in a two-course sequence. Emphasis on the theory of the firm's investment and financing decisions.

**FIN 7447: Financial Theory II**

**Credits: 4**                      **Grading Scheme:** Letter

Emphasis on the theory of the financial intermediary system asset pricing theory.

**FIN 7808: Corporate Finance**

**Credits: 4**                      **Grading Scheme:** Letter

Theory and empirical analyses of corporate financial decisions in a world of risk with both perfect and imperfect markets.

**FIN 7809: Investments**

**Credits: 4**                      **Grading Scheme:** Letter

Theory and empirical analyses of security investment decisions in a world of risk with both perfect and imperfect markets.

**FIN 7848: Marketing Microstructure**

**Credits: 2**                      **Grading Scheme:** Letter

Empirical research in finance, focused on the application of econometric and statistical techniques to address research problems in finance.

**FIN 7938: Finance Research Workshop**

**Credits: 1-4    Max: 7            Grading Scheme: Letter**

Analysis of current research topics. Paper presentation and critiques by doctoral students, faculty, and visiting scholars.

**FIN 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**FIN 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**FLE 6165: Bilingual-Bicultural Education**

**Credits: 3                    Grading Scheme: Letter**

Foundational principles and practices in the field of bilingual-bicultural education in the U.S. and in other nations. Critical examination of theories and practices related to language policy in education.

**FLE 6167: Cross-Cultural Communication for Teachers**

**Credits: 3**                      **Grading Scheme:** Letter

Critically explores ways educators can establish equitable and culturally responsive classrooms. Examines theories related to language, culture, and social justice.

**FLE 6336: Teaching Foreign Languages in Elementary Schools**

**Credits: 3**                      **Grading Scheme:** Letter

Pedagogy and critical issues related to content-based foreign language instruction and the integration of culture in the elementary foreign language classroom.

**FLE 6337: Methods of Teaching and Assessing Foreign Language in Secondary School**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the history of foreign language instruction, first- and second-language acquisition, and pedagogical issues of curriculum, methods, and assessment. Field teaching component.

**FLE 6385: Foreign Languages Teaching Methods**

**Credits: 3**                      **Grading Scheme:** Letter

This course will address both theoretical and practical issues related to the teaching of foreign languages at the college level.

**FLE 6946: Practicum in Teaching and Assessing Foreign Languages at Secondary Level**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of department chair.

Directed experiences emphasizing instructional strategies, selecting instructional materials, structuring and sequencing learning tasks, and diagnosing student progress. Practicum in secondary public schools.

### **FNR 5072C: Environmental Education Program Development**

**Credits: 3**                      **Grading Scheme:** Letter

Comprehensive approach, from needs assessment to evaluation, applied to youth-based, nonformal environmental education. Required field trip and group project. Offered fall term of odd-numbered years.

### **FNR 5335: Agroforestry**

**Credits: 3**                      **Grading Scheme:** Letter

Biological, ecological, socioeconomic, and technical-managerial aspects of tree/crop, tree/animal, and tree/crop/animal systems. Examples of traditional and modern, rotational, and intercropped systems, and analyses of their structure, functioning, and potentials, with special reference to the tropics and subtropics. Offered spring term.

### **FNR 5462: Spatial Models and Decision Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FOR 3434C, basic statistics, or instructor permission.

Environmental modeling in a spatial context using descriptive and prescriptive tools and spatial reasoning.

### **FNR 5608: Research Planning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor. Required for all new M.S. students.

History and philosophy of science, scientific method, development of a research proposal. Research facilities and programs are presented. Offered fall term.

**FNR 6564: Ecohydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* permission of instructor

Introductory course on ecohydrology - the study of interactions between organisms, ecosystems, and the hydrologic cycle. Uses a blend of theory and case studies.

**FOL 6326: Technology in Foreign Language Education**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FOL 6943, FRE 6943 , or equivalent.

Technology in classrooms. The interface between pedagogy and technology.

**FOL 6943: Romance Language Teaching Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Required of all graduate students who will be involved in teaching and have not had a similar course elsewhere.

**FOR 5157: Ecosystem Restoration Principles and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Application of ecological theory and economic and political constraints to restoration practice. Emphasizes regional, national, and international case studies.

**FOR 5159: Ecology and Restoration of Longleaf Pine Ecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

History, structure, function and ecological and economic importance; regeneration ecology, stand dynamics, restoration techniques, ownership patterns, and socio-economic and political and policy aspects of restoration

### **FOR 5161: Forest Productivity and Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Silviculture, disease management, and genetic improvement. Stand development and composition, competition, growth-limiting factors, epidemiology, choice of species and provenance, and tree breeding. Offered spring term of odd-numbered years.

### **FOR 5435: Forest Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Sampling methodology for natural resource inventories, involving remote sensing, geographic information systems (GIS), and global positioning system (GPS). Offered spring term of even-numbered years.

### **FOR 5615: Forest Conservation and Management Policies and Issues**

**Credits: 3**                      **Grading Scheme:** Letter

Current policies in North America and internationally. Historical patterns of resource use and policy response are reviewed as a basis for evaluating current issues. Offered fall term.

### **FOR 5625: Forest Water Resources Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SOS 3022.

Forest Management practices in relation to hydrologic responses and water quality considerations.

**FOR 5756: Non-Timber Forest Products**

**Credits: 3**                      **Grading Scheme:** Letter

Intensive review of non-timber forest products worldwide, and how forests are managed to provide these products.

**FOR 6005: Conservation Behavior**

**Credits: 3**                      **Grading Scheme:** Letter

Methods for changing behavior in various groups to improve environmental sustainability.

**FOR 6154: Analysis of Forest Ecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BSC 2010, or equivalent

Concepts of the forest ecosystem, the role of models for understanding ecosystem dynamics, disturbance regimes and stability theory, nutrient cycles, and ecosystem energetics.

**FOR 6156: Simulation Analysis of Forest Ecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

Conceptual basis, evaluation, implementation, testing, and analysis of forest simulation models. Students develop and present modeling projects.

**FOR 6164: Silviculture: Concepts and Application**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Course in ecology.

Principles governing establishment, treatment, and control of forest stands; regeneration systems; intermediate cuttings; intensive cultural practices; land use ethics; and management systems.

### **FOR 6170: Tropical Forestry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Promise and pitfalls of production-oriented management as a conservation strategy for naturally regenerated tropical forests. Ecological constraints to sustainable forest management in the tropics; strategies, tools, and techniques for large- and small-scale management of old growth and secondary tropical forests for timber and non-timber forest products and services; future of forests and forestry in tropical landscapes. Offered spring term.

### **FOR 6172C: Tropical Forestry Field Course**

**Credits: 2**                      **Grading Scheme:** Letter

Taught in Amazon Basin of Brazil. Emphasis on appreciation of practical considerations inherent in tropical forestry issues, including challenges/opportunities for improvement. Supplemental fee required.

### **FOR 6215: Fire Paradigms**

**Credits: 3**                      **Grading Scheme:** Letter

Reviewing dominant fire paradigms worldwide, including in-depth review of specific paradigm, its theoretical basis, and social/ecological/management implications.

### **FOR 6310: Forest Genetics and Tree Improvement**

**Credits: 3**                      **Grading Scheme:** Letter



Review of Mendelian, population, and quantitative genetics as important in natural forests and breeding programs of forest trees. Principles of tree improvement programs, gene conservation, and breeding strategy development for a wide variety of tree species. Offered fall term of odd-numbered years.

#### **FOR 6340: Physiology of Forest Trees**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status or consent of instructor.

Growth and development of woody perennial plants, with emphasis on understanding how environmental factors affect their physiology. Offered fall term of odd-numbered years.

#### **FOR 6345C: Plant Water Relations Techniques**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Instruments and techniques to quantify water balance/status of plants in field. Emphasis on theory, assumptions, and pros and cons of techniques.

#### **FOR 6543: Natural Resource Economics and Valuation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Extending microeconomic principles to problems in forest production, supply behavior, forest valuation, and multiple use of forest lands. Offered spring term of odd-numbered years.

#### **FOR 6628: Community Forest Management**

**Credits: 3**                      **Grading Scheme:** Letter

Integrates theory from the socio-economic and bio-physical sciences with on-the-ground realities in implementing community-based forest management and conservation.

**FOR 6665: Landscape Planning for Ecotourism**

**Credits: 3                      Grading Scheme: Letter**

Planning frameworks and techniques of large natural areas. Offered fall term.

**FOR 6905: Research Problems in Forest Resources and Conservation**

**Credits: 1-6    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**FOR 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**FOR 6933: Seminar**

**Credits: 1    Max: 2                      Grading Scheme: Letter**

**FOR 6934: Topics in Forest Resources and Conservation**

**Credits: 1-4    Max: 10                      Grading Scheme: Letter**

Selected topics in forestry and natural resources.

**FOR 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**FOR 6971: Research for Master's Thesis**

**Credits: 1-6                    Grading Scheme: S/U**

**FOR 7979: Advanced Research**

**Credits: 1-15                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**FOR 7980: Research for Doctoral Dissertation**

**Credits: 1-15                Grading Scheme: S/U**

**FOS 5126C: Psychophysical Aspects of Foods**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* FOS 4311C and 4722C.

Physical and chemical stimuli controlling human sensory perception of texture, color, and flavor of foods.

**FOS 5205: Current Issues in Food Safety and Sanitation**

**Credits: 3**                      **Grading Scheme:** Letter

Microbial, chemical, and biological safety of food; principles of sanitation for food processing and retail food industries.

**FOS 5225C: Principles in Food Microbiology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3020 or consent of instructor.

Fundamental aspects of biological contamination and its control during harvesting, processing, and storage of foods. Analysis of microbial food fermentation, microbial ecology of foods, selection of methods to examine foods for microbial content.

**FOS 5437C: Food Product Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 4000-level food science course, or consent of instructor.

Value-added food products. Technology, safety, health/nutrition, legal, quality, and economic/marketing considerations.

**FOS 5561C: Citrus Processing Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate course in food processing.

Grading, inspection, sampling, extraction, and concentration of citrus products. Emphasizes manufacturing and quality assurance. Taught partly at Lake Alfred Citrus Research and Education Center.

**FOS 5645: Functional Foods and Nutraceuticals**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate status

Analysis, chemistry, processing, bioavailability, and health benefits of bioactive food components. Content will include both basic knowledge and the latest research trends.

### **FOS 5732: Current Issues in Food Regulations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Governmental laws and regulations affecting the food industry.

### **FOS 6125C: Sensory Evaluation of Food**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.

Principles and techniques of sensory evaluation of foods. Emphasizes basics of taste and olfactory perception; the basic psychology of common sensory tests; the proper use of discrimination testing, consumer acceptability and preference testing, and descriptive analysis; and statistical analysis of sensory data.

### **FOS 6215: Principles of Food Safety**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Bachelor's Degree

A multidisciplinary approach to food safety that includes aspects of food chemistry, food toxicology, food biotechnology, food microbiology, food defense, and food processing. Enrollment restricted to students in the Food Safety Graduate Certificate Program.

### **FOS 6216: Food Safety Systems**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FOS 6215

Analyzing the seven steps of Hazard Analysis Critical Control Point (HACCP) and prerequisite programs associated with food processing environments in seafood, meat, poultry, vegetable, grain, and beverage processing facilities. Enrollment restricted to students in the Food Safety Graduate Certificate Program.

### **FOS 6217: Food Safety, Sanitation, and Microbiology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* FOS 6215

Microbial, chemical, and biological safety of food and principles of sanitation for the food processing and retail food industries. Enrollment restricted to students in the Food Safety Graduate Certificate Program.

### **FOS 6226C: Advanced Food Microbiology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* FOS 4222/4222L, MCB 4303/4303L and BCH 6415.

Selection of laboratory methods, characterization of food-borne pathogens and spoilage organisms.

### **FOS 6315C: Advanced Food Chemistry**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 4024 or 3025 and FOS 4311C.

Functions of lipids, carbohydrates, proteins, enzymes and other components in foods and their reactions and interactions during food processing and storage.

### **FOS 6317C: Flavor Chemistry and Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* basic and organic chemistry.

Psychophysics of taste and aroma, sensory analysis, flavor extraction, measurement techniques, flavor precursors, off-flavors, Maillard flavors, bioflavors, flavoring materials, flavor safety and authenticity.

### **FOS 6355C: Instrumental Analysis and Separations**

**Credits: 5                      Grading Scheme: Letter**

*Prerequisite:* CHM 3120, FOS 4311C.

Separation of food chemicals; gas, high performance liquid, thin-layer, ion-exchange and molecular size chromatography; characterization via UV-visible, IR, NMR, and mass spectrometry.

### **FOS 6428C: Advanced Food Processing**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* FOS 4427C.

Reaction kinetics, heat transfer mechanics, and process design, optimization and economics.

### **FOS 6455C: Industrial Food Fermentations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* FOS 4222/4222L.

Microbiological, chemical, and physical principles and practices in fermentation of foods and constituents.

### **FOS 6736: Food Regulations**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* FOS 6215

Federal laws and regulations associated with the food industry related to food safety, adulteration, misbranding, standards of identity, ingredients, and additives. Structure and function of U.S. government agencies involved in food regulation. Enrollment restricted to students in the Food Safety Graduate Certificate Program.

### **FOS 6905: Problems in Food Science**

**Credits: 1-3    Max: 4                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor. Not open to students on probation or conditional admission.

Individual study carried out in laboratory, library, pilot plant, or the food industry.

**FOS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**FOS 6915: Research Planning**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Required of first-year graduate students. Planning and initiating research, experimental techniques, analyzing data, reporting results.

**FOS 6936: Topics in Food Science**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Special aspects or current developments in food science.

**FOS 6938: Food Science Seminar**

**Credits: 1    Max: 4            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Preparing and presenting reports on specialized aspects of research and technology in food science.

**FOS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.



**FOS 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**FOS 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**FOS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**FOT 6940: Translation Studies Practicum**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* FOT 6805 .

Practical training for free-lance or job environment, using computer-assisted translation tools. By working closely with a mentor, professional experience in translation is acquired.

**FOW 6930: Special Study in Romance Languages and Literatures**

**Credits: 1-3    Max: 9**

**Grading Scheme: Letter**

Rotating topics in literary theory, cultural studies, or literary study involving two or more Romance languages.

**FRE 6060: Beginning French for Graduate Students I**

**Credits: 3**                      **Grading Scheme: S/U**

For students with no formal preparation who need a reading knowledge.

**FRE 6061: Beginning French for Graduate Students II**

**Credits: 3**                      **Grading Scheme: Letter, S/U**

*Prerequisite:* FRE 6060 or equivalent.

For students who need proficiency in reading.

**FRE 6466: Advanced Translation and Stylistics**

**Credits: 3**                      **Grading Scheme: Letter**

Translation from English to French and French to English. Texts selected from modern authors. Various genres and styles.

**FRE 6735: Special Studies in French Linguistics**

**Credits: 3**                      **Grading Scheme: Letter**

Rotating topics relevant to second language acquisition, sociolinguistics, and/or theoretical linguistics.

**FRE 6736: The French language in the Americas**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* None, but FRE 6785 or FRE 6855 recommended.

Examining of the presence of French in the Americas. Topics we will be covering are origin of French in the Americas, language practices of Francophone communities, linguistic characteristics of the varieties of French, effect of language contact on language behavior and representations, identity issues. Focus varies from year to year.

**FRE 6785: French Phonetics and Phonology**

**Credits: 3                      Grading Scheme: Letter**

Introduction to French phonological processes. Explanatory evidence: production of speech sounds, classification of sounds, and their interrelationships (gliding, nasalization, assimilation). Morphological and syllable structure. Specifically French phenomena: liaison, elision, final consonant drop, schwa drop. Relationship of morphology to phonology, especially verb system.

**FRE 6827: Sociolinguistics of French**

**Credits: 3                      Grading Scheme: Letter**

Sociolinguistic issues in the French-speaking world: language variation, discourse analysis, attitudes toward varieties of French, and contact with speakers of other languages.

**FRE 6845: History of the French Language**

**Credits: 3                      Grading Scheme: Letter**

Phonological, morphological, syntactic, and lexical evolution of French language.

**FRE 6855: Structure of French**

**Credits: 3**

**Grading Scheme:** Letter

Explores the French language as a system of communication and mental representation. Analyzes morphological, syntactic, and semantic aspects of contemporary French. Emphasizes historical, psychological, and sociological dimensions of linguistic investigation.

**FRE 6856: French in the 21st Century**

**Credits: 3**

**Grading Scheme:** letter

*Prerequisite:* None, but FRE 6785 or FRE 6855 recommended.

Examining of how the French language is changing in the 21st century, from phonological, morphological, syntactic, lexical and semantic points of view. Addressing such topics as phonological assimilation; the negative; interrogative structures; the future tense; and borrowings, calques and semantic shifts, in different varieties of French.

**FRE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5**

**Grading Scheme:** S/U

Practical training in teaching elementary French courses.

**FRE 6943: Romance Language Teaching Methods**

**Credits: 2, 4, 6    Max: 6**

**Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Required for students needing practice and direction in college-level teaching.

**FRE 6945: Practicum in Advanced College Teaching**

**Credits: 2    Max: 6**

**Grading Scheme:** S/U

Practical training and orientation for advanced doctoral students in teaching upper-division courses. Gain upper-level teaching experience by working closely with a mentor in all areas of the teaching process.

**FRE 6956: Overseas Studies in French**

**Credits: 1-5    Max: 5                    Grading Scheme:** Letter

*Prerequisite:* permission of graduate coordinator (French).

Course work in French as part of approved study-abroad program.

**FRW 6217: Seventeenth-Century French Prose**

**Credits: 3                                  Grading Scheme:** Letter

Major prose works of the classical period. Fermentation in philosophical and moral thought that characterized early modern period France. Cartesian thought, new science, Jansenism, libertines, and moralistes. Also includes texts by La Fayette and Sevigne.

**FRW 6276: Readings in Eighteenth-Century Literature**

**Credits: 3                                  Grading Scheme:** Letter

Rotating topics: theater, novel, image of the Orient, Anglo-French connection, women writers of the Old Regime.

**FRW 6288: Twentieth-Century French Novel**

**Credits: 3                                  Grading Scheme:** Letter

Analyzes representative novels. Emphasizes literary modernism, surrealism, and the new novel in light of pertinent cultural discourses and literary history.

**FRW 6315: Seventeenth-Century French Drama**

**Credits: 3**

**Grading Scheme:** Letter

Theory and practice of dramaturgy in classical period as reflected in plays of Corneille, Molière, and Racine. Close textual analysis to disengage aesthetic and ideological problematics posed by each play.

**FRW 6328: Twentieth-Century French Theater**

**Credits: 3**

**Grading Scheme:** Letter

Critical and historical study of representative plays. Theater as a genre and a cultural and political space. Discussion of theoretical writings. Viewing of selected plays on film.

**FRW 6346: French Poetry of the Renaissance**

**Credits: 3**

**Grading Scheme:** Letter

**FRW 6355: Modern French Poetry**

**Credits: 3**

**Grading Scheme:** Letter

Historical approach combined with close readings of poetic texts. Introduction to numerous theoretical and critical writings. In addition to poetic texts taken from traditional cannon, less frequently taught poets are presented.

**FRW 6396: French Cinema**

**Credits: 3**

**Grading Scheme:** Letter

Critical and historical study of representation of gender and ethnicity in French films.

**FRW 6416: Later French Medieval Literature**

**Credits: 3**                      **Grading Scheme:** Letter

**FRW 6536: The Romantic Period**

**Credits: 3**                      **Grading Scheme:** Letter

Development and main tenets of 19th-century French Romanticism. Various themes and genres (novel, poetry, theater, etc.) exploited by "romantic" artists. Socioeconomics and cultural matrices fostering movement. Relationship between literature and visual arts. Constructions of gendered, cultural, and artistic subjectivities. Exoticism (spatial, temporal, and mystic voyages). Representations of Paris and French society.

**FRW 6556: French Realism and Naturalism**

**Credits: 3**                      **Grading Scheme:** Letter

**FRW 6715: The Philosophic Movement**

**Credits: 3**                      **Grading Scheme:** Letter

Readings from major figures such as Voltaire, Montesquieu, Diderot, and Rousseau. Historiography of the period. Key issues of Enlightenment (religious tolerance, slavery, women's rights, etc.). Key institutions of the 18th century (encyclopedia, newspaper, salon).

**FRW 6780: Studies in Francophone Literature and Culture (Excluding the Caribbean and Sub-Saharan Africa)**

**Credits: 3**    **Max: 9**                      **Grading Scheme:** Letter

Literature and cultures of the Francophone world. Quebec, North Africa, Vietnam, the Middle East, Belgium and Switzerland, or regions of France.

**FRW 6805: Introduction to Graduate Study and Research**

**Credits: 3                      Grading Scheme:** Letter

Tools, problems, and methods of literary and linguistic research.

**FRW 6825: French Critical Theory**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

Review and comparative analysis of approaches to literature from Romanticism to Deconstruction. Act of reading and writing examined through eyes of Sainte-Beuve, Taine, Lanson, Bachelard, Geneva School, Ricoeur, Bataille, Blanchot, Barthes, Foucault, Genette, Lacan, Kristeva, Todorov, Derrida, and others. Rotating topics.

**FRW 6900: Special Study in French Literature**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

Selected topic or problem (varied each semester).

**FRW 6905: Individual Work**

**Credits: 1-3    Max: 9                      Grading Scheme:** Letter

*Available only by special arrangement with graduate adviser.*

**FRW 6910: Supervised Research**



**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**FRW 6938: Seminar in French Literature**

**Credits: 3    Max: 15            Grading Scheme: Letter**

Intensive research study of an author or topic.

**FRW 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**FRW 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**FRW 7980: Research for Doctoral Dissertation**

**Credits: 1-15            Grading Scheme: S/U**

**FYC 5008: Personal and Family Tax Planning**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing.

Principles, current law and practice of income taxation and its impact on financial planning for individuals, couples and families in their roles as investors, employees and business owners.

#### **FYC 5009: Personal and Family Insurance Planning**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing.

Introduces students to risk management and insurance decisions in personal and family financial planning. Topics include insurance for life, health, disability, property and liability risks, as well as annuities, group insurance and long term care.

#### **FYC 5106: Personal and Family Retirement and Estate Planning**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing.

Provides individuals with knowledge of both public and private retirement plans including Social Security, Medicare, Medicaid, defined benefit, defined contribution plans and their regulatory provisions. Estate planning aspects focus on the efficient conservation and transfer of wealth through trusts, wills, probate and charitable giving consistent with the client's goals.

#### **FYC 5935: Personal and Family Financial Planning Capstone**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* FYC 5008 , FYC 5009 and FYC 5106.

Critical thinking and decision making about personal and family financial management topics in the context of the financial planning process. Students analyze and prioritize goals and make recommendations for a client in areas of household accounting, taxes, investments, risk management, retirement planning and estate planning.

#### **FYC 6020: Principles of Family, Youth, and Community Sciences**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* principles of sociology; general psychology.

Critical issues in the new century. Applying key principles of family, youth, and community sciences to selected problems.

### **FYC 6111: Families and Violence**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the major types of family violence across the life span, including all forms of child maltreatment, intimate partner violence, and elder abuse.

### **FYC 6117: Military Families in Community Context**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Military culture and procedures, issues related to service in the military, the impact that military service can have on the individual and family, and strategies for providing services to military personnel and their families.

### **FYC 6131: Ethics for FYCS Practitioners**

**Credits: 3**                      **Grading Scheme:** Letter

Basic elements of ethics, professional ethics, and professionals as ethical "agents."

### **FYC 6207: Adolescent Problematic Behavior**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* core major courses.

Ecological model to examine common themes of adolescent development with challenges that lead to problematic behavior.

### **FYC 6221: Grant Proposals for Community-Based Organizations**

**Credits: 3**                      **Grading Scheme:** Letter

Skills needed to develop funding proposals to support community-based projects and organizations.

### **FYC 6222: Parenting and Child Relationships**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* core courses.

Relationships affecting child development outcomes.

### **FYC 6223: Promoting Positive Youth Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FYC 6207.

Examines risk and protective factors for promoting youth development.

### **FYC 6224: Resilience and Positive Youth Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FYC 6230 Theories of Youth and Family Development.

Conceptual and applied examination of resilience as a shaping force in youth development from infancy through the emerging adult years.

### **FYC 6230: Theories of Youth and Family Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SYG 2430 or FYC 3101 and 3201.

Historical and contemporary theories of youth and family development.

### **FYC 6234: Theoretical Approaches to Youth Programming**

**Credits: 3**                      **Grading Scheme:** Letter

In-depth examination and synthesis of historical (macro) and contemporary (micro) theories of youth development as they are used to inform the development of youth programs and services, curricula for nonformal community settings, and program planning and evaluation.

### **FYC 6302: Sustainable Community Development**

**Credits: 3**                      **Grading Scheme:** Letter

Relationships among economic, social, and environmental aspects of sustainability. Analytic and professional skills to build sustainable communities. Community study and in-depth analysis.

### **FYC 6320: Community Development and Civic Engagement**

**Credits: 3**                      **Grading Scheme:** Letter

Examining the process and methods for community development with an emphasis on research related to civic engagement and public participation. Students will develop skills for managing change in communities.

### **FYC 6330: Theories of Community Development**

**Credits: 3**                      **Grading Scheme:** Letter

Sociological concept of community and its application in public development policies.

**FYC 6331: Involving Youths in Community Issues**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of methods for investigating community issues. How to engage youths in scientific, technological, and social issues at the community level.

**FYC 6412: Historical Foundations of Philanthropy**

**Credits: 3**                      **Grading Scheme:** Letter

History of philanthropy and evolution of the nonprofit sector in the U.S. from colonial period to present.

**FYC 6421: Nonprofit Organizations**

**Credits: 3**                      **Grading Scheme:** Letter

Community nonprofit organizations. Governance, policy and decision making, and planning.

**FYC 6422: Policy Issues and Case Studies in Nonprofit Organizations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FYC 6241.

Study and analysis of policy and cases related to development and operation of nonprofit organizations.

**FYC 6423: Non-Governmental Organizations**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* FYC 6421.

Non-governmental organizations and their political and economic impacts.

#### **FYC 6424: Fund Raising for Community Nonprofit Organizations**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* FYC 6421.

Critical evaluation of fund raising theory, research on the profession, and best contemporary fund raising practices in the nonprofit sector.

#### **FYC 6425: Risk Management in Nonprofit Organizations**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* FYC 6421 Nonprofit Organizations.

A foundation in the concepts, principles and strategies associated with risk management in nonprofit organizations. Topics include the nature and purpose of risk management; the general risk management exposures facing nonprofit organizations; and risk mitigation strategies for nonprofits.

#### **FYC 6620: Program Planning and Evaluation for Human Service Delivery**

**Credits: 3**                    **Grading Scheme: Letter**

*Prerequisite:* core FYCS courses.

Contemporary theories and process for planning and evaluating human service education and delivery programs.

#### **FYC 6662: Public Policy and Human Resource Development**

**Credits: 3**                    **Grading Scheme: Letter**

Current policies and laws impacting youths, families, and communities. Strategies to change these policies and laws.

**FYC 6800: Scientific Reasoning and Research Design**

**Credits: 3                      Grading Scheme:** Letter

Scientific reasoning, scientific method, and quantitative and qualitative research design.

**FYC 6802: Advanced Research Methods for Family, Youth, and Community Sciences**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* FYC 6800 or equivalent.

Research tools and techniques appropriate for an ecological model, emphasizing a multi-method approach.

**FYC 6901: Problems in Family, Youth, and Community Sciences**

**Credits: 1-3    Max: 6                      Grading Scheme:** Letter

Advanced students select and study problem related to family, youth, and community sciences.

**FYC 6912: Nonthesis Project in Family, Youth, and Community Sciences**

**Credits: 1-3    Max: 6                      Grading Scheme:** Letter

Developing an original applied project such as program evaluation, policy analysis, or in-depth review of current issue in human resource development.

**FYC 6932: Topics, in Family, Youth, and Community Sciences**

**Credits: 1-3    Max: 6                      Grading Scheme:** Letter



Critical review of selected topics.

**FYC 6933: Seminar in Human Resource Development**

**Credits: 1    Max: 2            Grading Scheme: S/U**

Explores current topics, trends, and research findings.

**FYC 6934: Professional Internship/Practicum in Family, Youth, and Community Sciences**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

Directed work experience or internship in professional capacity.

**FYC 6971: Research for Master's Thesis**

**Credits: 1-6            Grading Scheme: S/U**

**GEA 6419: Seminar: South America**

**Credits: 3            Grading Scheme: Letter**

Cultural, economic, political, and resource characteristics and development of representative areas.

**GEA 6466: Seminar on Geography of Amazonia**

**Credits: 3            Grading Scheme: Letter**

Exploration of biophysical basis of natural resource management, cultural diversity, and economic development in Amazonia.

**GEA 6468: Resource Utilization and Conservation in Latin America**

**Credits: 3                      Grading Scheme:** Letter

Regional appraisal of human and natural resources. Analysis of role of resource utilization and conservation in development of Latin American countries.

**GEB 5114: Entrepreneurship and Venture Finance**

**Credits: 3                      Grading Scheme:** Letter

Entrepreneurial processes. Exploration of boom in world economies. Participation in entrepreneurial culture.

**GEB 5118: New Venture Creation**

**Credits: 4                      Grading Scheme:** Letter

Classroom lectures, panels of leading entrepreneurs, and team project. Background and tools necessary to develop an investment-grade business plan for a new venture, whether intracorporate or stand-alone.

**GEB 5212: Professional Writing in Business**

**Credits: 1-3    Max: 6                      Grading Scheme:** Letter

Written structure of memoranda, executive summaries, mission statements, marketing and SWOT analyses, product and management structure descriptions, marketing and business plans. Conventions and psychological principles governing reader preferences and assumptions.

**GEB 5215: Professional Communication in Business**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

Balance between descriptive information and application of organizational communication theories and techniques for business and professional speaking.

**GEB 5217: Executive Communication**

**Credits: 1-2    Max: 2                    Grading Scheme: S/U**

Guidelines to help build confidence as presenters and to make workplace presentations more effective.

**GEB 5225: Advanced Business Writing**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* GEB 5212.

Advanced writing techniques focusing on interdependence between corporate strategy and communications.

**GEB 5929: Foundations Review**

**Credits: 1-3    Max: 3                    Grading Scheme: S/U**

Overview of M.B.A. core courses to be used in working professional programs.

**GEB 6157: Entrepreneurship Experiential Learning Project**

**Credits: 1-3    Max: 3                    Grading Scheme: Letter**

*Corequisite:* Must be a graduate student to receive graduate credit

Development of entrepreneurial skills in business through authentic experiences.

### **GEB 6229: Professional Communication for Accountants**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GEB 3213 and GEB 3218 or consent of instructor

Focusing on the communication situations and documents experienced by working accountants, teaching students to communicate effectively in one-on-one meetings, persuasive proposals, negative messages, routine e-mails, and reports. Students will analyze rhetorical techniques, so that they can communicate appropriately in response to context and audience.

### **GEB 6365: International Business**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* designed for M.B.A. students.

Explores major characteristics, motivations, interactions, and structural realities of international economics via functional areas of business. Development of multinational framework for effective and efficient firm operation.

### **GEB 6366: Fundamentals of International Business**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* designed for M.B.A. students.

Complexities of extending the market to more than a single nation/state. Impact on multinational corporation of different cultures and languages, multiple legal systems, national and global capital markets, foreign exchange, and political issues.

### **GEB 6368: Globalization and the Business Environment**

**Credits: 2**                      **Grading Scheme:** Letter

Political and economic relations in connection with the structural power sources that directly and indirectly affect the design and shape of global political economy.

**GEB 6905: Individual Work**

**Credits: 1-4    Max: 8                    Grading Scheme:** Letter

*Prerequisite:* consent of Associate Dean or M.B.A. Director.

Reading and/or research in business administration.

**GEB 6924: Entrepreneurship Professional Speaker Series**

**Credits: 1-2    Max: 2                    Grading Scheme:** Letter

*Prerequisite:* Must be an MS-Entrepreneurship student

Topics relevant to entrepreneurship and innovation.

**GEB 6928: Professional Development Module IV**

**Credits: 1    Max: 2                    Grading Scheme:** S/U

*Prerequisite:* designed for M.B.A. students.

Personal financial planning.

**GEB 6930: Special Topics**

**Credits: 1-3    Max: 12                    Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Topics not offered in other courses and of special current significance.

**GEB 6941: Internship**

**Credits: 1-4    Max: 6                    Grading Scheme: S/U**

*Open only to graduate students in business administration. May not be used to meet credit requirements in M.B.A. program. Applied course work. Several papers and reports.*

**GEB 6957: International Studies in Business**

**Credits: 1-4    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and permission of department.

**GEO 5305: Environmental Biogeography**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* GEO 2200 or equivalent.

Description and explanation of spatial patterns of biodiversity, and underlying biophysical factors of human-environment interactions. Past and present distributions of organisms and how patterns of environmental variation influence the organisms. Biogeography is useful for designing nature reserves, forecasting how climate change may affect organisms, and explaining human adaptations to environmental variability. This class takes a mostly ecological approach to understanding biogeography.

**GEO 5346: Natural Hazards**

**Credits: 3                    Grading Scheme: Letter**

Multidisciplinary analysis of natural and man-induced environmental catastrophes. Their perception and institutional adjustments.

**GEO 5556: Geography of Innovation and Technological Change**

**Credits: 3                    Grading Scheme: Letter**

Generation, development, and spread of innovations by individuals, corporations, and organizations. Emphasizes the impact of innovations and technology on regional development and change.

**GEO 5605: Advanced Urban Geography**

**Credits: 3                      Grading Scheme:** Letter

Theoretical and planning literature that examines the locational and environmental issues confronting contemporary North American urban populations.

**GEO 5809: Geography of World Agriculture**

**Credits: 3                      Grading Scheme:** Letter

World distribution of crops and livestock related to natural and cultural conditions. Agricultural problems related to products, economic organization, agricultural regions, and the significance of world affairs.

**GEO 5905: Individual Study: Directed Reading**

**Credits: 3    Max: 12 including GEO 6905                      Grading Scheme:** Letter

**GEO 5920: Geography Colloquium**

**Credits: 1    Max: 6                      Grading Scheme:** S/U

Presentation and discussion of contemporary geographic research.

**GEO 5945C: Field Course in Geography**

**Credits: 3**

**Grading Scheme:** Letter

Methods of geographical fieldwork. Observation, classification, interpretation, note-taking, traversing, and mapping of data. Aerial analysis; landforms, climate, vegetation, soils, resources, settlement patterns, and land use.

### **GEO 6118: Contemporary Geographic Thought and Research**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* admission to graduate program in geography.

Summary of major currents of intellectual thought and research orientations in contemporary geography.

### **GEO 6119: Proposal Writing in Geography**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* Graduate standing in Geography or consent of instructor

Research design, proposal writing and proposal evaluation for geographic studies.

### **GEO 6160: Introduction to Quantitative Methods for Geographers**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* statistics.

Working knowledge of statistical and quantitative techniques used by geographers. Focuses on spatial analysis.

### **GEO 6161: Intermediate Quantitative Methods for Geographers**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* GEO 6160.

Statistical techniques used in the spatial and social sciences. Regression analysis for cross-sectional, qualitative, time-series, and geocoded data.



### **GEO 6166: Advanced Quantitative Methods for Spatial Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 6160 and GEO 6161 or equivalent or permission of instructor

Critical examination and analysis of spatial data and point patterns, trend-surface modeling and interpolation, count data modeling, cluster and hot-spot detection, process change statistics in space and time, and spatial regression models.

### **GEO 6255: Climatology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Introductory weather and climate course taken as an undergrad.

Climatology in a global context. Emphasizes energy budgets, weather systems in the tropics and extratropics, and atmospheric teleconnections such as El Nino.

### **GEO 6282: Fluvial Morphology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate standing, a basic physical geography or geology course and an introductory statistics course. Other interested individuals should consult instructor.

Study of fluvial processes, landforms and deposits and their changes due to environmental factors and human activities.

### **GEO 6348: Floods Seminar**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of the world's most extreme floods from the Pleistocene through present due to various causes. Emphasizes physical and human aspects of flood warning, preparedness, response and recovery throughout the world.

### **GEO 6375: Land Change Science Seminar**

**Credits: 3**                      **Grading Scheme:** Letter

Interdisciplinary study of land use and land cover change dynamics and their relationship with global environmental change.

**GEO 6429: Seminar: Cultural Geography**

**Credits: 3**                      **Grading Scheme:** Letter

Review of literature, theoretical frameworks, and research design formulation in contemporary cultural geography.

**GEO 6435: Seminar in Population**

**Credits: 3**                      **Grading Scheme:** Letter

Combination lecture and seminar dealing with social and population problems from a spatial perspective. Major research project required.

**GEO 6451: Medical Geography**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Studying human-environment interactions and the influence of these interactions on public health. This course provides a broad-based, comprehensive survey of geographic approaches in medical studies.

**GEO 6495: Environment and Behavior**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Theoretical and empirical analysis of how people perceive and interpret ordinary environments and their influence on well being.

**GEO 6905: Individual Work**

**Credits: 1-5    Max: 12 including GEO 5905    Grading Scheme: Letter**

**GEO 6921: How to Survive and Thrive in Academia**

**Credits: 1    Grading Scheme: Letter**

Strategies and approaches, from preparation in graduate school, to success on the academic job market, to getting tenure.

**GEO 6931: Seminar in Cultural and Political Ecology**

**Credits: 3    Grading Scheme: Letter**

Human-environment relationships from the perspective of cultural and political ecology.

**GEO 6938: Selected Topics in Geography**

**Credits: 1-5    Max: 15    Grading Scheme: Letter**

*Prerequisite:* graduate standing in geography or a related field.

**GEO 6971: Research for Master's Thesis**

**Credits: 1-15    Grading Scheme: S/U**

### **GEO 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **GEO 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

### **GER 6060: Beginning German for Graduate Students I**

**Credits: 3**

**Grading Scheme: S/U**

For graduate students from other departments who need to acquire a reading knowledge of German. Not open to graduate students in German.

### **GER 6061: Beginning German for Graduate Students II**

**Credits: 3**

**Grading Scheme: Letter, S/U**

*Prerequisite:* GER 6060 or its equivalent.

For graduate students from other departments who need to acquire a reading knowledge of German. Not open to graduate students in German.

### **GER 6505: German Culture**

**Credits: 3**

**Grading Scheme: Letter**

Interdisciplinary study of periods and major aspects of German culture from the Middle Ages to the present.

**GER 6940: Supervised Teaching**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* departmental approval.

**GET 6295: Weimar Cinema**

**Credits: 3                    Grading Scheme: Letter**

Weimar cinema, and theory and criticism that surround it. Examination of intersection between formal-aesthetic and ideological-political aspects as manifest in film text.

**GET 6299: New German Cinema and its Legacy**

**Credits: 3                    Grading Scheme: Letter**

New German cinema as response to Hollywood cinema, Germany's Nazi past and problems posed to society, and cinema by other mass media and new imaging technologies. Analytical texts draw from new historicism, cultural studies, psychoanalysis, and postmodernism.

**GEW 6205: Foundations of Literary Study**

**Credits: 3                    Grading Scheme: Letter**

*Required for M.A. and Ph.D. candidates in German.* Focus on literary criticism and methodology. Different theoretical approaches to literature and research techniques. Recent developments.

**GEW 6266: History of the German Novel**

**Credits: 3**                      **Grading Scheme:** Letter

Development of novel from its beginning in 17th century to its rise in late 18th, 19th, and 20th centuries as well as history of theories about novels.

**GEW 6305: Studies in German Drama and Theater**

**Credits: 3**                      **Grading Scheme:** Letter

Main trends in the development of German drama during different literary periods. Analysis of individual plays and theoretical texts.

**GEW 6405: Medieval and Renaissance Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Courtly and heroic epic, Volksbücher, and major genres and trends from the Medieval and Renaissance period.

**GEW 6425: From Luther to Lessing: Early Modern German Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of major trends, authors, and texts from Reformation to Enlightenment.

**GEW 6535: German Classical and Romantic Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of major authors and texts. Special attention to developments in culture, aesthetics, and society.

**GEW 6558: Young Germany, Biedermeier, Realism, and Naturalism**

**Credits: 3**                      **Grading Scheme:** Letter

Writers of the 19th century including Moerike, Heine, Droste-Huelshoff, Stifter, Keller, Raabe, Storm, Fontane, Meyer, Hauptmann.

**GEW 6725: Culture and Society in the Weimar Republic**

**Credits: 3**                      **Grading Scheme:** Letter

Intellectual and cultural life between 1918 and 1933. Analysis of literary works from theater, cabaret, and cinema within context of social and political life of the Weimar Republic.

**GEW 6735: Modern German Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Literary trends and major works of early twentieth century. Authors may include Mann, Rilke, Kafka, and Hesse. Relation to contemporary cultural and aesthetic developments.

**GEW 6736: Contemporary German Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Literary trends from 1945 to present. Relation to contemporary cultural and aesthetic developments. Current developments.

**GEW 6745: Literature and Culture in the Third Reich**

**Credits: 3                      Grading Scheme:** Letter

Analysis of major literary and nonliterary works of Nazi period. Appropriation of German literary tradition. Examination of Nazi theater and film. Literature of the so-called inner emigration.

**GEW 6826: German Literary Theory**

**Credits: 3                      Grading Scheme:** Letter

Major figures in field from nineteenth century to present. Emphasis on question of hermeneutics and different responses developed by literary theoreticians. Special focus on most recent developments in field.

**GEW 6900: Seminar in Germanic Languages and Literatures**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

**GEW 6901: Special Study in Germanic Languages and Literatures**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

Intensive study of a selected topic.

**GEW 6905: Independent Study**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

*Available by special arrangement. May be taken only once for M.A. credit.*



**GEW 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**GEW 6971: Research for Master's Thesis**

**Credits: 1-9                    Grading Scheme: S/U**

**GEW 7979: Advanced Research**

**Credits: 1-12                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**GEW 7980: Research for Doctoral Dissertation**

**Credits: 1-15                Grading Scheme: S/U**

*For students admitted to candidacy.*

**GEY 5935: Topics in Gerontology**

**Credits: 3    Max: 12            Grading Scheme: Letter**

### **GEY 6220: Overview of Geriatric Care Management**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* GEY 6646.

Overview of geriatric care management in aging network.

### **GEY 6306: Interpersonal Communication Within the Aging Network**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* GEY 6646.

Effective communication with clients, caregivers, and care teams. Dealing with conflict, therapeutic relationships, interviewing, report-writing, intergenerational communication, and cultural considerations.

### **GEY 6341: Shelter and Care Options for U.S. Elderly**

**Credits: 3                      Grading Scheme:** Letter

Examining how the housing and long-term care arrangements of older adults in the United States influence their ability to age successfully, that is, to be fully engaged in life and to effectively cope with their chronic health conditions and disabilities.

### **GEY 6646: Issues and Concepts in Gerontology**

**Credits: 3                      Grading Scheme:** Letter

A multidisciplinary, team-taught survey of the field.

### **GEY 6905: Independent Study in Gerontology**

**Credits: 1-3    Max: 4                      Grading Scheme:** Letter

**GEY 6936: Professional Development in Gerontology/Geriatrics**

**Credits: 1-2    Max: 10            Grading Scheme: S/U**

Research proposals, professional ethics, teaching, theoretical issues, academic journals, research trends, methodologies, conference and colloquium presentations, and career planning.

**GEY 7408: Psychotherapy with Older Adults**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Admission to graduate study in counseling psychology or clinical and health psychology or consent of instructor; PCO 7944 for counseling psychology or CLP 6407 for clinical and health psychology.

Psychotherapeutic interventions with older adults.

**GIS 5008C: Maps and Graphs**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* graduate standing.

General introduction to principles and techniques of thematic cartography and cartographic applications.

**GIS 5009C: Advanced Cartography**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* GEO 4100C; CGS 3460 or consent of instructor.

Advanced methods including computer cartography and elements of cartographic reproduction.

**GIS 5028C: Advanced Aerial Photo Interpretation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 2200 or consent of instructor.

Uses of aerial photographs in geographical research.

### **GIS 5038C: Remote Sensing**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 4120C.

Uses of remote sensing imagery in geographical research.

### **GIS 5107C: Geographic Information Systems in Research**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 3162C or equivalent.

Geographic technology for creating, modifying, displaying, and analyzing spatial information. Geographic analysis and reasoning, computer software and hardware technology, and research applications of GIS. Geographic databases.

### **GIS 5306: Geographic Information Systems Applications in Environmental Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 3171 or equivalent, consent of instructor.

Advanced study of applying GIS to research problems in geosciences, landscape ecology, and land management. Concepts, methods, data, and models for studying physical and ecological spatial patterns and processes. Not software-specific.

### **GIS 5540: Business Geography and New Real Estate Market Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GEO 3171 or equivalent, consent of instructor.

Methods that professional human economic geographers have used in the business community, starting with William Applebaum and extending through the contemporary period. Use of GIS and geographic analysis in business decisions. Trade zone, geographic market-area analysis, and gravity retail models.

### **GIS 6103: GIS Programming and Customization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Familiarity with ArcGIS and some exposure to programming (specific language not required), to be determined by instructor (approval of instructor required). Course will be departmentally controlled.

Hands-on introduction to the capabilities of a Geographic Information System (GIS) to be expanded through programming.

### **GIS 6104: Spatial Networks**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Entry level knowledge of statistics (GEO6160, or equivalent) or the consent of the instructor. Prior experiences with ArcGIS is preferred, but not required.

Many phenomena of interest in physical, social, and cyber environments can be thought of as networks within geographic context. This course teaches methods for analyzing these spacial networks, and introduces their applications in geography, urban studies, transportation, hydrology, epidemiology, social science, etc.

### **GIS 6116: Geographic Information Systems Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SUR 3393 and SUR 3393L

Analytical tools such as software grid modules, database query, map algebra, and distance operators; analytical operations such as database query, derivative mapping, and process modeling; sources and nature of uncertainty and error, and project planning management.

### **GIS 6425C: GIS Models for Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* (GEO4167C/GEO 6160 , or equivalent) and GIS (GIS3043/GIS 5107C , or equivalent), or the consent of the instructor

Focusing on the design of GIS-based models to address health and health care issues. Major topics include: a conceptual framework, landscape epidemiology models, disease diffusion models, health accessibility, human health behavior, and location-allocation of health services. Lab section helps students gain hands-on experience applying these models with GIS tools.

### **GLY 5156: Geologic Evolution of North America**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY 2010 or 2026; 4400C recommended.

Key geological features of North American plate and important aspects of their geological evolution through time. Current and past plate tectonic setting, major geological and geomorphologic provinces, geophysical aspects of North American lithosphere, and natural resources.

### **GLY 5245: Hydrogeochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* inorganic chemistry, calculus, or consent of instructor.

Geological controls on chemical and isotopic composition of natural waters, including meteoric ground water, brines, and sea water; emphasizing thermodynamic and kinetic aspects of fluid-solid reactions.

### **GLY 5246: Geochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2046, GLY 2010C.

The abundance and distribution of the elements and their behavior during various geological processes.

### **GLY 5247: Surface and Ground Water Interactions**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* geology/hydroecology and undergraduate chemistry and physics.

Classic and new literature that deals with interactions between surface and ground water. Emphasizes submarine ground water discharge in estuary and coastal zones, hyporheic zones of streams, and karst aquifers.

### **GLY 5248: Physical Geochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* calculus I, introductory chemistry, or consent of instructor.

Principles, theory, practice, and application of thermodynamics and kinetics to geochemical processes.

### **GLY 5255: Organic Geochemistry and Geobiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* one year introductory chemistry, one year introductory geology.

Theory, practice, and methods of organic geochemistry, organic biogeochemistry, and geomicrobiology.

### **GLY 5328: Advanced Igneous Petrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY 4310C or equivalent.

Compositional variability, phase relations, and petrogenetic history of igneous rocks, volcanic regions, and mantle. Theories of petrotectonic associations and magmagenesis.

### **GLY 5455: Introduction to Geophysics and Tectonics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY 2010C, 2026C, or 4400C and 1 year of college physics or consent of instructor.

Physics of the Earth. Study of gravity and magnetic fields, seismic waves, thermal history, orogenic belts, and plate tectonic theory.

### **GLY 5466: Seismology and Earth Structure**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302 or GLY 5455 or PHY 2048 or PHY 2060 or consent of instructor.

Introduces basic theory of elastic wave propagation in the Earth. Applies seismology as a tool for determining Earth structure and explains relationships between earthquakes and plate tectonics.

### **GLY 5468: Terrestrial Gravity and Magnetism**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302 or PHY 2060, and GLY 5455, or by consent of instructor.

Survey of potential field theory with applications to gravity and magnetism of the Earth.

### **GLY 5476: Environmental Geophysics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY 2010C or 2026C and 1 year of college physics or consent of instructor.

Reflection and refraction seismology. Gravitational, magnetic and electrical methods of exploration. Instrumentation, surveying techniques, and data reduction and interpretation.

### **GLY 5558C: Sedimentology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY 2010 or 2026; 4552.

Lecture and discussion of major sedimentary processes active in coastal and continental margin settings, focus on relating processes with sedimentary facies. Class work augmented with frequent field trips.

### **GLY 5576: Continental Margin Stratigraphy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GLY4552 or equivalent

Basic concepts of sequence stratigraphy and to illustrate their application in the study of tectonics, sediment supply, and sea-level change. Emphasizes exploration tools, such as advanced well logging techniques and seismic stratigraphy, used to relate lithology with stratigraphy.



**GLY 5705: Geomorphology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GLY 4400C.

Application of principles of geomorphology to origin and evolution of landscapes.

**GLY 5736: Marine Geology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GLY 2010C, or 2026C, or OCE 1001.

Detailed introduction to the origin and evolution of ocean basins, ocean margins, and oceanic sediments and microfossils, including a paleoceanographic history of the marine realm.

**GLY 5786L: Topics in Field Geology**

**Credits: 2    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* graduate standing and consent of instructor.

Visits to selected sites and regions of outstanding geologic value and interest.

**GLY 5827: Ground Water Geology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GLY 2010C, or 2026C.

Principles of ground water geology, with special reference to the Coastal Plain and Florida.

**GLY 6075: Global Climate Change: Past, Present, and Future**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GLY 4552C.

Evolution of the Earth's climate through geologic time, including discussion of modern climatology and methods of paleoclimate interpretations.

### **GLY 6268C: Isotope Geology**

**Credits: 4                      Grading Scheme:** Letter

*Prerequisite:* GLY 5246.

Application of radiogenic and stable isotopes to the solution of geologic problems such as geochronology, petrogenesis, and paleoclimatology.

### **GLY 6297: Topics in Geochemistry**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

*Prerequisite:* GLY 5246.

Applications of geochemical (elemental and isotopic) methods and data to tectonics and petrology).

### **GLY 6425: Tectonics**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* GLY 4400C.

Evolution and formation of mid-ocean ridges, seamounts, hot spots, island arcs, back-arc basins, passive margins, and mountain chains.

### **GLY 6519: Stratigraphy and Timescales**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor, or undergraduate degree in geology.

Methods in stratigraphy including biostratigraphy, chemostratigraphy, manetostratigraphy, and cyclostratigraphy and how these tools are integrated to generate geologic timescales in absolute time.

**GLY 6620C: Micropaleontology**

**Credits: 3                      Grading Scheme: Letter**

Classification and identification of biostratigraphically important microfossil groups and their use in local and regional correlation.

**GLY 6695: Topics in Paleoclimatology**

**Credits: 4    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* undergraduate degree in geology or consent of instructor.

Studies of paleoclimates and interpretation of climate change from rock record.

**GLY 6826: Hydrogeologic Modeling**

**Credits: 3                      Grading Scheme: Letter**

Application of computer modeling to hydrogeologic problems through use of analytical and numerical solutions.

**GLY 6862: Numerical Methods in Earth Sciences**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* College level Calculus and Physics, or permission of instructor.

Providing graduate students with a solid introduction to the quantitative methods that are increasingly utilized in the Earth sciences.

**GLY 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

For work beyond that offered in regular courses.

**GLY 6931: Seminar**

**Credits: 1    Max: 2            Grading Scheme: Letter**

Reading in special topics.

**GLY 6932: Special Topics in Geology**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

Lectures, conferences, or laboratory sessions covering selected topics of current interest in modern geology.

**GLY 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**GLY 6943: Internship in College Teaching**

**Credits: 2-6    Max: 6            Grading Scheme: Letter**

Required for Master of Science in Teaching candidates, but available for students needing additional practice and direction in college-level teaching.

**GLY 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**GLY 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**GLY 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****GMS 5604: Medical Human Embryology****Credits: 3****Grading Scheme: Letter**

*Prerequisite:* GMS 5605: Medical Anatomy

Providing the developmental basis for understanding the anatomical relationships and organization of major structures within the thorax, abdomen, head/neck, and back/limbs regions of the body. Congenital malformations associated with given organ systems will also be discussed.

**GMS 5605: Medical Anatomy****Credits: 3****Grading Scheme: Letter**

*Prerequisite:* Bachelor's degree.

Medical human anatomy, using a combined regional and systemic approach to examine the relationships and organization of major structures within the thorax, abdomen, head/neck, and back/limbs regions of the body; correlations with diagnostic imaging and pathophysiology; medical-based scenarios to develop problem solving and critical thinking skills.

### **GMS 5606L: Medical Anatomy Lab**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree.

### **GMS 5613: Medical Human Anatomy by Diagnostic Imaging**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 5605: Medical Anatomy

Focusing on the clinically relevant relationships of major anatomical structures within the thorax, abdomen, head/neck, and back/limbs regions of the body. Medically based scenarios will be used to develop problem solving and critical thinking skills. Anatomical imaging will be correlated to transverse, sagittal and coronal human sections.

### **GMS 5630: Medical Histology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree.

Correlating diagnostic imaging of normal and pathologic tissues, and medical-based scenarios, in order to develop problem solving and critical thinking skills, using microscopic structure and function of human cells and tissues.

### **GMS 5905: Special Topics in Biomedical Sciences**

**Credits: 1-4    Max: 4                      Grading Scheme:** Letter

Analysis and discussion of contemporary topics and the development of biomedical sciences.

### **GMS 6001: Fundamentals of Biomedical Sciences I**

**Credits: 5                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Integrated approach to cellular, molecular, biochemical, and genetic aspects of cell function.

### **GMS 6003: Fundamentals of Graduate Research and Professional Development**

**Credits: 1    Max: 2            Grading Scheme: S/U**

*Prerequisite:* consent of instructor. Designed for new graduate students.    *Corequisite:* GMS 6001.

Practical knowledge and understanding of issues to increase chances for a successful graduate education and professional career in biomedical sciences.

### **GMS 6004: IDP Practical Laboratory**

**Credits: 2                      Grading Scheme: Letter**

Five weeks of laboratory instruction complemented with supporting theoretical lectures and workshops on radiation safety, biosafety, and library resources. Practical laboratory experience in proteins and nucleic acids, including DNA cloning, PCR, Southern blotting, protein purification and characterization, and RNA methods for cDNA cloning.

### **GMS 6005: Fundamentals of Developmental Biology**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor. Designed for first-year graduate students.

Integrated overview of mechanistic principles of development deriving from experimental analysis of nematode worm, fruit fly, chick, and mouse.

### **GMS 6006: Fundamentals of Immunology and Microbiology**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor. Designed for first-year graduate students.

Integrated approach to immunology, microbiology, and immune response to infection.

### **GMS 6007: Fundamentals of Neuroscience**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor. Designed for first-year graduate students.

Fundamental concepts on development, structure, function, and plasticity of nervous system.

### **GMS 6008: Fundamentals of Physiology and Functional Genomics**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor. Designed for first-year graduate students.

Fundamental physiological concepts. Emphasizes the impact of functional genomics technology on contemporary physiology.

### **GMS 6009: Principles of Drug Action**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor. Designed for first-year graduate students.

Fundamental concepts of drug action, receptor structure and function, and pharmacokinetics.

### **GMS 6010: Yeast Genetics**

**Credits: 1    Max: 3                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Using the yeast *Saccharomyces cerevisiae*, as a model eukaryotic cell to study the biological processes common to all eukaryotic organisms.

### **GMS 6011: Mouse Genetics**

**Credits: 1    Max: 3                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.



Theoretical framework for understanding the fundamentals of mouse genetics and use of the mouse model to study human disease. Advanced technical tools used for research and their application to novel problems.

### **GMS 6012: Human Genetics**

**Credits: 1    Max: 3            Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Theoretical framework for understanding the fundamentals of human genetics. Advanced technical tools used for research.

### **GMS 6013: Developmental Genetics**

**Credits: 1    Max: 3            Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Theoretical framework for understanding the fundamentals of developmental genetics. Advantages and limitations of several model systems and their application to the study of development.

### **GMS 6014: Applications of Bioinformatics to Genetics**

**Credits: 1                    Grading Scheme:** Letter

*Prerequisite:* GMS 6001; consent of instructor.

Storage, retrieval, and analysis of information related to genetics.

### **GMS 6015: Human Genetics II**

**Credits: 1                    Grading Scheme:** Letter

*Prerequisite:* GMS 6012; consent of instructor.

Theoretical framework, emphasizing functional genomics and bioinformatics. Advanced technical tools used for research and development in these areas.

### **GMS 6017C: In-Vitro Fertilization Laboratory Practicum A**

**Credits: 4**                      **Grading Scheme: S/U**

*Prerequisite:* Master's degree in animal sciences.      *Corequisite:* Acceptance into the Animal Molecular and Cellular Biology (AMCB) graduate program.

IVF training and lectures leading to proficiency in human-assisted reproductive technologies. Hands-on manipulation of human gametes in preparation for patient clinical management during infertility treatment.

### **GMS 6018L: Advanced in-Vitro Fertilization Laboratory Practicum**

**Credits: 4**                      **Grading Scheme: S/U**

*Prerequisite:* GMS 6017C and master's degree in animal science.      *Corequisite:* acceptance into Animal Molecular and Cellular Biology (AMCB) graduate program.

Advanced IVF training leading to proficiency in human-assisted reproductive technologies. Hands-on manipulation of human gametes in preparation for patient clinical management during infertility treatment.

### **GMS 6021: Principles of Neuroscience I: Organization and Development of the Nervous System**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Principles governing neural development and plasticity of the vertebrate central nervous system.

### **GMS 6022: Principles of Neuroscience II: Cellular and Molecular Neuroscience**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Principles governing intercellular communication within the nervous system.

### **GMS 6023: Principles of Neuroscience III – Molecular Neuropharmacology and its Clinical Application**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* Principles of Neuroscience I and II

This course surveys the basic principles of neuropharmacology with an emphasis on the molecular pharmacology of CNS disorders. The specific focus is to provide a description of the cellular and molecular actions of drugs on synaptic transmission with in-depth discussion of drug-induced changes in the functioning of the nervous system.

#### **GMS 6024: Principles of Neuroscience IV: Neural Integration & Control**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 6023 or consent of instructor.

Principles governing the integration and control of information processing within the central nervous system.

#### **GMS 6029: Brain Journal Club**

**Credits: 1    Max: 12                      Grading Scheme:** S/U

*Prerequisite:* consent of instructor.

Opportunities to present and participate in discussions of top-tier research papers in the neurosciences.

#### **GMS 6031: Molecular Immunology**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 , GMS 6006, or consent of instructor.

Biological and biochemical aspects, focusing on molecular events critical to development of an immune response.

#### **GMS 6032: Mechanisms of Host Defense**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001, GMS 6006, or consent of instructor.

Biological and biochemical aspects of immunology, focusing on effector mechanisms of immune response to microbes and macromolecules.

### **GMS 6033: Immunity in Health and Disease**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001, GMS 6006, or consent of instructor.

Biological and biochemical aspects of immunology, focusing on the molecular and cellular basis of human disease.

### **GMS 6034: Advanced Virology I: Genetics and RNA**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Theoretical framework for understanding the fundamental concepts of viral genetics. Methods of analysis used to elucidate the mechanisms of virus reproduction.

### **GMS 6035: Advanced Virology II: RNA Viruses**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Molecular biology and genetics of virology, focusing on the molecular biology of RNA viruses.

### **GMS 6036: Molecular Virology III: DNA Viruses**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Molecular biology and genetics of virology, focusing on replication and pathogenesis of DNA viruses.

### **GMS 6038: Bacterial Genetics and Physiology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6006 or consent of instructor.

Theoretical framework for understanding fundamental concepts.

### **GMS 6039: Bacterial Pathogenesis**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of medical microbiology, focusing on the genetics and physiology of bacteria, their use as research tools, and the role of bacteria in causing disease.

### **GMS 6040: Host-Pathogen Interactions**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of medical microbiology, focusing on the host response and subsequent evasion of that response by pathogens.

### **GMS 6051: Signal Transduction**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Focuses on the mechanisms underlying cellular signal transduction.

### **GMS 6052: Ion Channels of Excitable Membranes**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Examines the background of ion channel proteins that regulate and respond to cell membrane potential. A cell's membrane potential is an important source of energy for regulating intracellular ion concentration, controlling the secretory process, and for electrical signaling in the nervous system.

### **GMS 6053: Cancer Biology and Therapeutics**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6065 or consent of instructor.

Integrated approach for teaching of pharmacology and physiology pertaining to cancer.

### **GMS 6059: Gene Therapy from Bench to Bedside**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6034, GMS 6035, and GMS 6036 or consent of instructor.

Designing and using gene transfer vectors to treat various diseases. Understanding the practical successes and hurdles of gene therapy.

### **GMS 6061: Nuclear Structure and Dynamics**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Cell biology of the nucleus. Offered in odd-numbered years.

### **GMS 6062: Protein Trafficking**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Movement of proteins in cell. Offered in even-numbered years.

### **GMS 6063: Mechanisms of Aging**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Recent developments in the field of aging.

### **GMS 6064: Tumor Biology**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Current understanding of the molecular basis of cancer. Offered in odd-numbered years.

### **GMS 6065: Fundamentals of Cancer Biology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Broad-based introduction into causes of cancer, molecular and biological processes involved in malignancies, and current cancer treatment approaches.

### **GMS 6070: Sensory and Motor Systems**

**Credits: 1    Max: 2                      Grading Scheme:** Letter

*Prerequisite:* medical, veterinary, or dental neuroscience.

Analyzing neural coding by model sensory or motor system, depending on student's research interest. Offered fall term.

### **GMS 6072: Neuroendocrinology and Neuroimmunology**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6007 or consent of instructor.

Cellular and molecular mechanisms regulating interactions among the immune, endocrine, and nervous systems.

### **GMS 6073: Developmental Neurobiology**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6007 or consent of instructor.

Focuses on current research that is being conducted to build on an understanding of how the nervous system develops. Examines both cellular and molecular perspectives.

### **GMS 6074: Comparative and Evolutionary Neurobiology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6007 or consent of instructor.

Broad perspective of nervous system evolution, structure, and function in different species. Comparisons of cytoarchitectural principles that produce mammalian nervous systems are additional focus.

### **GMS 6077: Neural Degeneration and Regeneration**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Fundamental cytological, molecular, neurophysiological, and behavioral features associated with neural tissue reactions to trauma and neurodegenerative disease. Offered spring term.

### **GMS 6078: Synaptic Function and Plasticity**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Synapses that mediate fast electrical excitation and inhibition in the mammalian brain and how these synapses change with development and experience. Molecular biology of glutamate, GABA, and nicotinic acetylcholine receptor subtypes, experimental paradigms for studying long-lasting changes in synaptic function, and changes in animal behavior related to neuroplastic events.

### **GMS 6079: Computers in Biology**

**Credits: 1                      Grading Scheme: Letter**



*Prerequisite:* GMS 6001 or consent of instructor.

Students will be introduced to the use of computers in studies of protein and nucleic acid sequences and cellular function.

### **GMS 6080: Basic Magnetic Resonance Imaging**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6007 or consent of instructor.

Principles behind nuclear magnetic resonance imaging (MRI) and spectroscopy (MRS) and how these methods are applied to studies of the human brain.

### **GMS 6081: Biological Imaging Techniques**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Basic principles and advanced applications of biological imaging, with a focus on optical methods and visualization techniques.

### **GMS 6082: Introduction to Functional Magnetic Resonance Imaging**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* Consent from instructor

Functional magnetic resonance imaging (fMRI) is at the forefront of many research fields in neuroscience. the method is widely in human and animal studies to investigate neural mechanisms. Introduction to Functional MRI will provide students with the basic and practical principles underlying fMRI of the brain. Students will complete the course having an in-depth introduction to neurophysiological mechanisms that couple magnetic resonance phenomenon to task-or stimulus-dependent changes in neuronal activity and cerebral metabolism.

### **GMS 6090: Research in Medical Sciences**

**Credits: 1-10    Max: 10                      Grading Scheme:** S/U

Supervised research other than that for the thesis or dissertation in biochemistry and molecular biology, genetics, immunology and microbiology, molecular cell biology, neuroscience, and physiology and pharmacology.

### **GMS 6096: Introduction to NIH Grant Writing for Biomedical Sciences**

**Credits: 1                      Grading Scheme: S/U**

This 14-week course will cover introductory topics related to preparing and submitting an NIH grant application. The format will be a one-hour lecture once a week by accomplished NIH-funded researchers. Target audience is advanced graduate students, postdocs, junior faculty, and senior faculty seeking an introduction to current grant submission procedures.

### **GMS 6099: Foundations in Aging and Geriatric Research**

**Credits: 3                      Grading Scheme: Letter**

Teaching proficiency on critical assessment and understanding of methods used in research studies related to biomedical aging and clinical geriatrics. Students will gain the ability to understand, gather information and assess the quality of these studies including basic content and construction of peer reviewed journal articles.

### **GMS 6121: Infectious Diseases**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* Consent of instructor.

Survey of medical microbiology directed at understanding infectious disease in terms of molecular pathogenesis, bacterial physiology, and genetics.

### **GMS 6140: Principles of Immunology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Fundamental principles of basic and experimental immunology, from first engagement of innate immunity to the

generation of the adaptive immune response and its clinical consequences.

### **GMS 6143: Cells of the Innate Immune System**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6140

Emphasizes the critical role that innate immune cells play in infectious and autoimmune diseases. Emphasis will be on understanding how individual innate immune cell types (macrophages, dendritic cells, natural killer cells and neutrophils) were discovered and understanding the fundamental roles of these cells within the immune response.

### **GMS 6145: Immunology of Gene Transfer**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* background in molecular biology, virology, and immunology.

Immunological aspects of gene therapy.

### **GMS 6151: Genetic Analysis Using Model Systems**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Major model systems used in scientific research.

### **GMS 6153: Advanced Bacterial Genetics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6038 or consent of instructor.

Advanced principles of bacterial genetics, emphasizing work with bacteria and genetic constructs as tools in biotechnologies.

### **GMS 6155: DNA Microarray Data Analysis**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6014 or consent of instructor.

Hands-on study of microarray data analysis and relational databases.

### **GMS 6160: Introduction to Oral Biology I**

**Credits: 2                      Grading Scheme: Letter**

Review of basic principles of prokaryotic and eukaryotic molecular biology, gene therapy, stem cell biology, and tissue engineering and the application of those principles to study of normal and abnormal conditions of oral cavity.

### **GMS 6161: Introduction to Oral Biology II**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* GMS 6160 or consent of instructor.

Review of current information on psychophysiology and biology of oral pain; oral infectious diseases; oral ramifications of inflammation, hypersensitivities, and immune deficiencies; bone disorders; and oral health in normal aging.

### **GMS 6169: Antimicrobial Strategies**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Recent developments in the field of antimicrobial strategies including antibiotics and their mechanisms of action, antibiotic resistance mechanisms, phage therapy, antimicrobial target identification, and vaccine approach.

### **GMS 6173: Stomatognathic System: Form and Function**

**Credits: 2                      Grading Scheme: Letter**

Anatomy and function of head and neck muscles, temporomandibular joints, and salivary glands. Normal and abnormal mastication, deglutition, speech, and oral sensorimotor measures.

#### **GMS 6176: Biology of Tooth Supporting Structures I**

**Credits: 1                      Grading Scheme: Letter**

*Corequisite:* BCH 6740 or consent of instructor.

Organization, vasculature, and innervation of the periodontium; chemistry; biosynthesis, biophysics, and degradation of collagen; studies of other associated, unique proteins.

#### **GMS 6177: Biology of Tooth Supporting Structures II**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6176; or consent of instructor.      *Corequisite:* BCH 6207.

Development and function of the periodontal ligament; organization, development, biophysics, and biochemistry of bone; calcification mechanisms and bone remodeling; effects of hormones and nutrients on bone.

#### **GMS 6181: Special Topics in Microbiology**

**Credits: 1-6    Max: 18                      Grading Scheme: Letter**

#### **GMS 6190: Seminar**

**Credits: 1; max:12                      Grading Scheme: S/U**

Presentations by invited speakers.

#### **GMS 6191: HIV Journal Club**

**Credits: 1                      Grading Scheme: Letter**

Presentation and critical discussion of recent original articles in the HIV literature.

**GMS 6193: Research Conference in Oral Biology**

**Credits: 1 or 3    Max: 8                      Grading Scheme: S/U**

*Required of graduate students in oral biology; open to others by departmental approval. Critical discussion and appraisal of current research in the department by students and faculty.*

**GMS 6195: Epigenetics Journal Club**

**Credits: 1    Max: 12                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Presentation and critical discussions of recent original papers published in high-impact journals relating to the topic of epigenetics.

**GMS 6196: Virology Journal Club**

**Credits: 1    Max: 12                      Grading Scheme: Letter**

Presentation and critical discussions of recent original articles in the virology literature.

**GMS 6198: Bacterial Pathogenesis Journal Club**

**Credits: 1    Max: 12                      Grading Scheme: Letter**

Presentation and critical discussion of recent original papers on bacterial pathogenesis published in high-impact journals. Offered spring and fall term.

### **GMS 6221: Ethics in Genetics**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* Consent of instructor

Presentation and critical discussion of relevant topics pertaining to ethics, policy and translation in genetics research.

### **GMS 6223: Drosophila Neurogenetics: from Development to Function**

**Credits: 2                      Grading Scheme: letter**

*Prerequisite:* Core IDP course GMS 6001

Providing a comprehensive and detailed introduction to contemporary research on the genetics of *Drosophila* neurobiology. The course will be divided in three major sections covering: (A) the development of the CNS, (B) the dissection of neural circuits in the adult brain, and (C) the genetic basis of complex behaviors.

### **GMS 6231: Genomics and Bioinformatics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6166 and PCB 5065 or consent of instructor.

Principles of genomic characterization and bioinformatic analysis of eukaryotes.

### **GMS 6232: Advanced Applications of Bioinformatics in Genetics**

**Credits: 1    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* GMS 6014 or consent of instructor; programming experience.

Applying bioinformatics and computational approaches to solve research problems.

### **GMS 6233: Quantitative Models of Protein Evolution and Phylogenetics**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Intended for graduate students interested in protein biology.

Discusses the intricacies and assumptions of methods of phylogenetic analysis from molecular data. Emphasizes the study of the theoretical principles underlying models of protein evolution, as used in phylogenetic analysis. Examines biological principles and mathematical tools used to model protein evolution in inferring phylogenetic relations. Develops quantitative models of protein evolution and studies algorithmic applications of existing models. Interactive lectures in a Socratic format, tailored to the progress of the students.

### **GMS 6234: Introduction to phylodynamics: A practical approach to molecular phylogenetics of pathogens**

**Credits: 3**                      **Grading Scheme:** Letter

Principles of molecular evolution. Mathematical models of DNA/RNA sequence evolution and their application to phylogenetic inference. Mathematical and statistical tools implemented in phylogenetic-tree reconstruction methods and molecular clock calibration. Introduction to coalescent theory. Phylodynamic models and their application to the study of viral and bacterial pathogens. Practical computer sessions analyzing real data with the MEGA5 and BEAST software packages.

### **GMS 6251: Molecular Therapy I – Vectors and Molecular Mechanisms**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or instructor approval

Gene therapy is an established molecular medicine for treatment of multiple genetic diseases (e.g., primary immune deficiencies, inherited forms of blindness) and cancers. This course covers the most important/widely studied diseases and applications of gene therapy. Emphasis is given to diseases successfully treated by gene therapy in clinical trials.

### **GMS 6252: Molecular Therapy II – Disease Targets and Applications**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6251 Molecular Therapy I or instructor approval

Gene therapy is an established molecular medicine for treatment of multiple genetic diseases (e.g., primary immune deficiencies, inherited forms of blindness) and cancers. This course will be covering the most important/widely studied diseases and applications of gene therapy. Emphasis is given to diseases successfully treated by gene therapy in clinical trials.



### **GMS 6253: Molecular Therapy III – Immunology of Gene Transfer**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or instructor approval

This course will be covering the interaction between gene transfer vectors and their therapeutic gene products and the immune system, including mechanisms of innate and adaptive immune responses against gene-based drugs, viral immunology, immune modulation, immune tolerance, and use of gene transfer to enhance immune responses against cancer or infectious disease.

### **GMS 6290: Genetics/Genomics Program Graduate Seminar**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* enrolled in campus-wide genetics and genomics program or consent of instructor.

Presentations, seminars, and critical discussions of recent original research relating to genetics and genomics.

### **GMS 6312: Clinical Chemistry and Toxicology**

**Credits: 3                      Grading Scheme: Letter**

Comprehensive review of analytical techniques used in clinical chemistry and toxicology, and interpretation of laboratory data.

### **GMS 6313: Clinical Chemistry and Toxicology: A Rotation**

**Credits: 2-20    Max: 20                      Grading Scheme: S/U**

*Prerequisite:* GMS 6312.

Participation in all phases of practical clinical chemistry and toxicology. Chemical methodology, clinical interpretation, and significance of laboratory measurements used in diagnosing diseases. Individual investigative project in clinical chemistry and toxicology. Pathology graduate students specializing in clinical chemistry must spend 3 semesters on this rotation.

### **GMS 6331: Stem Cell Biology**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Recent progress in mammalian stem cell research.

### **GMS 6335: Advanced Stem Cell Biology: Tissue Engineering**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6331 and GMS 6336

Current state of the art in using stem cells and other technologies to engineer tissues and organs for therapeutic use.

### **GMS 6336: Advanced Stem Cell Biology: Regenerative Medicine**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* GMS 6331.

Potential clinical applications of tissue-specific, adult stem cells; derivation, manipulation, uses, and limitations.

### **GMS 6337: B Cell Development in Health and Disease**

**Credits: 1    Max: 15                      Grading Scheme: Letter**

*Prerequisite:* GMS 6031, GMS 6032, and GMS 6033 or equivalent. Strong background in immunology.

Advanced understanding of the role and regulation of B cells, emphasizing dysregulation of B cell functions in autoimmune diseases.

### **GMS 6338: Recent Advances in Cancer Metastasis**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* None.

Recent progress in cancer metastasis including the interactions between tumor cells and host environments at molecular and cellular levels during metastatic process as well as tools and models available for cancer metastasis research.

### **GMS 6381: Special Topics in Pathology**

**Credits: 1-4    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* departmental approval.

Conference and supervised laboratory work. Topics selected to meet each student's needs. Offered in even-numbered years.

### **GMS 6382: Special Topics in Immunology**

**Credits: 1-3; max:6                    Grading Scheme: Letter**

*Prerequisite:* GMS 6140 or consent of instructor.

Analysis and discussion of contemporary topics in development of current concepts. Evaluation of the most recently published research literature. Seminars and discussions with invited speakers.

### **GMS 6383: Current Topics in Immunotherapy**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* GMS 6140

Becoming acquainted with concepts of immune therapy for the treatment of cancer and autoimmune diseases. Students will be expected to develop critical thinking skills with regards to identifying problems, providing possible solutions and debating areas related to experimental design and data interpretation. The course will include the discussion of journal articles and presentations. The class will focus to a large extent on lectures and student presentations of both historically significant as well as recent journal articles.

### **GMS 6393: Seminar in Clinical Chemistry**

**Credits: 1    Max: 7                    Grading Scheme: S/U**

*Prerequisite:* consent of instructor.    *Corequisite:* GMS 6312.

Reports and discussions of current research and clinical literature presented by faculty, invited speakers, and graduate students.

**GMS 6394: Seminar in Mammalian Genetics**

**Credits: 1; max:12**

**Grading Scheme: S/U**

Research report given by invited speakers, genetics faculty, and graduate students.

**GMS 6400C: Principles of Physiology**

**Credits: 6**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Physiology of mammalian organ systems, with special reference to the human.

**GMS 6403: Advanced Endocrinology**

**Credits: 4**

**Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or Instructor Approval

Readings, discussions and lectures on recent advances in endocrinology

**GMS 6405: Fundamentals of Endocrine Physiology**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor. For 1st- and 2nd-year graduate students.

Human body endocrine system physiology.

**GMS 6406: Fundamentals of Pulmonary/Respiratory Physiology**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Human body pulmonary/respiratory system physiology.

**GMS 6408: Fundamentals of Renal Physiology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Human body gastrointestinal system physiology.

**GMS 6410: Physiology of the Circulation of Blood**

**Credits: 2**                      **Grading Scheme:** Letter

Physiology of the component parts of the circulation. The relation of structure and function. Emphasizes control mechanisms.

**GMS 6411: Fundamentals of Cardiovascular Physiology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Human body cardiovascular system physiology.

**GMS 6412: Human Physiology for Biomedical Engineering**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor. For students in biomedical engineering.

Fundamentals of human physiology, processes, and regulatory mechanisms of major organ systems.

**GMS 6413: Advances in Hypertension Research**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6008: Fundamentals of Physiology and Functional Genomics

Exposes graduate students, post docs, and fellows to important aspects of hypertension research.

#### **GMS 6414: Advanced Renal Physiology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Advanced knowledge of renal physiology and pathophysiology.

#### **GMS 6415: Fundamentals of Gastrointestinal Physiology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Gastrointestinal system of human body.

#### **GMS 6416: Human Endocrinology and Anatomy of Reproduction**

**Credits: 2**                      **Grading Scheme:** S/U

*Prerequisite:* master's degree.

Overview in relation to in vitro fertilization.

#### **GMS 6417: Integrative Aging Physiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6400C: Principles of Physiology

Focusing on the effect of the aging process on the physiology of energy metabolism and the impact to systems involved in maintaining physical and cognitive function. This will include a discussion of changes to skeletal muscle and neurological systems that are known to become dysregulated with age.

#### **GMS 6421: Cell Biology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* undergraduate biochemistry or cell biology or consent of instructor. Taught in conjunction with 1st year IDP core course.

Fundamental mechanisms of cell functions, specializations, and interactions that account for the organization and activities of basic tissues.

### **GMS 6471: Fundamentals of Physiology and Functional Genomics I**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* Permission of instructor.

Fundamental physiological concepts with emphasis on the impact of functional genomics technology on contemporary physiology. Focuses on an overview of human physiology, cardiovascular system and muscle physiology. May be taken concurrently with Fundamentals of Physiology and Functional Genomics II and/or III.

### **GMS 6472: Fundamentals of Physiology and Functional Genomics II**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* Permission of the instructor

Fundamental physiological concepts with a focus on the impact of functional genomics technology on contemporary physiology. Emphasizes respiratory, renal, endocrine and autonomic nervous systems.

### **GMS 6473: Fundamentals of Physiology and Functional Genomics III**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* Permission of instructor.

Fundamental physiological concepts with a focus on the impact of functional genomics technology on contemporary physiology. Emphasizes gastrointestinal system and modern experimental approaches in physiology.

### **GMS 6483: Theories of Aging**

**Credits: 3                      Grading Scheme: Letter**

Humans have theorized about aging since 3000 AD in an attempt to explain how specific changes during the lifecourse are an integral part of aging. This course will explore the fundamental theories of aging across a wide array of disciplines to give the learner a broad understanding of "healthy" aging.

#### **GMS 6484: Geriatric and Age Related Diseases**

**Credits: 3                      Grading Scheme: Letter**

Providing an overview of the practice of providing care to geriatric populations. This includes an understanding of common syndromes, conditions and diseases that are relevant to the quality of life in older adults.

#### **GMS 6485: Population Based Research on Aging**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6099, GMS 6483, GMS 6484, and GMS 6876

Geared toward population-based research on diseases of elders that include: neurodegeneration, dementia, pulmonary disorders, chronic kidney disease, musculoskeletal, cardiovascular, and metabolic health conditions. At the completion of this course, students will be able to evaluate population-based research on aging and use these concepts in everyday practice.

#### **GMS 6486: Fundamentals of Biological Aging**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6099, GMS 6483, GMS 6484, and GMS 6876

Students will learn: 1) major theories of biological aging, including Evolutionary Neuroendocrine, and Free Radical Theories of Aging, 2) the roles of vital organ systems, key cellular programs, and 3) how the aging process can be delayed through pharmaceutical and genetic manipulation, or calorie restriction.

#### **GMS 6490C: Research Methods in Physiology**

**Credits: 2-4    Max: 6                      Grading Scheme: S/U**



Special needs of each student are met by conferences and laboratory work,

**GMS 6491: Journal Club in Physiology**

**Credits: 1    Max: 12            Grading Scheme: S/U**

Timely research papers in all areas of physiology; namely, cellular physiology, molecular physiology, and functional genomics.

**GMS 6495: Seminar in Physiology**

**Credits: 1                    Grading Scheme: S/U**

S/U

**GMS 6496: Recent Advances in Physiology**

**Credits: 1                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Content varies from year to year.

**GMS 6497: Seminar on Vision**

**Credits: 2                    Grading Scheme: Letter**

Current research and theory on visual function. Literature survey and design of an experiment relevant to recent theory.

**GMS 6500: Introduction to Pharmacology**

**Credits: 6                      Grading Scheme: Letter**

*Prerequisite:* elementary courses in biochemistry and physiology.

Overview of the field of pharmacology as study of interactions between living systems and foreign chemicals.

**GMS 6506: Biologic Drug Development**

**Credits: 1                      Grading Scheme: Letter**

Explores the manufacturing and testing of biomedical products, quality control, quality assurance responsibilities, and regulatory compliance, providing practical understanding of the successes and hurdles that are faced in biopharmaceutical product development today.

**GMS 6563: Molecular Pharmacology**

**Credits: 1    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6009 or consent of instructor.

Biochemical approach to the actions of drugs, stressing analysis of drug-receptor interactions, structure-activity relationships, kinetics of distribution of drugs, and metabolism of foreign compounds.

**GMS 6590: Seminar in Pharmacology**

**Credits: 1    Max: 15                      Grading Scheme: Letter**

*Prerequisite:* GMS 6500.

Research reports and discussions of current research literature by graduate students, faculty, and invited lecturers.

**GMS 6592: Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes**

**Credits: 1                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Recent papers in the context of larger issues in therapeutics and neuroscience. Discussions led by students and faculty.

### **GMS 6607C: Musculoskeletal Systems**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor, recommendation of graduate adviser, good standing in approved master's or doctoral program.

Human dissection and application of anatomical principles underlying clinical sciences including systemic approach to radiographic interpretation. Offered summer term B.

### **GMS 6609: Advanced Gross Anatomy**

**Credits: 2-4**    **Max: 6**                      **Grading Scheme:** Letter

Regional and specialized anatomy of the human body taught by laboratory dissection, conferences, and demonstrations.

### **GMS 6621: Vision**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Introduction to methodology, anatomy, and function of vision.

### **GMS 6622: Mitochondrial Biology in Aging and Disease**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing or consent of instructor

Basic biology of mitochondria; mitochondria in aging and disease; assessments for mitochondrial function and genetic variance.

**GMS 6635: Organization of Cells and Tissues**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Three credit full semester course covering tissues and nine organ systems related to cell and tissue biology.

**GMS 6642: Morphogenesis: Organ Systems I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6635, second-year IDP student.

Skin, respiratory, lymphatics, and special sense.

**GMS 6643: Morphogenesis: Organ Systems II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6642, second-year IDP student.

GI, kidney, endocrine, male and female reproduction.

**GMS 6644: Apoptosis**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Modern view of the molecular mechanisms of tumor development. Offered in even-numbered years.

**GMS 6647: Transcriptional and Translational Control of Cell Growth and Proliferation**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:*  
1st and 2nd Yr IDP Students.

Fundamental mechanisms that govern cell growth and proliferation.

**GMS 6683: Fundamentals of Vascular Physiology and Pathology**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001

Seeking to introduce the fundamentals of vascular biology and discussing the current understanding of the pathogenesis of common vascular diseases. Subjects to be covered include: mature and progenitor vascular cells, vascular physiology and histology, and the cellular and molecular mechanisms that drive vascular stenosis/restenosis and aortic aneurysm.

**GMS 6690: Molecular Cell Biology Journal Club**

**Credits: 1    Max: 12                      Grading Scheme:** Letter

Faculty-student discussion of research papers and topics.

**GMS 6691: Special Topics in Cell Biology and Anatomy**

**Credits: 1-4    Max: 10                      Grading Scheme:** Letter

Readings in recent research literature of anatomy and/or applied disciplines including cell, developmental, and reproductive biology.

**GMS 6692: Research Conference in Anatomy and Cell Biology**

**Credits: 1    Max: 12                      Grading Scheme:** Letter

Research reports and discussions of current research by graduate students, faculty, and invited speakers.

### **GMS 6705: Functional Human Neuroanatomy**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Intensive introduction to the anatomy, function, and dysfunction of the human central nervous system.

### **GMS 6709: Current Topics in Vision**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Genetics, molecular biology, and biochemistry underlying vision and the diseases that affect this important human sense.

### **GMS 6711: Neurobiology of Pain**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of instructor.

Overview of neurobiological processes involved in pain, including methods of investigating pain processing in humans and other animals.

### **GMS 6715: Lifestyle Interventions in Aging I: Behavioral Aspects & Clinical Outcomes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6099, GMS 6483, GMS 6484, and GMS 6876

Examining behavioral antecedents of major diseases, by reviewing epidemiological and population-based studies of behavioral/psychosocial variables and disease conditions and decreased longevity. Focusing on behavioral interventions to modify risk for disease, including the conceptual basis for the interventions, clinical trial data supporting efficacy, and application in clinical practice.

### **GMS 6717: Lifestyle Interventions in Aging II: Physiologic Aspects**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6099, GMS 6483, GMS 6484, GMS 6876, and GMS 6715

Building on the behavioral concepts of lifestyle-based intervention discussed in the Lifestyles I. We will examine the underlying physiologic changes experienced by older adults in response to lifestyle-based interventions. Adaptations will be evaluated across the spectrum of physiologic organization, from whole-body to molecular and cellular changes.

### **GMS 6719: Fundamentals of Computational Neuroscience**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* basic knowledge of calculus and computing and/or consent of instructor.

Major concepts of neural signaling and communication from a single neuron to systems of neural ensembles, and the role of neural computation.

### **GMS 6735: Neuroparmacology**

**Credits: 1    Max: 3                      Grading Scheme:** Letter

*Prerequisite:* GMS 6007, GMS 6009, or consent of instructor.

Identification, synthesis, metabolism, and pharmacology of neurotransmitters and their receptors. Includes biogenic amines, neuropeptides, and other nervous system transmitters.

### **GMS 6750: Molecular Pathobiology of Neural Disease**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Overview of a broad range of neural disorders emphasizing genetically determined conditions.

### **GMS 6760: Comparative Biology of Cell Signaling**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* GMS 6001 or consent of coordinator.

Overview of the principles governing cellular and molecular signaling in the nervous system. Introduction to novel experimental approaches and non-mammalian preparations used to explore these principles.

### **GMS 6771: Clinical Neuroscience of Aging**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6099, GMS 6483, GMS 6484, and GMS 6876

Using a clinical science approach that examines the relationship between aging and change in brain systems as they relate to clinical disorders. Overviews of modern clinical neuroscience methodology, clinical assessment, intervention strategies, functional neuroanatomy, and major cognitive systems and age-related changes are provided.

### **GMS 6780: Addiction: Neuroscience and Trends**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree or higher from a regionally accredited institution or equivalent

Presenting findings from leading-edge neuroscience research on how different drugs act on the brain, and how differences in age, gender and other factors influence those effects. It introduces different types of drugs, and describes global trends in substance use disorders and addiction.

### **GMS 6786: Medical Writing in Addiction**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Instructor permission

Teaches students how to produce well-written, discipline-specific medical, and science news stories on addiction, for print, online, and broadcast media. Students will assess media coverage and controversies regarding addiction, and learn how to simplify addiction-related scientific concepts and communicate knowledgeably, skillfully, and ethically with lay audience about this often-sensitive topic.

### **GMS 6787: Food Addiction, Overeating and Obesity**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree from a regionally accredited institution or equivalent

Examines how relationships-- with our bodies, with other people and with food-- are linked to obesity and recovery. It



also explores chemical processes behind "food addiction" and appetite, physiological processes by which food is transformed to energy and fat, current obesity treatments, and the future of obesity science.

**GMS 6791: Visual Neuroscience Journal Club**

**Credits: 1    Max: 9                    Grading Scheme: S/U**

*Prerequisite:* 1st-year IDP core course; or consent of instructor.

Presentation and discussion of cutting-edge research papers.

**GMS 6792: Neuroscience Graduate Research Seminar**

**Credits: 1    Max: 12                    Grading Scheme: S/U**

Critique and analysis of student-developed neuroscience projects and presentations.

**GMS 6800: Fundamentals of Epidemiology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* graduate standing

Introduction to epidemiology principles and methods for students majoring in any aspect of health.

**GMS 6801: Epidemiology, Prevention, and Control of Infectious Diseases**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* GMS 6800 or consent of instructor.

Detailed review of epidemiology, prevention, and control of major infectious diseases and methodology used.

**GMS 6802: Examining Health Outcomes for Chronic Diseases in Clinical and Community-based Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6851 & Instructor Approval

In-depth analysis of risk factors and health outcomes assessment for adult and childhood chronic diseases. The impact of childhood chronic conditions on adult health is emphasized. The interplay of health disparities and chronic diseases also will be discussed.

### **GMS 6803: Data Management for Clinical Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Consent of instructor.

Introducing data management techniques as they apply to clinical research. Students will learn how to select and design data collection instruments and the steps necessary for ensuring quality control of data at various stages of study. Students will be provided hands-on opportunities to work with and manage data using statistical software.

### **GMS 6804: Medical Informatics**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* GMS 6800, basic statistics, consent of instructor.

Issues in using computerized epidemiological and medical data sources and systems.

### **GMS 6810: Intermediate Epidemiology Methods**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* GMS 6800 or consent of instructor.

Methodological issues important for designing epidemiological studies of all diseases covered at the intermediate level.

### **GMS 6811: Grant Writing Skills for Clinical Research**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Instructor Approval

Instruction in preparing grant proposals related to clinical and translational research, including studies conducted in community settings. Emphasis is placed on National Institutes of Health (NIH) procedures, VA-funded research applications, and competitive foundation applications. Students receive individual mentoring and complete a proposal.

### **GMS 6812: Cancer Health Outcomes Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6851 & Instructor Approval

Methods and measurement issues in cancer health outcomes assessment are addressed across the continuum of cancer care -prevention, screening, diagnosis, treatment, survivorship, and end of life. Outcomes covered include survival, health-related quality of life, patient satisfaction with care, and economic burden.

### **GMS 6813: Clinical Trials**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6800 or consent of instructor.

Principles for design and conduct. Emphasizes protocol preparations, randomization, sample size, trial monitoring, ethical issues, and data analyses.

### **GMS 6814: Molecular and Genetic Epidemiology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6800 or consent of instructor.

Human genetics and molecular biology in studying host susceptibility to disease. Mendelian and non-Mendelian genetics.

### **GMS 6816: Pediatric Child Health Outcomes Assessment for Clinical and Community-Based Research**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6851 & Instructor Approval

This course covers methods and measurement issues related to assessing children's health outcomes in a range of clinical and community settings. Issues such as assessing outcomes for children with special health care needs and healthy children, considerations related to growth and development, defining outcomes from parent, child and adolescent perspectives, the conduct of health risk assessments among adolescents, and implications for researchers and clinicians are presented.

### **GMS 6818: Design and Conduct Clinical Trials I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Scientific evaluation of health care interventions by clinical trials and the ethics, principles, and conduct of clinical trials in an epidemiological context.

### **GMS 6819: Design and Conduct Clinical Trials II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Complex issues in analyzing and interpreting clinical trials.

### **GMS 6820: Advanced Epidemiology Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6800, GMS 6810, consent of instructor.

In-depth examination of the design of epidemiological studies including biases, confounding, misclassification, and the concept of causal models.

### **GMS 6821: Measuring and Analyzing Health Outcomes I**

**Credits: 2**                      **Grading Scheme:** Letter

Focusing on measurement methods currently used in medical research and clinical settings.

## **GMS 6822: Measuring and Analyzing Health Outcomes II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Cross-cultural translation, data-analysis issues, outcome measures for special populations.

## **GMS 6823: Methods for Evaluating Health Care Outcomes and Costs: Module 1**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of instructor.

Introduction to the use of decision sciences in health care.

## **GMS 6824: Methods for Evaluating Health Care Outcomes and Costs: Module 2**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of instructor.

Focusing on cost-effectiveness, cost-utility, and cost-benefit analyses in health care.

## **GMS 6825: Methods for Evaluating Health Care Outcomes and Costs: Module 3**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* Background in basic statistics, familiarity with concepts covered by this course, and consent of instructor.

Fundamental econometric methods for evaluating health care outcomes and cost.

## **GMS 6826: Advanced Design and Methodology for Case-Control Studies in Clinical Research**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Students are required to have taken a graduate course in health outcomes and policy prior to enrolling in the course. Students are expected to apply basic measures (Odds Ratios, Risk Ratios) and analysis techniques

(logistic regression).

Providing instruction on design, critical assessment, and implementation of case-control studies. This advanced course will focus on design and methodological challenges particularly important in case control studies. Variations of the case-control study including case series, case-crossover, case-cohort, and nested case-control studies will be covered.

### **GMS 6827: Advanced Clinical Trial Methods**

**Credits: 3    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Statistical principles and methods used in the design and analysis of clinical trials. Rotating topics include group sequential designs, adaptive clinical trials, and Statistical Monitoring of Clinical Trials.

### **GMS 6829: Longitudinal Research Design**

**Credits: 2                            Grading Scheme: Letter**

*Prerequisite:* a graduate course in epidemiology, a graduate course in statistics, and consent of instructor.

Design, evaluation, and implementation of cross-sectional and longitudinal research.

### **GMS 6830: Health Outcomes Research and Policy Development**

**Credits: 3                            Grading Scheme: Letter**

*Prerequisite:* GMS 6800 and instructor approval

Focusing on the use of theoretical and applied methods to address health outcomes and policy-relevant issues, with the goal of ultimately improving people's health. This course examines health policies and their implications for health outcomes for various populations, as well as the evaluation of such policies through research. We will discuss the interconnectedness of these facets and evaluate them through the use of publications and other research conducted in this area.

### **GMS 6832: Economic Methods for Evaluating Value in Health**

**Credits: 3                            Grading Scheme: Letter**

*Prerequisite:* Consent of instructor.

Evaluating the relative value of health care interventions through economic methods. Foundational topics include framing the analysis, defining alternatives, techniques for eliciting patient preferences, measuring costs, and assessing outcomes. Students are exposed to cost effectiveness analysis and related methods for combining these core elements into an economic evaluation.

### **GMS 6833: Health Care Policy and Vulnerable Populations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Policy tools used to explore how the health care system can serve vulnerable populations such as the poor, elderly, and children.

### **GMS 6834: Health Policy and Formulation of Payment Mechanisms for Health Care**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Analytic approaches to developing payment mechanisms. Emphasizes understanding provider reimbursement in health care.

### **GMS 6835: Health Policy Issues in Children's Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Analyzes critical issues in child health policy such as early intervention programs, new morbidities, health care, and insurance status for children in the U.S.

### **GMS 6841: Design and Analysis of Translational Research in Biomedical Sciences**

**Credits: 2**                      **Grading Scheme:** Letter

Common statistical analysis methods and widely used experimental design techniques including hypothesis testing, study design, confidence intervals, multiple regression, longitudinal data analysis, Non-linear regression for

pharmacokinetics and pharmacodynamics, Kaplan-Meier estimates, proportional hazards models, randomization, and power analysis.

#### **GMS 6842: Translational Research Methods**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Concepts of translational research using a multidisciplinary approach to understand research design ranging from basic science discoveries to implementation of those discoveries in clinical and community settings.

#### **GMS 6844: Experimental and Quasi-Experimental Research Designs for Community Settings**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Research design, sampling, measurement, implementation, analysis, and interpretation for community settings.

#### **GMS 6845: Clinical & Translational Research Practicum**

**Credits: 3**                      **Grading Scheme:** S/U

*Prerequisite:* GMS 7093

Application of clinical and/or translational research methodologies to the development of research questions and experimental design of doctoral research relevant to human health and disease.

#### **GMS 6846: Meta-Analysis in Clinical, Health Services Research and Public Health**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of instructor

Systematic overviews and meta-analysis techniques. Lectures and laboratory work. Develop and conduct a meta-analysis in small groups.

#### **GMS 6850: Foundations of Biomedical Informatics**



**Credits: 3**

**Grading Scheme:** Letter

Covers foundational issues in biomedical informatics, including the unique nature of biomedical information, why biomedical information is created and used, analysis methods and inference on biomedical information, and ethical and privacy issues. Information systems and software in biomedicine and issues in implementation and use will also be covered.

### **GMS 6851: Health Outcomes Research**

**Credits: 2**

**Grading Scheme:** Letter

*Prerequisite:* Permission of instructor.

An overview of principles and practices of health outcomes, health program evaluation and implementation science in the context of the translational research continuum. Content areas include the populations studied, data sources, and user audiences. Exposure to a range of health outcomes, program evaluation and implementation science topics and conceptual frameworks.

### **GMS 6852: Community Engaged Research for Clinical Effectiveness and Implementation Science Studies**

**Credits: 2**

**Grading Scheme:** Letter

*Prerequisite:* GMS 6851 & Instructor Approval

This course covers the principles and practices of clinical effectiveness and implementation science research conducted with community partners. The benefits of and barriers to conducting community engaged research will be addressed in the context of the translational research continuum. The relationships between community partner involvement and study design, data collection, and analytic methods are addressed. Additional topics include partnership development, relationships between researchers and the community, capacity building, and sustainability.

### **GMS 6853: Applied Topics in Dissemination and Implementation Science**

**Credits: 2**

**Grading Scheme:** Letter

*Prerequisite:* GMS 6851 & Instructor Approval

This course provides a framework for examining dissemination research and implementation sciences and its applicability to clinical and community-based research. The role of dissemination research and implementation sciences in the translational research spectrum will be a key focus. Translation research involves the study of how best to transfer evidence-based knowledge into routine or representative practice, and by definition requires

involvement and input of the end-user, thus a key focus will be on examining different study designs in dissemination research and implementation science, and the strengths and limitations of different methodological approaches.

### **GMS 6854: Applied Topics in Clinical Effectiveness Research**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6851 & Instructor Approval

Clinical effectiveness research advances the translation of evidence about the effectiveness of treatments and health care delivery strategies into practice by assessing what interventions and strategies work best for which patients and in what settings are different treatment approaches best used. This course provides an overview of the origins of clinical effectiveness research, the role of clinical effectiveness research in the translational research spectrum, and the different study designs used for conducting clinical effectiveness research. Case studies, guest lectures by faculty engaged in clinical effectiveness research, and other applied approaches will be used.

### **GMS 6855: Medical Writing in Psychiatry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Instructor permission

Teaches students how to produce well-written, discipline-specific medical/science news stories on psychiatric disorders, for print, online and broadcast media. Students will assess media coverage and controversies regarding psychiatric disorders, and learn how to simplify scientific concepts and communicate knowledgeably, skillfully and ethically with lay audiences about the topic.

### **GMS 6861: Applied Biostatistics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Consent of Department.

Basic probability and distribution concepts and statistical analysis methods, including descriptive measures, point estimation, hypothesis testing (e.g., t test, analysis of variance, chi-square test etc.), confidence interval, simple linear regression and some nonparametric methods. SPSS will be used for basic statistical analyses.

### **GMS 6862: Applied Biostatistics II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Applied Biostatistics I

Provides background to apply and appropriately interpret statistical applications in the medical and health related fields, and to formulate clinical and basic science research questions in statistical terms.

### **GMS 6863: Analysis and Study Design for High Dimension, Low Sample Size Data**

**Credits: 3**                      **Grading Scheme:** S/U

*Prerequisite:* consent of instructor.

Rotating topics include current statistical methods for the study, design and analysis of high dimension, and low sample size data. Emphasizes the importance of scientific thinking and analysis validity.

### **GMS 6872: Science and Ethics of in Vitro Fertilization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Scientific, practical, and ethical issues in establishing and operating a human in vitro fertilization laboratory.

### **GMS 6873: Introduction to Medical Bioethics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Bachelor's degree from an accredited regional institution or equivalent.

Reviewing the impact of bioethics in medical practice and research. It delves into topics such as stem cell research, reproductive rights, privacy laws, humans as research subjects, cultural and religious considerations in medical decision-making, and the role of government vs. the rights of individuals.

### **GMS 6876: Law & Ethics of Aging**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an overview of the legal and ethical challenges that our aging society and their caregivers (whether family members, health care providers, or others) face as well as a framework for analyzing these challenges.

**GMS 6881: Special Studies in Epidemiology and Health Policy Research**

**Credits: 2    Max: 4                    Grading Scheme: S/U**

*Prerequisite:* GMS 6800; consent of instructor.

Advanced or specialized topic in epidemiology or health policy with the approval of the instructor.

**GMS 6882: Directed Readings in Epidemiology and Health Policy**

**Credits: 2                            Grading Scheme: Letter**

*Prerequisite:* GMS 6800 or consent of instructor.

Student selects an advanced or specialized topic in epidemiology or health policy with instructor approval.

**GMS 6883: Practicum Experience in Epidemiology and Health Policy**

**Credits: 2                            Grading Scheme: S/U**

*Prerequisite:* GMS 6800 or consent of instructor.

Student selects a state or federal health agency or research project in epidemiology and health policy with instructor approval.

**GMS 6884: Research in Epidemiology and Health Policy**

**Credits: 2                            Grading Scheme: Letter**

*Prerequisite:* GMS 6800, consent of instructor.

Individual, approved research topic or project in epidemiology and health policy.

**GMS 6885: Research Designs in Health Outcomes and Policy**

**Credits: 3                            Grading Scheme: Letter**

*Prerequisite:* GMS 6861 & GMS 6851 . These courses may be taken concurrently.

This course will be providing an overview of the research design of observational and experimental studies. This course will be focusing on critical assessment and methodological challenges important in health outcomes and policy studies. The course will also be providing the foundation for Department of Health Outcomes and Policy advanced methods and policy electives.

### **GMS 6893: Clinical and Translational Science Seminar Series**

**Credits: 2    Max: 6                    Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Researchers discuss clinical, laboratory, epidemiologic, and economic aspects of a given topic; also, intervention strategies and community outreach activities. Exposure to faculty who may be available for Clinical Preceptorship assignments. Topics rotate every 2 weeks.

### **GMS 6895: CTS Journal Club**

**Credits: 1    Max: 3                    Grading Scheme:** S/U

*Prerequisite:* GMS 7093

Rotating topics include the presentation and critical discussion of recent, original papers about clinical and/or translational research relevant to human health and disease.

### **GMS 6896: Health Outcomes and Policy Seminar**

**Credits: 1                            Grading Scheme:** Letter

*Prerequisite:* Permission of instructor.

Providing a forum for students and faculty to critically evaluate cutting-edge research and methodology and discuss the implications for their own research through interactive seminar series. Both recently published research and research in progress are evaluated.

### **GMS 6901: Seminar in Biology of Disease**

**Credits: 1    Max: 8                    Grading Scheme:** S/U

Current advances in etiology and treatment of disease.

**GMS 6903: Manuscript and Abstract Writing for Clinician/Scientists**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Didactic and interactive sessions to improve the quality of manuscript and abstract writing.

**GMS 6905: Independent Studies in Medical Sciences**

**Credits: 1-10    Max: 12                      Grading Scheme: Letter**

**GMS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**GMS 6920: Genetics Journal Colloquy**

**Credits: 1    Max: 12                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Critical presentations and discussions of recent original articles.

**GMS 6921: Immunology/Microbiology Journal Colloquy**

**Credits: 1    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* GMS 6001, GMS 6006, or consent of instructor.

Critical presentations and discussions of recent original articles.

**GMS 6931: Ethical and Policy Issues in Clinical Research**

**Credits: 2                      Grading Scheme: Letter**

Ethical and policy issues relating to conduct of clinical research. Basic understanding of regulations governing research on human subjects. Introduction to the topic of research with animals.

**GMS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**GMS 6943: Master's Translational Biotechnology Internship**

**Credits: 3                      Grading Scheme: S/U**

*Prerequisite:* GMS 6971

Summer Internship in Translational Biotechnology at a Biotechnology company (Florida-based preferred). Exposure to and participation in product development, regulatory compliance, business, science, medicine, manufacturing, and quality systems.

**GMS 6970: Individual Study**

**Credits: 1-3    Max: 8                      Grading Scheme: Letter**

Supervised study in areas not covered by other graduate courses.

**GMS 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**GMS 7001: Fundamentals of Biomedical Science Education**

**Credits: 2**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Overview of educational issues faced by biomedical scientists teaching at the undergraduate, graduate, or professional level. Practical guidelines most relevant for beginning biomedical science educators, including teaching skills and strategies and the underlying theory of learning and teaching.

**GMS 7002: Practicum in Biomedical Science Education**

**Credits: 3**

**Grading Scheme: S/U**

*Prerequisite:* GMS 7001.

Teach biomedical science and/or biotechnology (supervised by a professor) at summer workshops for high school students and teachers.

**GMS 7003: Responsible Conduct of Biomedical Research**

**Credits: 1**

**Grading Scheme: Letter**

*Prerequisite:* GMS 6001 or consent of instructor.

Key issues in the responsible conduct of biomedical research, following the research process from inception to planning, conducting, reporting, and reviewing biomedical research.

**GMS 7093: Introduction to Clinical and Translational Research**

**Credits: 2**

**Grading Scheme: Letter**

*Prerequisite:* Consent of APPCI program.

Design, management, measurement, and study limitations for research in the clinical setting.



**GMS 7179: Journal Colloquy**

**Credits: 1    Max: 8                    Grading Scheme: Letter**

Critical presentation and discussion of recent original journal articles in the oral biology literature.

**GMS 7191: Research Conference**

**Credits: 1    Max: 12                    Grading Scheme: S/U**

Critical discussion and appraisal of research programs of faculty and students of the department.

**GMS 7192: Journal Colloquy**

**Credits: 1    Max: 12                    Grading Scheme: S/U**

Critical presentations and discussions of recent original articles.

**GMS 7194: Biotechnology Seminar**

**Credits: 1    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* Prereq or coreq: Molecular Biology.

Given concurrently with BCH 7410. Presentations related to biotechnology industry by outside speakers and students.

**GMS 7593: Topics in Pharmacology and Toxicology**

**Credits: 1-3    Max: 12                    Grading Scheme: Letter**

Seminars, informal conferences, or laboratory work on selected topics.

## GMS 7794: Neuroscience Seminar

**Credits: 1    Max: 12    Grading Scheme: S/U**

Research seminars given by local, national, and occasionally international speakers.

### GMS 7795: Special Topics in Neuroscience

**Credits: 1-4    Max: 12    Grading Scheme: Letter**

Specialized subjects in the neurosciences and allied disciplines. Current topics include biological imaging techniques, fundamentals of computational neuroscience, graduate research seminar series, write clubs, scientific communication workshop (Whitney Lab), and electrophysiological journal club (Whitney Lab).

**GMS 7886: Health Outcomes and Policy PhD Seminar: Applied Research**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:*

- GMS 6885, GMS 6861, GMS 6862, and instructor approval.
- One of: GMS 6826, GMS 6829, GMS 6832, GMS 6844, or GMS 6846

This course builds on students' knowledge of health outcomes theory, research design and methods with an applied focus. Students critically evaluate research with faculty who have successfully implemented health outcomes research in biomedical, clinical, and community settings. Students develop research questions, hypotheses, and study protocols in preparation for independent research.

**GMS 7887: Health Outcomes & Policy PhD Research Seminar**

**Credits: 1**                      **Grading Scheme: S/U**

*Prerequisite:* Instructor approval.

Seminar series where advanced PhD students will meet to present, critically appraise, and discuss current research in the health outcomes and policy academic literature as well as the research programs of HOP faculty and graduate students.

**GMS 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**GMS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**GRE 6425: Greek Prose Composition**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* GRD 1131.

Construction of advanced sentences and complex prose in Classical Greek.

**GRE 6755: Epigraphy**

**Credits: 3    Max: 6**

**Grading Scheme: Letter**

*Prerequisite:* reading knowledge of ancient Greek and Latin at advanced level; basic reading knowledge of French and German.

Reading and interpretation of selected inscriptions in Greek and/or Latin.

**GRK 6905: Individual Work in Modern Greek**

**Credits: 3-5    Max: 10            Grading Scheme: S/U**

*Prerequisite:* graduate standing or consent of instructor.

Directed independent study.

**GRW 6105: The Greek Tradition**

**Credits: 3                    Grading Scheme: Letter**

Synoptic survey of Greek literature.

**GRW 6216: Greek Novel**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Selections from ancient Greek novels.

**GRW 6316: Greek Tragedy**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* advanced reading ability in Greek.

Reading and analysis of Greek tragedies by Aeschylus, Sophocles, or Euripides, whose dramas form cornerstone of western theater. Text selection varies over 3-year cycle.

**GRW 6317: Ancient Greek Comedy**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* advanced reading ability in Greek.

Reading and study of ancient Greek comedy, with selected plays by Aristophanes and Menander.

**GRW 6345: Greek Lyric Poetry**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Variety and peculiarities of lyric content, style, grammar, structure, dialect, and meter shown through selected poems.

**GRW 6346: Pindar**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Selected poems.

**GRW 6347: Homer**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Readings from *Iliad* and *Odyssey*.

**GRW 6386: Greek Historians**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* graduate status or consent of instructor.

Readings and analysis of Herodotus, Thucydides, or other major Greek historians.

**GRW 6506: Plato**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

Reading of *Symposium* and selected books of the *Republic*.

**GRW 6705: Attic Orators**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

*Prerequisite:* Graduate student status or consent of instructor.

Examines Attic oratory, focusing on rhetorical methods of persuasion; social dynamics of the disputing process; and political, social, and cultural impact of law on the Athenian democracy.

**GRW 6905: Individual Work**

**Credits: 2-4    Max: 10                    Grading Scheme:** Letter

*Prerequisite:* graduate standing or consent of instructor.

Readings and reports in Greek language and literature.

**GRW 6930: Special Topics in Greek Literature**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

*Prerequisite:* graduate status or consent of instructor.

Intensive study of a particular author, genre, period, or subject.

**GRW 6931: Comparative Study of Greek and Latin Literature**

**Credits: 3                                    Grading Scheme:** Letter

Study of genre types.

**GRW 6971: Research for Master's Thesis**

**Credits: 1-15**                      **Grading Scheme: S/U**

*Prerequisite:* reading knowledge of ancient Greek at an advanced level.

**GRW 7979: Advanced Research**

**Credits: 3-12**                      **Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**GRW 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**HIS 5450: Slavery in the New World: Comparative Perspectives**

**Credits: 3**                      **Grading Scheme: Letter**

Examines the evolution of slavery in the New World from its European and African antecedents through abolition and emancipation.

**HIS 5484: Science and the Enlightenment**

**Credits: 3**                      **Grading Scheme: Letter**

Theoretical developments in the physical and biological sciences between the late seventeenth and late eighteenth centuries, including the significance of social and cultural dimensions of natural science.

**HIS 5485: Special Studies in the History of Science**

**Credits: 3    Max: 9            Grading Scheme: Letter**

**HIS 6060: Historical Method**

**Credits: 3                    Grading Scheme: Letter**

Introduction to the methods of research used by professional historians.

**HIS 6061: Introduction to Historiography**

**Credits: 3                    Grading Scheme: Letter**

Introduction to the schools, theories, and philosophies of the discipline of history.

**HIS 6416: Problems in Comparative Legal History**

**Credits: 3                    Grading Scheme: Letter**

Seminar begins with the question of what comparative legal history is and considers a series of case studies to explore approaches to comparative legal history.

**HIS 6445: Postcolonial Theories**

**Credits: 3                    Grading Scheme: Letter**



Readings in history and theory of aftermaths of European imperialism. Emphasizes the passage from colonial to postcolonial regimes. Critiques of colonialism and nationalist decolonization emerging in nineteenth- and twentieth-century Americas, Asia, Africa, and Europe.

#### **HIS 6469: Topics in Historiography of History of Science**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

History of writing in the discipline of history of science from the Enlightenment to Post-modern. Variable topics: classical studies, history of ideas, social construction.

#### **HIS 6478: Topics in the Scientific Revolution**

**Credits: 3                                Grading Scheme:** Letter

Social, cultural, and intellectual roots of modern science from Copernicus to Newton. Variable topics: primary sources, historiography, humanism and science.

#### **HIS 6480: Pre-Newtonian Sciences**

**Credits: 3                                Grading Scheme:** Letter

Physical and life sciences; may cut across chronological, geographical, and disciplinary boundaries.

#### **HIS 6488: Readings in the History of Science**

**Credits: 1-4    Max: 12                    Grading Scheme:** Letter

Inquiry into the development of western scientific thought and institutions. Specific historical topics having intellectual coherence and substantial historiography.

**HIS 6905: Individual Study**

**Credits: 1-3    Max: 12 including AMH 5905    Grading Scheme: Letter**

**HIS 6910: Supervised Research**

**Credits: 1-5    Max: 5    Grading Scheme: S/U**

**HIS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5    Grading Scheme: S/U**

**HIS 6943: Internship in College Teaching**

**Credits: 2,4,6    Max: 6    Grading Scheme: Letter**

**HIS 6957: Nonthesis Project in History**

**Credits: 1-3    Max: 9    Grading Scheme: S/U**

Nonthesis research.

**HIS 6971: Research for Master's Thesis**

**Credits: 1-15    Grading Scheme: S/U**

**HIS 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**HIS 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****HLP 6515: Evaluation Procedures in Health and Human Performance****Credits: 3****Grading Scheme: Letter**

Evaluation and interpretation of tests and analysis of research data.

**HLP 6535: Research Methods in Health and Human Performance****Credits: 3****Grading Scheme: Letter**

Introduction to research methodology and design.

**HLP 6911: Research Seminar**

**Credits: 1    Max: 6                    Grading Scheme: S/U**

Research presentations by graduate students and faculty in the College.

**HLP 6935: Variable International Topics**

**Credits: 1-6    Max: 15                    Grading Scheme: Letter**

*Prerequisite:* adviser's approval.

Opportunity to study in a wide range of cultural settings.

**HLP 7939: HHP PhD Professional Development Seminar**

**Credits: 3                    Grading Scheme: Letter**

Designed to complement the scholarly emphases of the HHP PhD program by providing insight into key considerations for professional development and personal growth. Best practices will be shared for developing professional aptitude and the skills necessary for successful matriculation through graduate studies and future professional careers.

**HLP 7979: Advanced Research in Health and Human Performance**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field, or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**HLP 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

### **HMG 6076: Introduction to Hospitality and Tourism**

**Credits: 2**

**Grading Scheme:** Letter

This course will focus on the lodging and restaurant segments of the hospitality industry. This course takes a management perspective when introducing concepts and associated issues in the lodging, meetings/conventions, and restaurant operations. In addition, case study analysis will be largely used to enhance communications of business related concepts, ideas, and problem solving abilities through individual and group decision making in oral and written form.

### **HMG 6608: Hospitality Law and Risk Management**

**Credits: 2**

**Grading Scheme:** Letter

Addressing law and risk management in the context of hospitality. In order for hospitality managers to be successful in reducing the probability of injury to participants, and providing the best defense against lawsuits, they must have knowledge of risk management and legal principles. The course is designed to convey the principles, tools, techniques and methods employed in order to be effective in reducing the risk of liability in the hospitality setting.

### **HMG 6747: Marketing in Hospitality/Tourism**

**Credits: 2**

**Grading Scheme:** Letter

Providing a marketing analysis of the hospitality and tourism industry. The course will cover key marketing principles in practices and discuss tourism and hospitality marketing strategies. Case studies will be used to help students develop an understanding of the interrelationship among the marketing concepts that will be covered in this course. The course should allow students to take the proper marketing steps and make decisions given the latest trends in tourism and hospitality.

### **HOS 5085C: Principles of Postharvest Horticulture**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* BOT 3503 and BCH 3023 or equivalent.

Biological principles involved in harvesting, grading, packaging, transportation, and marketing horticultural crops, and their effects on quality maintenance. Offered even-numbered years in fall.

### **HOS 5115C: Horticultural Plant Morphology and Identification**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken ORH 3513C.

Principles and practices of horticultural plant identification using vegetative and floral morphology.

### **HOS 5242: Genetics & Breeding of Vegetable Crops**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303 or equivalent.

Traditional and molecular breeding methods for vegetable crops and the influence of scientific research, government policies, and consumer preferences on vegetable crop improvement.

### **HOS 5306: Molecular Biology of Plant Hormones**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 6415 and HOS 4304 or equivalent.

Biochemistry, molecular biology, and physiology of plant hormones that control plant growth and development. Offered even-numbered years in fall.

### **HOS 5330: Postharvest Technologies for Horticultural Crops**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* HOS 5085C suggested. Open to graduate students and to upper-division undergraduate students with consent of instructor.

Intensive study of current technologies and procedures for harvesting and handling fresh fruit, vegetable, and ornamental crops grown in Florida. Requires field trip during spring break. Offered in spring.

### **HOS 5432: Advanced Nutritional Management of Ornamental Crops**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022/3022L, ORH3253C, or consent of instructor

Techniques for determining, interpreting, and managing the nutritional status of ornamental plants in the greenhouse, nursery or landscape. Topics include: meter selection and calibration, water analysis, substrate/soil analysis, report interpretation and writing, diagnosis and recommendations.

### **HOS 5515C: Greenhouse and Nursery Operations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students needing introduction to the principles of planning, organizing, and managing production operations. Not open to students who have taken ORH 3254.

Principles involved in managing nurseries. Interaction among media components, irrigation, and nutrition. Weekend field trips may be required.

### **HOS 5516C: Advanced Production of Greenhouse and Nursery Crops**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* ORH 3254 or HOS 5515C.

Decisions in scheduling crops and developing cultural plans. Test for Pesticide Applicators License required. Practical aspects of managing nursery workers. Maintenance of crops outside assigned laboratory and one weekend field trip required.

### **HOS 5555: Tropical Fruit Production and Research in Florida**

**Credits: 3**                      **Grading Scheme:** Letter

A comprehensive study at the Tropical Research and Education Center at Homestead and field locations in South Florida. (Students will be in residence for 4 weeks at the Center.) Offered even-numbered years in summer.

### **HOS 5711: Phytochemicals in Food & Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 4024 or equivalent or consent of instructor.

This course examines phytochemicals in fruits and vegetables including their distribution, roles in human health promotion, biosynthesis and degradation, enzymes, genes and case studies of crop breeding and engineering.

### **HOS 6201: Breeding Perennial Cultivars**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303.

Methods of breeding perennial fruit and ornamental cultivars using mutations, cell and tissue culture, polyploidy, recurrent selection, and wide hybridization. Conservation and domestication of wild plants. Offered odd-numbered years in fall.

### **HOS 6236: Molecular Marker Assisted Plant Breeding**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an overview of terminology, methodology, and applied examples of utilizing molecular markers in a plant breeding program.

### **HOS 6331: Postharvest Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 3503 and BOT 5505C or equivalents.

Physiological, biochemical, and molecular aspects of senescence and ripening of harvested fruit, vegetative, and floral organs with attention to the storage and quality maintenance of harvested plant organs.

### **HOS 6345: Environmental Physiology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 3503 or consent of instructor.



Physiology from molecular to whole-plant level. The basis for responses to environmental factors such as light, temperature, water, atmosphere, and stress extremes. Offered even-numbered years in fall.

#### **HOS 6412: Nutrition of Horticultural Crops**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BOT 3503 and HOS 4304 or equivalent.

Physiological, biochemical and environmental factors influencing nutritional status of horticultural plants and the resulting effects on growth, yield, and quality. Offered odd-numbered years in spring.

#### **HOS 6523: Research and Development in Turfgrass Science**

**Credits: 3**                      **Grading Scheme:** Letter

Principles and practices of turfgrass improvement and management, including propagation, nutrition, physiology, soil management, and experimental methods applied to turf research.

#### **HOS 6545: Advanced Citriculture I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FRC 3212 and 4223 or equivalent.

Regulation of citrus vegetative growth including climactic, physiological, and cultural factors. Offered odd-numbered years in the fall at Lake Alfred CREC.

#### **HOS 6546: Advanced Citriculture II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* FRC 3212 and 4223 or equivalent.

Factors regulating flowering, fruit development and alternate bearing of citrus. Offered even-numbered years in spring at Lake Alfred CREC.

**HOS 6905: Problems in Horticultural Science**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**

Independent study.

**HOS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**HOS 6931: Horticultural Science Seminar**

**Credits: 1    Max: 3            Grading Scheme: S/U**

Oral presentation of material in one of the following areas: literature review, related to student's research; research results; or published paper, of relevance to horticulture. Subject matter determined by instructor. Offered in spring.

**HOS 6932: Special Topics**

**Credits: 1-4    Max: 8            Grading Scheme: Letter**

Study of contemporary research in horticultural science.

**HOS 6934: Professional Seminar Preparation**

**Credits: 1            Grading Scheme: Letter**

Preparation and oral presentation of proposal and research seminars emphasizing presentation design and mechanics.

**HOS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**HOS 6941: Practicum in Horticultural Science**

**Credits: 2-4    Max: 8            Grading Scheme: Letter**

*Prerequisite:* admission is limited to graduate students majoring in horticultural science.

Supervised and individual work in professional areas of horticulture.

**HOS 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**HOS 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**HOS 7980: Research for Doctoral Dissertation**

**Credits: 1-15            Grading Scheme: S/U**

### **HSA 5103: Introduction to the U.S. Health Care System**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Overview of organization, delivery, and financing. Historical antecedents, patients, providers, payers, and health policy.

### **HSA 5174: Fundamentals of Health Care Finance**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Introduction to basic theory and principles of finance as applied to the health care industry. Financial statements, cost measurement, budgeting, and capital investment decisions.

### **HSA 6105: Professional Skills Seminar**

**Credits: 1    Max: 4                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Presentations by speakers from health-related organizations and programs designed to improve career planning and professional skills. May be repeated for credit.

### **HSA 6114: U.S. Health Care System**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Overview of structural elements of the contemporary system. Historical antecedents, patients, providers, payers, and the role of health policy.

### **HSA 6115: Introduction to Management of Health Services Organizations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Organizational principles and practices as applied to management. Organizational theory, managerial role, managing groups, work design, and organization design.

### **HSA 6126: U.S. Health Insurance System**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Description and analysis of U.S. health insurance systems. Topics include private vs. public insurers, demands for health insurance, health plan types, premium setting, and reimbursement of providers.

### **HSA 6152: Overview of U.S. Health Policy**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Survey and critical analysis of federal and state health policy processes and outcomes as they relate to the effectiveness and efficiency of health services in the U.S. and selected countries.

### **HSA 6175: Health Care Financial Management**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* EMHA option.

Applying corporate finance concepts and principles to health care organizations with the goal of improving financial decision making.

### **HSA 6177: Advanced Health Care Finance**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Applying accounting and financial management theory and principles to the health care industry, emphasizing managed care organizations and integrated delivery systems.

### **HSA 6179: Introduction to Health Care Finance**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Applying accounting and financial management theory and principles to the health care industry, emphasizing provider organizations.

### **HSA 6188: Strategic Management in Health Administration**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

The relationship of a health care organization to its environment. Strategic management processes, business planning, and other perspectives to aid in managing complex health care organizations.

### **HSA 6196: Healthcare Data Analytics II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

This course is the second in a two course series on the use of data analytics in health care decision making to help health services organizations get more effectiveness and efficiency from their operations. Specific topics to be covered include process flow, simulation, decision-making, quality improvement, forecasting, capacity management, project management, and inventory management.

### **HSA 6197: Information Management in Health Administration**

**Credits: 3                      Grading Scheme: Letter**

Survey of information systems in healthcare administration (system composition, role, and development). Designing, evaluating, and selecting computer resources. Managing information technology in health care organizations. Current trends and issues in health care information systems.

### **HSA 6198: Information Management in Health Administration**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of management information systems. Analyzing system requirements, system design and evaluation, selecting computer resources, and managing the implementation process.

### **HSA 6342: Human Resource Management for Health Services Managers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Knowledge and skills needed for effective management in complex health services organizations. Focuses on human resource acquisition, retention, and exit, as well as labor relations issues.

### **HSA 6385: Performance Management for Health Care Managers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Overview, emphasizing implementation. Aspects of performance defined in relation to structure, process, and outcomes, and meeting expectations and requirements of patients, insurers, government, and other organizations.

### **HSA 6395: Healthcare Data Analytics I**

**Credits: 3                      Grading Scheme: Letter**

Introduces students to the use of data analytics in healthcare decision making to help health services organizations get more effectiveness and efficiency from their operations. It is the first in a two course series in the Masters of Health Administration degree program.

### **HSA 6427: Legal and Ethical Issues in Health Administration**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Survey of legal and ethical issues relating to health administration. Topics include government regulation, tort liability and malpractice, the professional-patient relationship, right to die, and patients without decisional capacity.

### **HSA 6436: Health Economics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Fundamental economic relations governing production, consumption, reimbursement, and financing of health services. Characteristics of markets for acute and long-term care services, insurance, and health care labor. Economic evaluation of technology.

### **HSA 6855: Internship in Health Administration**

**Credits: 5                      Grading Scheme: S/U**

Supervised fieldwork in a health administration setting.

### **HSA 6858: Internship in Health Services Research**

**Credits: 1-6    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Supervised fieldwork.

### **HSA 6878: Externship in Legal Aspects of Health Services Administration**

**Credits: 3    Max: 6                      Grading Scheme: S/U**

Supervised fieldwork in a health administration or health legal setting.



**HSA 6905: Individual Study in Health Administration**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

**HSA 6910: Supervised Research**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**HSA 6911: Research Seminar in Health Services Research**

**Credits: 1    Max: 6                    Grading Scheme: S/U**

Research presentations by graduate students.

**HSA 6930: Special Topics in Health Services Administration**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

Selected topics in theory and research in health services administration.

**HSA 6935: Seminar in Health Administration**

**Credits: 2    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Current issues including new organizational forms for health services delivery and financing, and changing governmental programs related to health care.

### **HSA 6939: Capstone Seminar in Health Administration**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Analysis of cases dealing with administrative and policy issues in health services. Emphasizes problem-solving in ill-defined, multi-faceted situations.

### **HSA 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **HSA 6946: Internship in Public Health Management and Policy**

**Credits: 1-6    Max: 6                      Grading Scheme: S/U**

Supervised fieldwork.

### **HSA 7106: Seminar in Health Care Access and Utilization**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Overview of context and processes in which individuals seek and obtain health care services; distributional issues; equity.

### **HSA 7116: Health Services Organizational Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Major perspectives in organization theory and their applications to the health care sector.

### **HSA 7157: Research Foundations of Health Policy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

In-depth examination of U.S. health policy issues concerning cost, quality, and access; and interdisciplinary research methods used to address such issues.

### **HSA 7414: Society, Health, and Medical Care**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Overview of health and medical care as sociocultural phenomena; health behaviors, health care organizations, and health services delivery in a social and historical context.

### **HSA 7437: Advanced Health Economics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Exposure to advanced economics models of the health care sector, including static and dynamic models of consumer and producer behavior, risk selection in insurance markets, and optimal reimbursement mechanisms.

### **HSA 7707: Health Services Research Methods I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Current and historical thinking about the philosophy of science and scientific modeling. Experimental and quasi-experimental design. Introduction to measurement and sampling.

### **HSA 7708: Health Services Research Methods II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Review and appraisal of methods. Findings and examples from historical and contemporary studies. Introduction to qualitative and quantitative research methodologies.

### **HSA 7759: Quality and Outcomes in Health Services Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Current research concerning small area variation, outcomes, appropriateness, and effectiveness. Theory and specifics of alternative quality improvement and assurance approaches. History of approaches to health care quality assessment.

### **HSA 7905: Advanced Individual Study in Health Services Research**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

### **HSA 7936: Seminar in Health Care Costs and Financing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Examination of health services research related to costs and financing. Cost measurement and analysis, health insurance, sources and methods of payment, current policy.

### **HSA 7938: Advanced Seminar in Health Services Research**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* completion of graduate core program and preliminary dissertation topic.

**HSA 7979: Advanced Research****Credits: 1-4****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**HSA 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****HSC 5135: Emotional Health Education****Credits: 3****Grading Scheme: Letter**

Importance of emotional health in achieving optimal health. Health educator's role in program development, supportive listening, and referral strategies for counseling. Development of communication skills. Common emotional health problems and concerns. Not open to students who have completed HSC 3134.

**HSC 5138: Human Sexuality****Credits: 3****Grading Scheme: Letter**

Theory and practice, including psychosexual development, human reproduction, sexual relationships, dysfunction, therapy, legal and ethical issues, as well as teaching and facilitative techniques. Not open to students who have completed HSC 3133.

**HSC 5142: Drug Education****Credits: 3****Grading Scheme: Letter**

Social, behavioral, environmental, and historical perspectives on substance abuse; content, issues, and instructional strategies appropriate for health education regarding alcohol, tobacco, and other drugs in school and community settings. Not open to students who have completed HSC 3140.

### **HSC 5315C: Teaching Health in Elementary Schools**

**Credits: 3**                      **Grading Scheme:** Letter

Examines needed health education areas, lesson and unit planning, methods and innovative approaches to health instruction, and evaluating comprehensive school health education.

### **HSC 5536C: Medical Terminology for the Health Professions**

**Credits: 3**                      **Grading Scheme:** Letter

Literal and "actual" meanings of medical and scientific terms. Anatomy, physiology, diagnostic, clinical, therapeutic, and pathology pictures presented with compound medical terms. Writings and pronunciation exercises augment the visual format to provide an interactive working knowledge of medical language.

### **HSC 5576: Nutrition Education for Special Populations**

**Credits: 3**                      **Grading Scheme:** Letter

Assessing nutrition information needs for selected population groups. Planning, implementing, and evaluating nutrition education programs for school and community settings. Not open to students who have completed HSC 3574.

### **HSC 5606: Spirituality and Health**

**Credits: 3**                      **Grading Scheme:** Letter

Exploring current research and theory about the relationship of spirituality and health/disease.

### **HSC 5618: Advanced Exercise Therapy, Adapted Physical Activity, & Health**

**Credits: 3**                      **Grading Scheme:** Letter

Art and science of effectively teaching exercise therapy, adapted physical activities, and healthy living strategies. Medical and health characteristics of common disabilities and methods for prescribing appropriate exercise therapy programs are presented. Multiple adapted equipment ideas will be presented to facilitate teaching in inclusive settings for all ages. Clinical experiences with individuals with disabilities are provided.

### **HSC 5626: Minority Health Issues**

**Credits: 3**                      **Grading Scheme:** Letter

Current health problems confronting socioeconomically disadvantaged groups and ethnic minority groups.

### **HSC 5657: Health and End-of-Life Issues**

**Credits: 3**                      **Grading Scheme:** Letter

Cultural, spiritual, and psychological traditions that affect health decisions, behavior, and medical care. Emphasizes developing professional and personal skills for coping with end-of-life issues for oneself and for assisting others.

### **HSC 5925: Seminar in Health Education**

**Credits: 1-6    Max: 6**                      **Grading Scheme:** Letter

### **HSC 5938: Special Topics**

**Credits: 1-6    Max: 12            Grading Scheme: Letter**

**HSC 5956: Writing for Professional Publications**

**Credits: 3                    Grading Scheme: Letter**

Procedures and practices in scholarly writing for health-related professional publications including topic selection, literature searches, internet applications, documentation, manuscript preparation, reasons for rejection, and legal and ethical considerations.

**HSC 6037: Philosophy and Principles of Health Education**

**Credits: 3                    Grading Scheme: Letter**

History, philosophy, and ethics; theories of health behavior and principles of learning; areas of professional specialization; roles and functions of professional health educators; certification and continuing education; trends.

**HSC 6216: Environmental Health**

**Credits: 3                    Grading Scheme: Letter**

Human interactions and the environment. How the environment, broadly defined, affects human health. Exploring personal and local solutions to current environmental concerns.

**HSC 6235: Patient Health Education**

**Credits: 3                    Grading Scheme: Letter**

Health education theory and principles applied to the primary health care setting. Overview of agents and processes



of disease, emphasizing program development for teaching protocols for specific diseases. Recent developments in patient education (e.g., outpatient programs and wellness centers).

### **HSC 6318: Planning Health Education Programs**

**Credits: 3**                      **Grading Scheme:** Letter

Basic principles of health education for various community settings, and using communication media in joint planning for comprehensive health education.

### **HSC 6506: Epidemiology**

**Credits: 3**                      **Grading Scheme:** Letter

Procedures used in studying the origin, distribution, and control of chronic and communicable diseases. Emphasizes the role of health education interventions in disease control.

### **HSC 6567: Health Promotion and Programming in Gerontology**

**Credits: 3**                      **Grading Scheme:** Letter

Planning, implementing, and evaluating health maintenance and promotion programs for adult populations, emphasizing the aging process.

### **HSC 6571: Contemporary Issues in Health Promotion**

**Credits: 3**                      **Grading Scheme:** Letter

Emotional health, value systems, stress and depression, aging and death, drug abuse, physical fitness, weight control, consumer health, and chronic and communicable diseases.

**HSC 6575: Women's Health Issues**

**Credits: 3**                      **Grading Scheme:** Letter

Relevance for health promotion, prevention, education, and counseling.

**HSC 6595: HIV/AIDS Education**

**Credits: 3**                      **Grading Scheme:** Letter

Examine the medical, social, legal and educational implications of HIV/AIDS on individuals and society.

**HSC 6603: Theories of Health Behavior and Practice in Health Education**

**Credits: 3**                      **Grading Scheme:** Letter

Selected health behavior theories and applying these theories to the practice of health education and health promotion.

**HSC 6605: Scientific Foundations of Holistic Health**

**Credits: 3**                      **Grading Scheme:** Letter

Examining and interpreting the holistic principles that influence and modify the health potential of the individual and the community.

**HSC 6625: Trends in International Health**

**Credits: 3**                      **Grading Scheme:** Letter

Disease patterns and prevalence, contributing factors, organizational and governmental initiatives, and model programs; emphasizes problems amenable to health education interventions. Not open to students who have completed HSC 4650.

### **HSC 6629: Health Promotion for Priority Populations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Health issues confronting politically and socioeconomically disadvantage groups and ethnic minority groups.

### **HSC 6637: Social Marketing and Health**

**Credits: 3**                      **Grading Scheme:** Letter

Current theory and knowledge in field of social marketing. Analysis of components and applications of marketing within context of health behavior.

### **HSC 6646: Community Health Methods in Injury Prevention & Control**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* HSC 3032

Research-based concepts and theories related to unintentional injury prevention and control. Epidemiology and mechanisms of injury, community health injury surveillance systems, incidence and prevalence rates by category of injury, and role of law in injury prevention. Methods for planning, implementing, and evaluating injury prevention programs. Trends and future directions for research.

### **HSC 6665: Health Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of theory and research relevant to the role of communication processes in health behavior, health care, and health promotion.

### **HSC 6667: Health Communication Programs**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* HSC 6665 or consent of instructor.

Theory, research, and skills for planning, implementing, and evaluating health communication programs.

### **HSC 6668: Interpersonal Communication and Health**

**Credits: 3**                      **Grading Scheme:** Letter

Theory, research, and application of the role of interpersonal communication in health behavior, health care, and health promotion.

### **HSC 6695: Worksite Health Promotion**

**Credits: 3**                      **Grading Scheme:** Letter

Procedures involved in planning, implementing, and evaluating comprehensive health promotion programs; factors in risk assessment and reduction; strategies and resources for employee health education; ethical issues in client relations. Not open to students who have completed HSC 4694.

### **HSC 6712: Evaluating Health Education Programs**

**Credits: 3**                      **Grading Scheme:** Letter

Models and strategies for conducting formative and summative evaluations of health education programs.

### **HSC 6735: Research Methods in Health Education**

**Credits: 3                      Grading Scheme: Letter**

Introduction to methods of health education research.

**HSC 6850: Internship in Health Education**

**Credits: 1-12    Max: 12                      Grading Scheme: Letter**

**HSC 6904: Readings in Health Education**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

**HSC 6905: Independent Study**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

**HSC 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**HSC 6935: Current Topics in Health Education**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

**HSC 6939: Special Topics**

**Credits: 1-5    Max: 10            Grading Scheme: Letter, S/U**

**HSC 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**HSC 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**HSC 6973: Project in Lieu of Thesis**

**Credits: 1-9            Grading Scheme: S/U**

Planning, implementing, and evaluating a health education program intervention.

**HSC 7904: Advanced Readings in Health Education**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

**HSC 7905: Advanced Independent Study in Health Education**

**Credits: 1-3    Max: 6            Grading Scheme: Letter**

**HSC 7937: Advanced Seminar in Health Education**

**Credits: 3**                      **Grading Scheme:** Letter

**HUM 5357: Creativity and Health: Foundations of the Arts in Medicine**

**Credits: 3**                      **Grading Scheme:** Letter

This online course will be exploring the theoretical foundations that facilitate an understanding of the relationship of creativity to health and inform the field and practice of the arts in medicine.

**HUM 5595: Arts in Medicine in Practice**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* none - only students accepted to the Graduate Certificate program will take this course

Exploring the practice of the arts in medicine in the fields of health and human services. The course will be providing a dynamic, interdisciplinary overview of diverse practices and methodologies in the field of arts in medicine in community and healthcare settings.

**HUM 6340: Arts Advocacy and Public Policy**

**Credits: 3**                      **Grading Scheme:** Letter

An in depth study of the principles, practice, and policy of government's involvement with the arts sector. Students will study the historic relationships between the artist and government at all levels of society.

**HUM 6353: Arts in Medicine Professional Seminar**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Creativity and Health; Arts in Medicine in Practice

The course will be providing a practical orientation to professional competencies, practice, and ethics for the field of arts in medicine. The professional seminar will be focusing on core issues, trends, and critical debates central to current practice within the discipline and its historical and contemporary applications.

#### **HUM 6354: Arts in Medicine Advanced Professional Seminar**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Creativity and Health; Arts in Medicine in Practice; Arts in Medicine Graduate Practicum; Arts in Medicine Professional Seminar

The Arts in Medicine Advanced Professional Seminar will be providing an advanced orientation to professional competencies, practice, and ethics for the field of arts in medicine. This online professional seminar will focus on in-depth issues, trends, and critical debates central to current practice within the discipline and its historical and contemporary applications. This course is designed to synthesize and integrate student learning in preparation for practice in the field of arts in medicine.

#### **HUM 6358: Arts in Medicine Capstone Proposal**

**Credits: 1**                      **Grading Scheme: Letter**

*Prerequisite:* Creativity and Health; Arts in Medicine in Practice; Arts in Medicine Practicum

Engaging the student in research, planning, and submission/approval of a capstone project plan as a part of the Master of Arts in Arts in Medicine. The student will undertake extensive literature review and other research to support the development of a plan for undertaking an arts project that addresses health in a healthcare or community setting.

#### **HUM 6359: Arts in Medicine Capstone**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Creativity and Health; Arts in Medicine in Practice; Arts in Medicine Practicum; Arts in Medicine Capstone Proposal

This course will be engaging the student in advanced practice of the arts in medicine in a healthcare or community environment. The student will be implementing and evaluating a defined arts project in the healthcare or community setting, with the goal of developing professional level arts in medicine practice.



### **HUM 6596: Arts in Medicine Capstone**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* HUM 5357 , HUM 5595

Engages the student in advanced practice of the arts in medicine in a healthcare or community environment. The student will implement and evaluate a defined arts project in the healthcare or community setting, with the goal of developing professional level arts in medicine practice.

### **HUM 6930: Special Topics in Fine Arts**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

A Graduate level general Fine Arts special/rotating topics on various subjects in the arts.

### **HUM 6942: Arts in Medicine Graduate Practicum**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* HUM6930, Creativity and Health: Foundations of the Arts in Medicine

This course will be engaging the student in focused professional level practice in an established arts in medicine program. The student will undertake 150 hours of work, including arts practice and administration, in an approved healthcare or community program setting, with the goal of preparing for professional arts in medicine practice.

### **HUM 6944: Arts in Action: Consulting Project in Performing Arts Management**

**Credits: 3                      Grading Scheme: Letter**

Providing opportunities for arts administration students to experience an arts organization through hands-on learning experience. Students must research an organization where they will work, negotiate their duties, and write a proposal outlining their projected work experience, which must be approved by the program director.

### **HUN 5246: Current Issues in Dietary Supplements**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* HUN 2201 or consent of instructor.

Federal laws and regulations covering definition, marketing, and labeling of dietary supplements. Discusses specific vitamins, minerals, herbs, and ergogenic aids. Reviews scientific literature and public information.

#### **HUN 5441: Metabolic Response to Enteral and Parenteral Nutrition**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* BCH 3025, HUN 2201, and PET 2350 or equivalents.

Response of the body's organ systems to enteral and parenteral nutritional support, emphasizing physiological and biochemical adaptations.

#### **HUN 5447: Nutrition and Immunity**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PCB 4713C.

Role of nutrition in immunity. Effect of nutrients, foods, and dietary supplements on regulation of the immune system.

#### **HUN 6245: Advanced Human Nutrition**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCH 4024 or 3025, and a nutrition principles course.

Molecular and cellular aspects of nutrients and discussion of research techniques in genomics and proteomics.

#### **HUN 6255: Clinical Nutrition**

**Credits: 2-12    Max: 12                      Grading Scheme: Letter**

Nutritional requirements and metabolism of nutrients in normal individual, altered nutritional requirements and

metabolism of nutrients in different disease states, and practical aspects of nutritional and metabolic support of different types of patients.

#### **HUN 6301: Nutritional Aspects of Lipid Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

Role of lipids in nutrition, with emphasis on energy metabolism and derangements in chronic diseases.

#### **HUN 6305: Nutritional Aspects of Carbohydrates**

**Credits: 3**                      **Grading Scheme:** Letter

Characteristics, absorption, and metabolism of common carbohydrates in the food chain; carbohydrate metabolism and its regulation; carbohydrate metabolism in disease.

#### **HUN 6321: Proteins and Amino Acids in Nutrition**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 3025.

Digestion, absorption, and degradation; emphasis on turnover, requirements, assessment of quality, and effects of deficiencies, toxicities, and physiological stresses.

#### **HUN 6331: Vitamins in Human Nutrition**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BCH 4024 or 3025.

Biochemical and physiological functions; nutrient requirements and interactions; response to deficiencies and excesses.

#### **HUN 6356: Minerals in Nutrition**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* BCH 4024 or equivalent.

Biochemical and physiological aspects of mineral absorption, metabolism, and function.

### **HUN 6812C: Analytical Techniques in Nutritional Biochemistry**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* BCH 4024 or 3025 and consent of instructor.

Biochemical analyses of tissues and fluids, radio-tracer methodology, metabolic studies, tissue handling, and formulation of experimental animal diets.

### **HUN 6905: Problems in Nutritional Sciences**

**Credits: 1-3    Max: 4                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor. Not open to students on probation or conditional admission.

Individual study carried out in laboratory, library, pilot plant, or food industry.

### **HUN 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

For nonthesis students only.

### **HUN 6936: Topics in Nutritional Sciences**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Special aspects or current developments in nutritional sciences.

**HUN 6938: Nutritional Sciences Seminar**

**Credits: 1    Max: 4                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Presentation of reports on research in nutrition.

**HUN 6939: Advanced Clinical Nutrition**

**Credits: 2-12    Max: 12                    Grading Scheme: Letter**

Applying normal and therapeutic nutrition principles to specific clinical topics based on cases from the health center environment.

**HUN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**HUN 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

*Prerequisite:* for thesis students only.

**HUN 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**HUN 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**ICM 5905: Special Studies**

**Credits: 1-3    Max: 12**

**Grading Scheme: Letter**

*Prerequisite:* Graduate Standing

**ICM 6420: Commercial Management and Cost Control**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Budgeting and estimating, and principles of cost analysis for international projects.

**ICM 6440: Construction Value Management**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Classical value management/value engineering principles; practical applications for designers, contractors, suppliers, and other construction functions. Students conduct full-scale VM/VE studies of recent international projects.

**ICM 6680: Principles of International Sustainable Construction**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Techniques for creating good indoor and outdoor environments, renewable resources, conservation, low environmental impact methods, life cycle assessments.

## **ICM 6682: Construction Ecology and Metabolism**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Application of ecological theory and developments in industrial ecology to ecological design in built environment.

## **ICM 6684: High-Performance Green Building Delivery Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing, BCN 6585 or ICM 6680, or consent of instructor.

Overview of emerging delivery systems for high-performance green buildings and the basis on which their sustainability can be evaluated. LEED criteria are discussed in detail.

## **ICM 6710: Construction Human Resource Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Theories of human behavior and influence and leadership, organization, environment, motivation, and culture.

## **ICM 6750: Managing Construction Information Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Applications of computer and information systems in international construction industry. How information technology develops and how it dramatically affects structure, process, and performance of projects.

## **ICM 6751: International Construction Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Principles of overseas marketing and business development. International contract documents and management and performance aspects of international construction projects.

#### **ICM 6752: Construction Finance and Investment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Aspects of project finance, from funding sources to financial engineering as well as managerial economics and accounting relevant to effect project management.

#### **ICM 6761: Advanced Planning, Scheduling, and Logistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Overall schedule, including overall durations and phasing and review points, principles of logistics planning, and practicalities of detailed network scheduling.

#### **ICM 6762: Construction Risk Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Overview of what is meant by risk and uncertainty and influences in international construction industry.

#### **ICM 6770: Advanced Project Safety Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

International, governmental, and construction industry requirements of safety and loss control regulations. Project responsibilities.



**ICM 6772: International Strategic Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Performance measurements and evaluation processes. Students assess international business opportunities, formulate business strategy, and learn how project strategy should be developed to best advantage of firm.

**ICM 6905: Directed Independent Study in International Construction**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

**ICM 6910: Supervised Research**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

**ICM 6930: Construction Communication and Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Research proposal development process and statistical, computational, visual, and presentational tools available to researcher.

**ICM 6934: International Construction Research**

**Credits: 1-6    Max: 12                      Grading Scheme: S/U**

**IDC 6505C: Programming for Artists**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* graduate level in School of Art and Art History or consent of instructor.

Fundamental programming concepts that enable the digital artist to take full advantage of the range of computer-mediated interactivity.

### **IND 5023: Introduction to Architectural Interiors**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* consent of graduate coordinator.

Overview of the profession. Designing interiors to enhance human activity while observing life safety codes and human performance. Examines significant interiors and furniture components.

### **IND 5106: History of Interior Design I**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of graduate coordinator.

Design philosophy and interior elements in an architectural and sociological context. Record of human achievements expressed in built environment. Foundation for contemporary design and interior preservation practice. Slides, lecture, and discussion.

### **IND 5136: History of Interior Design II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* IND 5106 or equivalent.

Continuation of IND 5106. Evolution of contemporary design philosophy. Foundation for contemporary design and interior presentation practice. Nineteenth-century revivals through current developments.

### **IND 5212C: Architectural Interiors I**

**Credits: 5                    Grading Scheme: Letter**

*Prerequisite:* consent of graduate coordinator.    *Corequisite:* IND 5427C and IND 5638.

Developing interior spaces from conceptual phases to final design resolution, based on the needs of people, interior considerations, and exterior influences. Emphasizes three-dimensional design development, process, and detailed graphic representation of designed spaces.

#### **IND 5213C: Introduction to Architectural Interiors Lab**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Designing micro-interior environments in relation to the architectural setting. Examines human perception, dimension, and spatial activity requirements. Explores the design process and graphic communication of interior design ideas.

#### **IND 5227C: Advanced Architectural Interiors I**

**Credits: 6**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor or graduate coordinator.      *Corequisite:* IND 5454C.

Advanced problems with respect to sophisticated clients in urban settings. Ranges from the infrastructure of large urban spaces to the details of individual spaces, including corporate office planning and design of both public and private spaces.

#### **IND 5231C: Architectural Interiors II**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* IND 5212C or consent of instructor or graduate coordinator.      *Corequisite:* IND 5434C and IND 5508.

The conceptual design process, design theory, and programmatic concerns included in residential, commercial, and institutional interior design. Emphasizes professional applications and the interior designer as team player, programmer, and problem solver.

#### **IND 5232C: Advanced Architectural Interiors II**

**Credits: 6**                      **Grading Scheme:** Letter

*Prerequisite:* IND 5227C or consent of graduate coordinator.      *Corequisite:* IND 5454C.

Advanced problems focusing on multiple phases of the design process through final design and detailing of each project. Final project demonstrates the highest level of design achievement.

### **IND 5317C: Interior Design Communication Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Conceptual process, design theory, and programmatic concerns involved in residential, institutional, and commercial interior design. Emphasizes visual communication techniques, including explanation of media, and forms of visual communication and design concepts.

### **IND 5326: Color Theory Planning and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Explores color through a review of focused research and experiential learning. Examines the art and science of color theory in the context on interior design and allied fields.

### **IND 5427C: Interior Design Construction Documents**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Systematic overview of construction systems, technologies, and materials. Emphasizes the design of interior systems, and detailing of systems, as an extension of the overall design concept.

### **IND 5428: Materials for Interior Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Characteristics, fabrication, and installation of interior materials. Environmental sustainability and indoor air quality. Architectural building and finish materials and furnishings.

### **IND 5434C: Interior Lighting**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Introduction to lighting design based on critical awareness of luminous environment and principles and perception of light and color. Graphic exercises in lighting design, documentation, and lighting calculations based on student design project solutions.

### **IND 5445C: Furniture Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Materials, joinery, and detailing of furniture for interior spaces. Design of custom furniture.

### **IND 5454C: Advanced Interior Design Detailing and Construction Documents**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Advanced problems in interior finish systems, such as interior architecture and cabinetry exploration, and production of interior mechanical and millwork drawings and construction documents. Integration of building codes and life safety issues.

### **IND 5464C: Computer Applications in Three-Dimensional Design**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Introduction to microcomputers as tools for illustration, drafting, and design development. Skills and technical knowledge in image processing, two-dimensional drawing, and three-dimensional modeling of interior architecture.

### **IND 5466: Interior Environmental Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Relation to human sensory reactions, psychological factors, health safety, and satisfaction. Vocabulary and concepts of interior environmental technology related to the process of design.

### **IND 5508: Business and Professional Practices for Interior Designers**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor or graduate coordinator.

The profession of interior design as practiced today. Considers office practices and design project management. Contract documents, legal concerns, management and marketing strategies, personnel practices, and career planning. Ethics/contracting for design services via case studies.

### **IND 5638: Design Environments and Human Interaction**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* consent of graduate coordinator.

Introduction to significant theories concerning the interaction of people with environments at various scales. Also, the corresponding applied environmental design implications of these theories will be explored. This survey of normative theories, philosophies and doctrines of environment and behavior will serve as an evidence base to support research-based design decisions.

### **IND 5937: Current Topics in Interior Design**

**Credits: 1-3    Max: 6                      Grading Scheme:** Letter

Framework to support theory, research, and application of interior design processes. Programming and post-occupancy phases through exploration of environment and behavior research and gaming simulation.

### **IND 6239: Advanced Topics in Interior Design Studio**

**Credits: 6    Max: 12                      Grading Scheme:** Letter

Advanced design topics, building on student interest and selected faculty experience. Medical facilities, advanced lighting design, facility planning design.

**IND 6639: Methods of Interior Design Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing.

Theory and methods related to research in interior design, environment and behavior, and history. Reciprocal interactions between people and the built environment.

**IND 6906: Independent Studies and Readings**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

**IND 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**IND 6941: Interior Design Internship**

**Credits: 2-4    Max: 4                      Grading Scheme: S/U**

*Prerequisite:* IND 5427C, IND 5232C, IND 5508.

Opportunities to work in an architectural and interior design office gaining hands-on professional experience working up to 12 weeks.

**IND 6971: Research for Master's Thesis**

**Credits: 1-6                      Grading Scheme: S/U**

**INR 5935: Advanced Topics in International Relations**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* departmental approval.

**INR 6036: Globalization, Regionalism, and Governance**

**Credits: 3                    Grading Scheme: Letter**

Analysis of interplay between globalization and regionalism, and effects on governance.

**INR 6039: International Political Economy**

**Credits: 3                    Grading Scheme: Letter**

**INR 6208: Advanced International Relations Theory**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* INR 6607

Examination of contemporary debates about power, sovereignty, anarchy, order and conflict in international relations theory.

**INR 6213: Seminar: Politics of the European Union**

**Credits: 3                    Grading Scheme: Letter**



Predominant political and economic theories that explain and prescribe regional economic cooperation. Sub-theories and models of decision making in European Union. Processes of EU policy making including agenda setting, policy formulation, and implementation. EU legislation in selected policy areas. Salient issues facing EU policy makers.

#### **INR 6249: Inter-American Relations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Consent of instructor.

Addresses selected topics (such as free trade, regional integration, democracy promotion, international migration, drug traffic, transnational crime, etc.) in the light of major theories in International Relations.

#### **INR 6305: Politics of American Foreign Policy Making**

**Credits: 3                      Grading Scheme: Letter**

Interaction between foreign policy and domestic political variables.

#### **INR 6337: Survey of International Security**

**Credits: 3                      Grading Scheme: Letter**

Principal problems and issues in the area of international security, considered by examining samples of scholarly literature in the subfield.

#### **INR 6352: International Environmental Relations**

**Credits: 3                      Grading Scheme: Letter**

Introduction to theories, processes and results of cooperation among states to deal with environmental issues that cross borders. Designing and implementing international environmental institutions and negotiating treaties that create institutions.

**INR 6507: International Organization**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* INR 6607.

Advanced reading and research. Special focus on international norms, regimes, formal intergovernmental and supranational organizations, and global constitutions.

**INR 6607: International Relations Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Basic forces, problems, and developments in international politics and organization.

**INR 6936: Seminar in Transnational and Global Studies**

**Credits: 1**                      **Grading Scheme:** Letter

Seminar on current issues in transnational and global studies.

**INR 6938: Seminar in Culture and World Politics**

**Credits: 3**                      **Grading Scheme:** Letter

Exploration of the interplay between culture and power in contemporary world politics. Special focus on concepts such as identity, representation and difference and their relation to international conflict and/or order.

**IPM 5305: Principles of Pesticides**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate standing or instructor's permission to register.

Basic knowledge of pesticides and their use. Practical working knowledge of pesticides used in agricultural and horticultural settings. Offered spring term.

### **ISM 5021: Information Systems in Organizations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor. Designed for MBA students.

Introduction for graduate students with minimal microcomputer operation skills. Topics include the range of computer information technology available, language types and procedural languages, applications in organizations, management of resources, and trends. Students use microcomputers in the College's computing laboratories.

### **ISM 6022: Management Information Systems**

**Credits: 2**                      **Grading Scheme:** Letter

Policy and management issues surrounding information systems in today's enterprises. Strategic use, organizational impact, project management, human resource issues, and other topics important to understanding information systems in business.

### **ISM 6123: Systems Analysis and Design**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the various activities performed when developing a new information system or upgrading an existing system.

### **ISM 6128: Advanced Business Systems Design and Development I**

**Credits: 2**                      **Grading Scheme:** Letter

Object-oriented analysis and model specification for business software systems. Articulation of key requirements (data, processes, physical components, deployment) using logical modeling methodologies.

### **ISM 6129: Advanced Business Systems Design and Development II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6128 or consent of instructor.

Continuation of ISM 6128. Focuses on object-oriented design of systems. How to translate business requirements into specific task and component requirements.

### **ISM 6215: Business Database Systems I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6129.

Fundamentals of data storage and retrieval models for business applications. Data modeling and database design principles. Theoretical foundations and exercises presented for relational data model and SQL.

### **ISM 6216: Business Database Systems II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6215.

Continuation of ISM 6215. Focuses on implementation and programming issues.

### **ISM 6217: Database Management Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Designing and developing databases. Understanding the role of databases in meeting business information needs.

### **ISM 6222: Business Telecom Strategy and Applications I**

**Credits: 2**                      **Grading Scheme:** Letter

Survey of networking technologies used in WWW and e-commerce. TCP/IP networks and related security, networking hardware, and Internet software standards.

**ISM 6223: Business Telecom Strategy and Applications II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6222 or consent of instructor.

Introduces traditional telephony. Discusses issues companies face on consolidation of voice and data networks. Technological developments, product announcements, and market activity. Ultimate focus is on strategy of voice/data integration.

**ISM 6224: Business Telecom Strategy and Applications III**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6223 and ISM 6129.

Telecommunications analysis and design. Both tactical and strategic issues concerning integration.

**ISM 6226: Business Telecom Strategy and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction and overview of the field of business communications. Understanding telecommunications components and terminology applied to business in this age of electronic communication.

**ISM 6236: Business Objects I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6215 , ISM 6222 , and ISM 6259.

Overview of main tools for business objects in enterprise programming, with hands-on experience. Distributed object models, component architectures, design methodologies and patterns, languages and development environments, and databases and repositories.

### **ISM 6239: Business Objects II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6236.

Extends concepts and tools of ISM 6236 to include practical aspects of using business objects in enterprise systems. Focus on overview of ERP systems, proxies, proxy repositories, and wrapping legacy systems with objects.

### **ISM 6257: Intermediate Business Programming**

**Credits: 2**                      **Grading Scheme:** Letter

Application in business systems. Classes, inheritance, polymorphism, interfaces, error handling, multi-threading, database connectivity, and their use in business information systems.

### **ISM 6258: Advanced Business Programming**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6257.

Event-driven, component-based programming. GUI components, and client end system design and implementation in distributed systems, as well as database development, networking, security, and object-oriented concepts.

### **ISM 6259: Business Programming**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6258.

An advanced system-implementation course to teach client end system design and implementation. Topics include object-oriented systems development, databases, networking, security, and web application development.

### **ISM 6405: Business Intelligence**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ISM 6216

Mastering emerging business intelligence technologies such as data warehousing, online analytic processing (OLAP), data mining and text mining in generating valuable control and decision-support business intelligence for many organizations in adjusting to their competitive business environment.

### **ISM 6423: Data Analysis for Decision Support**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ISM 6405

Overview of various solution methods for data analysis programs such as clustering, classification, and regression that occur in business decision making. How methods support decision making.

### **ISM 6485: Electronic Commerce and Logistics**

**Credits: 2                      Grading Scheme: Letter**

Underlying technologies that herald innovations. How to capitalize on new electronic commerce and logistics in business.

### **ISM 6486: eCommerce Technologies**

**Credits: 2                      Grading Scheme: Letter**

Database management systems, systems design and Web-page design, human computer interface issues, artificial intelligence methods (such as data mining and expert systems), and intelligent software agents.

### **ISM 6487: Risks and Controls in eCommerce**

**Credits: 2                      Grading Scheme: Letter**

Strategic IT planning, policies and control; risk assessment, reliability, benchmarking and monitoring; privacy and security models and technologies; availability, continuity and compliance testing; and threat monitoring.

**ISM 6942: Electronic Commerce Practicum**

**Credits: 2**                      **Grading Scheme:** Letter

Projects such as developing e-commerce business plans, constructing e-commerce sites, etc.

**ISM 7166: Advanced Business Systems Design and Development III**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* ISM 6129.

Continuation of ISM 6129. Focus on software project management and development. Exploration of object-oriented project management approach supported by computer-aided software engineering tool.

**JOU 5007: History of Journalism**

**Credits: 3**                      **Grading Scheme:** Letter

Origin, development, and potentiality of print and broadcast media. Evolution of standards, policies, methods, and controls.

**JOU 5705: Issues and the Press**

**Credits: 3**                      **Grading Scheme:** Letter

Influence of the press in defining and shaping public concern with major social issues.



### **JOU 6102: Reporting Workshop**

**Credits: 3**                    **Grading Scheme:** Letter

Depth reporting theory and practice.

### **JOU 6114: Journalist Bootcamp**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* None.

Providing a grasp of and hands-on experience in interactive journalism. We will present ways news is gathered and presented on multiple platforms, including the techniques of collaborative journalism, traditional broadcast storytelling and social media sourcing and reporting

### **JOU 6309: Seminar in Journalism as Literature**

**Credits: 3**                    **Grading Scheme:** Letter

Analysis of mass media writing, broadcast programs, and graphics to assess their merits both as journalism and as art. Various periods studied; emphasis on 20th century.

### **JOU 6344: Journalist Toolkit 1**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* JOU 6114: Journalist Bootcamp

Preparing the student to work as a journalist in today's newsrooms, where the online and digital platforms are at least as important as the traditional print or broadcast platforms.

### **JOU 6349: Journalist Toolkit 2**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* JOU 6344

Gathering information using journalism practices, such as in-person interviews, and learn to use various technologies (including video) to produce journalism stories for online and other digital platforms in this intermediate reporting and production course in which students .

### **JOU 6502: Newsroom Management**

**Credits: 3**                      **Grading Scheme:** Letter

Internal problems of newspaper operation. Status of personnel, effects of technological developments, news decision-making, defining objectivity, improving news coverage.

### **LAA 5331: Site Design Methodologies**

**Credits: 3**                      **Grading Scheme:** Letter

Learn, develop, and refine methodologies to effectively evaluate relevant natural, social, and cultural characteristics of a site and its context as an integral part of the planning and design process.

### **LAA 5366: Principles of Landscape Architecture**

**Credits: 5**                      **Grading Scheme:** Letter

Explores the range of introductory landscape architectural issues. Site design incorporating a mixture of cultural, environmental, and historic topics.

### **LAA 6231: Landscape Architecture Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.      *Corequisite:* LAA 6656C.

Explores theories pertinent to the practice and study of landscape architecture. Aesthetic and cultural principles and values and related ecological aspects. Designated core course.

#### **LAA 6322: Project Management for Landscape Architects**

**Credits: 3**                      **Grading Scheme:** Letter

Two-part exploration of current methods, theories, and approaches to critiquing and evaluating built and proposed environments and their users. Designated core course.

#### **LAA 6342: Landscape Architecture Criticism**

**Credits: 3**                      **Grading Scheme:** Letter

Case studies and readings of theories, models, and processes applicable to landscape architectural planning and design. Emphasizes the issues of perception, preference, and other user concerns. Designated core course.

#### **LAA 6349C: Design Communications for Landscape Architects**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* Graduate standing or consent of instructor.

Visualization techniques in landscape architectural design and planning, including traditional drawing conventions (plan, section/elevation & perspective) and digital communication and visualization methods.

#### **LAA 6382: Ecological and Environmental Policy**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of major environmental policy and law with particular reference to Florida case studies. Designated core course.

### **LAA 6525L: Advanced Landscape Construction Design**

**Credits: 4                      Grading Scheme:** Letter

Development of current communication and production techniques related to professional landscape architectural construction documentation.

### **LAA 6536: Landscape Management**

**Credits: 3                      Grading Scheme:** Letter

Survey of large and small scale management issues including principles of landscape ecology and site maintenance.

### **LAA 6656C: Advanced Landscape Architectural Design**

**Credits: 1-6    Max: 18                      Grading Scheme:** Letter

Complex project design. Emphasizes user issues, ecological concerns, and regional and cultural issues; and determination of form for sustainable environments.

### **LAA 6713: Cultural Landscapes**

**Credits: 3                      Grading Scheme:** Letter

Explores the intersection of human and cultural systems as expressed in physical form, with multi-disciplinary explorations of why a landscape looks the way it does, what landscapes "mean", and how they are active agents/indicators in ongoing changes in cultural products, built environments, and society.

### **LAA 6716: History of Landscape Architecture**

**Credits: 3                      Grading Scheme:** Letter

History of man as expressed in urban form, gardens, parks, and public spaces.

**LAA 6905: Directed Study**

**Credits: 1-3    Max: 9                    Grading Scheme:** Letter

**LAA 6931: Water Conservation through Site Design and Green Roofs**

**Credits: 3                                  Grading Scheme:** Letter

Exploration of the impacts of development on the natural systems of a site, particularly water resources. Mitigation of these impacts through sustainable site planning and design methodologies.

**LAA 6931C: Special Topics**

**Credits: 1-3    Max: 6                    Grading Scheme:** Letter

Development of a current design opportunity. May be in collaboration with a professional office.

**LAA 6933: Topics in European Design: Paris, France**

**Credits: 4                                  Grading Scheme:** Letter

*Corequisite:* LAA 6952C.

Urban form and its relation to history, ecology, and culture.

**LAA 6935: Gardens of the World**

**Credits: 3**                      **Grading Scheme: Letter**

Explores the garden as a complex expression of human relationships with each other and the larger environment, both physical and cultural.

**LAA 6941: Supervised Internship**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* required for all students who do not document a landscape architectural experience.

Work is to be supervised by a registered landscape architect. Internship is to be accomplished in summer between first and second years or second and third years. Students, after completion, register in the next fall term for credit.

**LAA 6952C: European Landscape Architecture Studio**

**Credits: 5**                      **Grading Scheme: Letter**

*Corequisite:* LAA 6933.

Studio to explore classical and ecological design methodologies in European landscape.

**LAA 6971: Research for Master's Thesis**

**Credits: 1-15**                      **Grading Scheme: S/U**

**LAA 6979: Terminal Project**

**Credits: 1-6**                      **Grading Scheme: S/U**

This option, in lieu of thesis, is available for a design project that because of magnitude or design complexity does not adapt to thesis format.

### **LAE 6298: Literacy & Language Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

Prepares preservice teachers to teach language arts integrated with writing & children's literature. The study combines theory & practice in language/writing development, differential instruction & assessment for diverse students & using literature for language & writing instruction.

### **LAE 6319: Language Arts in the Elementary School**

**Credits: 3**                      **Grading Scheme:** Letter

Speaking, listening, writing, and language study in the elementary classroom.

### **LAE 6339: Curriculum, Methods, and Assessment in Secondary English Language Arts**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 30 hours of upper-division English. Designed for Proteach students only.

Introduction to the theory and practice of teaching English.

### **LAE 6348: Teaching Multiliteracies**

**Credits: 3**                      **Grading Scheme:** Letter

Application of theory and methods in teaching multiple modes of literacy.

### **LAE 6365: Language Arts: Language and Composition**

**Credits: 3**                      **Grading Scheme:** Letter

Methods and materials for teaching language and composition in the secondary school. This course and LAE 6366, in conjunction, comprise methods and materials for teaching English in the secondary school.

**LAE 6366: Language Arts: Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and method for teaching literature in the secondary school. This course and LAE 6365, in conjunction, comprise methods and materials for teaching English in the secondary schools.

**LAE 6407: Early Childhood Children's Literature**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* a course in children's literature.

Methods of involving young children (birth through kindergarten) with literature and the role of literature in the home and school.

**LAE 6446: Multicultural Literature for Children and Adolescents**

**Credits: 3**                      **Grading Scheme:** Letter

Examines diverse cultures and theories in multicultural literature.

**LAE 6447: Immigrant Experiences in Children's and Adolescent Literature**

**Credits: 3**                      **Grading Scheme:** Letter

Guide students' exploration of immigrant issues in children's literature. Develop a better understanding of diverse cultures represented in schools across the United States. Critique literature to determine how different cultures are represented in children's books.



**LAE 6455: International Children's Literature**

**Credits: 3                      Grading Scheme:** Letter

Examine and develop curriculum for children's literature from around the world.

**LAE 6505: Applied Preschool Language Disorders: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme:** Letter

Seminar and practicum in diagnoses and treatment of preschool children with language learning disabilities.

**LAE 6616: Seminar in Children's Literature**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* LAE 3005.

Trends and issues in children's literature and teaching literature. Topics rotate.

**LAE 6635: Teaching Adolescent Literature in the Secondary School**

**Credits: 3                      Grading Scheme:** Letter

Explores what adolescent literature is and examines the theory and practice of teaching it in grades 7-12.

**LAE 6714: Children's Literature in the Childhood Curriculum**

**Credits: 3                      Grading Scheme:** Letter

Evaluating, selecting, and using fiction, biography, poetry, and informational books for instructional, informational, and recreational purposes.

**LAE 6861: Technology and Media Literacy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LAE 6366.

Methods and materials for integrating technology and media literacy in secondary English classrooms.

**LAE 6865: Teaching Media Literacy with the Internet**

**Credits: 3**                      **Grading Scheme:** Letter

Application of literacy theory and pedagogy to teaching multimodal internet texts.

**LAE 6869: Teaching Digital Storytelling**

**Credits: 3**                      **Grading Scheme:** Letter

Focusing on educators by using storytelling and digital tools to advance literacy, learning, and the meaningful use of technology in educational settings.

**LAE 6939: Literacy, Family, and Culture**

**Credits: 3**                      **Grading Scheme:** Letter

Examines various literacy patterns of students with non-mainstream cultural, social, and linguistic backgrounds; explores the impact of home literacy on school learning.

**LAE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**LAE 6945: Practicum and Assessment for Teachers of Secondary School English**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of department chair.

Directed experiences focused on applying instructional strategies, assessing student progress, and reflecting on ethical issues. Includes experiences in field and laboratory work.

**LAE 6946: Children's Literature in Educational Settings**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* LAE 3005.

Field studies in library or school settings with high involvement in children's literature.

**LAE 6947: Writing Theories & Practices**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* English major.

**LAE 7006: Language Acquisition and Education**

**Credits: 3                    Grading Scheme: Letter**

First language acquisition and implications for curriculum and instruction.

**LAE 7519: Language and Inquiry**

**Credits: 3                      Grading Scheme: Letter**

Examines inquiry and its implications for curriculum and instruction.

**LAE 7715: Research in Children's Literature**

**Credits: 3                      Grading Scheme: Letter**

Research and research methodologies in children's literature and teaching literature.

**LAE 7934: Seminar in Composition Theory and Practice**

**Credits: 3                      Grading Scheme: Letter**

Examines the theory of composition, and research on the impact of writing.

**LAE 7936: Seminar in English Language Arts**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Contemporary developments and research in English language arts and education.

**LAH 5438: Modern Mexico**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Topics in Mexican history from independence in 1821 to the present. Emphasizes the Diaz dictatorship and the Mexican Revolution. Not open to students who have taken LAH 4433 or equivalent.

### **LAH 5475: Caribbean, Nineteenth and Twentieth Centuries**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

A social history of the modern caribbean. Slave emancipation and decolonization; race relations and black consciousness; labor, culture, and economic change. Not open to students who have taken LAH 4472.

### **LAH 5476: Caribbean History to 1800: Slavery, Colonization, and International Conflict**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Social, economic, and political history of the West Indies and the Circumcaribbean region to around 1800. Emphasizes slave societies. Not open to students who have taken LAH 4471.

### **LAH 5527: Andean Nations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Anthropological and political history of the postcolonial Andean region, including the republics of Venezuela, Colombia, Ecuador, Peru, and Bolivia.

### **LAH 5607: History of Amazonia**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the history of the Amazon region. Places the region in the wider context of Latin American history and Atlantic history from the pre-colonial era to the 1980s.

### **LAH 5637: Brazil Since 1750**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

History of Brazil from the Portuguese era of reform to the military regime of 1964-85.

**LAH 5933: Topics in Caribbean History**

**Credits: 3                      Grading Scheme:** Letter

Introduction to historiography of the Caribbean. Pre-Columbian times to the present.

**LAH 5934: Topics in Latin American History**

**Credits: 3    Max: 16                      Grading Scheme:** Letter

**LAH 6934: Seminar in Colonial Spanish America**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

**LAH 6936: Seminar in History of Brazil**

**Credits: 3                      Grading Scheme:** Letter

**LAH 6938: Seminar in Modern Spanish America**

**Credits: 3                      Grading Scheme:** Letter

### **LAS 6008: Ecological Principles**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* None.

Reviewing key concepts in ecology and placing them in the context of conservation and development issues faced by society. The course is designed for students who as professionals will use ecological knowledge rather than those who will conduct ecological research.

### **LAS 6220: Issues and Perspectives in Latin American Studies**

**Credits: 3                      Grading Scheme:** Letter

Overview of the economic and political history of Latin America, the history of thought about Latin American development problems, and US-Latin American relations during the 19th and 20th centuries.

### **LAS 6290: Tropical Conservation and Development**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

Patterns and trends of tropical resource use and conservation analyzed against sustainability criteria. Socioeconomic, biological, and political factors addressed with emphasis on global linkages.

### **LAS 6291: Conservation and Development Skills**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

Development of technical knowledge and interpersonal skills necessary for conservation and development professionals. Professional presentations, facilitation, workshop organization, and negotiation skills.

### **LAS 6292: Tropical Conservation and Development Research Methods**

**Credits: 3    Max: 6                      Grading Scheme:** Letter

Introduction to field research methods for studies focused on natural resource use and management by local populations in tropical regions. Emphasizes participatory approaches and integration of natural and social science tools.

**LAS 6293: Design and Methods of Research in Latin American Studies**

**Credits: 3                      Grading Scheme:** Letter

Readings and exercises introducing the main quantitative and qualitative strategies that social scientists use to carry out research in Latin America.

**LAS 6295: Latin American Business Environment**

**Credits: 2                      Grading Scheme:** Letter

*Prerequisite:* M.B.A. core.

Examination of the contemporary political economy of Latin America from a business perspective. Analysis of economic, social, political, and cultural factors affecting business and finance in the region. Special attention to recent market reforms and regional integration.

**LAS 6296: Latin American Business Topics**

**Credits: 2-4    Max: 4                      Grading Scheme:** Letter

*Prerequisite:* M.B.A. core and LAS 6295.

Examination of various economic, management, finance, and legal topics affecting business and finance in Latin America.

**LAS 6905: Individual Work**

**Credits: 1-3    Max: 9                      Grading Scheme:** Letter



Reading or research in topics focusing on a Latin American area, but cutting across disciplines.

### **LAS 6938: Seminar in Modern Latin American Studies**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

*Prerequisite:* Latin American area concentration.      *Corequisite:* required seminar for M.A. students in LAS.

Analyses of Latin American Studies with special focus on development and democracy in Latin America and the different perspectives and approaches within LAS to understand these issues. Different course sections are taught under this number, including Cuba, Change, and Continuity; Mexican Icons; and Research Design and Methods.

### **LAS 6941: Tropical Conservation and Development Practicum**

**Credits: 3    Max: 12                    Grading Scheme:** S/U

Design and organize an independent service-oriented project, beyond thesis research, on- or off-campus, illustrating leadership and collaboration, engaging others in workshops, outreach, and other practical activities.

### **LAS 6943: Development Theory and Practice in Latin America**

**Credits: 3    Max: 6                    Grading Scheme:** Letter

Rotating topics surrounding the inter-relationship of core fields of study of development in Latin America, including health sciences, natural sciences, social sciences, and management. Introduces the basic core competencies and practical skills required of a development practitioner.

### **LAS 6949: Internship In Latin American Studies**

**Credits: 1-6    Max: 9                    Grading Scheme:** S/U

Internship related to Latin American , Caribbean or Latino Studies, supervised by an LAS faculty member or affiliate faculty member. Each credit hour requires 45 hours of work with an entity approved by the Center for Latin American Studies. Internships can be paid or unpaid.

**LAS 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**LAT 6425: Latin Prose Composition**

**Credits: 3**

**Grading Scheme: Letter**

Translating English into Latin and imitation of various Latin prose styles.

**LAW 7200: Introduction to the Legal System of the United States for LL.M. in Comparative Law, Part II**

**Credits: 1-2    Max: 2**

**Grading Scheme: Letter**

*Prerequisite:* For LL.M. in comparative law program students only.    *Corequisite:* Requires approval by the program director.

Continuing coverage of legal education, professionalism and the legal system of the United States, conducted over one or two full semesters. Typically, it will be conducted over two semesters with one teaching hour per semester week. Alternately, it will be taught as a two-credit course with two teaching hours per semester week.

**LAW 7493: LL.M. Research: Selected Topics in Environmental & Land Use Law**

**Credits: 1-3    Max: 3**

**Grading Scheme: Letter**

*Prerequisite:* Students must be enrolled in the Environmental & Land Use Law LLM Program to register for this course

Involving substantial independent research/writing project under supervision of faculty member with special interest in particular topic. Student develops research topic with supervising faculty member; faculty member determines credits awarded based on research difficulty, topic and final written product of 20 pages per credit. Repeatable to 6 total credits.

**LAW 7602: Taxation of Property Transactions**

**Credits: 3                      Grading Scheme: Letter**

Tax problems of individual taxpayers. Problems incident to the sale, exchange, and other disposition of property, including recognition and characterization concepts.

**LAW 7604: Timing Issues in Taxation**

**Credits: 2                      Grading Scheme: Letter**

Aspects of federal income tax dealing with timing issues in income taxation, including tax accounting methods, transactional versus annual reporting, tax problems arising out of time value of money principles, and problems in the reporting of error corrections in taxation.

**LAW 7611: Corporate Taxation I**

**Credits: 3                      Grading Scheme: Letter**

Tax considerations in corporate formations, distributions, redemptions, and liquidations, including Subchapter C and Subchapter S corporations. Consideration of alternatives relating to the sales of corporate businesses.

**LAW 7613: Corporate Taxation II**

**Credits: 2-3    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* LAW 7601 or consent of instructor.

Corporate reorganizations; corporate acquisitions and divisions, including transfer or inheritance of losses and other tax attributes; corporate penalty taxes; provisions for consolidated returns.

**LAW 7614: U.S. International Tax I**

**Credits: 2-3    Max: 3                      Grading Scheme: Letter**

Tax definition of resident. Distinction between domestic and foreign entities. Taxation of business and nonbusiness income of foreign persons. Taxation of income from trades or businesses carried on by foreign persons in the U.S. Special rules on U.S. real property interests. Branch profits and branch interest taxes.

#### **LAW 7615: U.S. International Tax II**

**Credits: 2**                      **Grading Scheme:** Letter

The foreign tax credit; special rules on controlled foreign corporations; foreign currencies; and cross-border transfers in nonrecognition transactions.

#### **LAW 7617: Partnership Taxation**

**Credits: 3**                      **Grading Scheme:** Letter

Tax meaning of "partnership"; formation transactions between partner and partnership, determination and treatment of partnership income; sales or exchange of partnership interest; distributions; retirement; death of a partner, drafting the partnership agreement.

#### **LAW 7623: Taxation of Gratuitous Transfers**

**Credits: 2 or 3 at option of department**                      **Grading Scheme:** Letter

Federal estate, gift, and generation-skipping transfer taxes.

#### **LAW 7625: Income Taxation of Trusts and Estates**

**Credits: 2**                      **Grading Scheme:** Letter

Taxation of income of trusts and estates, including simple and complex trusts, annuities, property distributions, income in respect of decedent, grantor trusts.

**LAW 7626: Estate Planning**

**Credits: 2**                      **Grading Scheme:** Letter

Planning lifetime and testamentary private dispositions of property, postmortem planning; analysis of small and large estates; eliminating and offsetting complicating and adverse factors; selection of fiduciary and administrative provision.

**LAW 7632: Deferred Compensation**

**Credits: 2**                      **Grading Scheme:** Letter

Tax consequences of compensation in forms other than cash paid contemporaneously with performance of services, including nonqualified deferral compensation devices, and qualified pension and profit-sharing plans.

**LAW 7633: Tax Exempt Organizations**

**Credits: 2**                      **Grading Scheme:** Letter

Study of exemption from federal income tax accorded to a variety of public and private organizations, and tax treatment of contributions to such organizations; public policies underlying exemption from tax and deductibility of contributions.

**LAW 7640: Civil Tax Procedure**

**Credits: 2**                      **Grading Scheme:** Letter

Legal and procedural aspects of federal tax administration, collection and litigation.

**LAW 7641: Procedures in Tax Fraud Cases**

**Credits: 2**

**Grading Scheme:** Letter

Criminal offenses and methods of proof; investigative authority of the IRS; summons enforcement proceedings; search warrants and grand jury subpoenas; constitutional defenses to the compulsory production of evidence; the attorney-client privilege and other objections available to taxpayers and third parties.

#### **LAW 7650: State and Local Taxation**

**Credits: 2**

**Grading Scheme:** Letter

Nature and purpose of state taxation, comparison of property and excise taxes; uniformity of taxation; assessment and collection procedures; remedies available to taxpayers.

#### **LAW 7660: Tax Policy**

**Credits: 2**

**Grading Scheme:** Letter

Examines the principal criteria used in choosing forms of taxation. The impact of tax provisions on type and location of business and investment activities. Content may vary.

#### **LAW 7680: Comparative Taxation**

**Credits: 2**

**Grading Scheme:** Letter

A comparative study of tax systems of the world, including income and wealth transfer taxes and taxes on consumption. Basic structural features and policies.

#### **LAW 7682: Income Tax Treaties**

**Credits: 2**

**Grading Scheme:** Letter

Bilateral income tax conventions between countries to alleviate double taxation of income from international investments and activities and to provide for exchanges of tax information and consultation between tax authorities.

### **LAW 7683: Transfer Pricing**

**Credits: 2                      Grading Scheme: Letter**

International transactions between related entities in connection with tax requirement that such transactions be priced as if between unrelated persons.

### **LAW 7805: Legal Writing and Research for LL.M. in Comparative Law**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* For LL.M. in comparative law program students only.    *Corequisite:* Requires prior approval by program director.

Intensive three week introduction to professional legal writing in American legal English taught by a legal writing professor; supplemented by research instruction by librarians. Requires prior approval by program director.

### **LAW 7905: Independent Study**

**Credits: 1-3    Max: 4                      Grading Scheme: S/U**

### **LAW 7906: Directed Research for LL.M. in Comparative Law**

**Credits: 1-2    Max: 2                      Grading Scheme: Letter**

*Prerequisite:* Open to LLM in Comparative Law students only.    *Corequisite:* Requires approval by the program director.

Legal research to be completed under the supervision of a faculty member conversant the with topic selected and culminating in a paper.  
Requires approval of the program director.

**LAW 7910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**LAW 7911: Federal Tax Research**

**Credits: 1-2    Max: 2            Grading Scheme: Letter**

Substantial research and writing project on a federal tax subject; instruction in tax research techniques.

**LAW 7916: Research Methods and Environmental Land Use Law**

**Credits: 1    Max: 2            Grading Scheme: Letter**

Rotating topics assisting students with the design of their LLM written projects, by guiding the students on topic selection, research methods, and trends in recent research.

**LAW 7931: Current Federal Tax Problems**

**Credits: 1-2    Max: 6            Grading Scheme: Letter**

Significant current developments in tax law, often with emphasis on policy considerations. Variable content.

**LAW 7932: Introduction to the Legal System of the United States for LLM in Comparative Law, Part I**

**Credits: 2            Grading Scheme: Letter**

*Prerequisite:* Open only to LLM in Comparative Law Students.    *Corequisite:* Requires approval by the program director.



Intensive 3-week introduction to the comparative method and to legal education, professionalism and the legal system of the United States. Requires approval by the program director.

### **LEI 5121: Outdoor Recreation and Park Management**

**Credits: 3**                      **Grading Scheme:** Letter

History and current issues of outdoor recreation, preservation, and conservation policy in U.S. Review of government and private roles in providing outdoor recreation opportunities. Synthesis of social science research on outdoor recreation behavior and implementation of strategies utilizing current research in park management operations to improve visitor experiences.

### **LEI 5188: Trends in Leisure Studies**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to issues and trends pertinent to leisure, recreation, and tourism. Influence of social, demographic, and environmental changes on leisure behavior examined drawing on relevant theories, empirical research, and contemporary articles to frame analysis.

### **LEI 6108: Contemporary Theories of Recreation and Leisure**

**Credits: 3**                      **Grading Scheme:** Letter

Understanding of leisure and recreation as they relate to social, psychological, and economic constructs. Examination of current studies of leisure behavior. Investigation of both holistic and particular dimensional viewpoints and approaches in determination of leisure behavior.

### **LEI 6325: Ecotourism**

**Credits: 3**                      **Grading Scheme:** Letter

Examination of tourism development in hospitality and tourism industry. Emphasis on planning and impacts to area.

Case studies used to understand planning and development issues in various destinations worldwide emphasizing how tourism policy affects destination.

### **LEI 6326: Sport Tourism**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of the interconnectedness of sport and tourism for behavioral, historical, economic, management, marketing, environmental, and policy perspectives.

### **LEI 6336: Tourism Planning and Development**

**Credits: 3**                      **Grading Scheme:** Letter

Examination of development in hospitality and tourism industry. Case studies used to understand planning and development issues in various destinations around the world. Emphasis on impact of tourism policy on area.

### **LEI 6351: Heritage Tourism**

**Credits: 3**                      **Grading Scheme:** Letter

Theory, practice, history, terminology and current issues of cultural heritage tourism planning and management. Basic survey of cultural and heritage components: motives and behaviors of heritage tourist attractions (museums, arts, festivals/events, and landscapes), interpretation, economics, and policies.

### **LEI 6439: Campus Recreation Administration and Programming**

**Credits: 3**                      **Grading Scheme:** Letter

In-depth examination of operations, innovation, and development of campus recreation offerings at community college, university, and military levels. Facility construction and maintenance, personnel management, and fiscal responsibility for diverse audience, primarily from director's perspective.

### **LEI 6513: Administrative Procedures in Leisure Services**

**Credits: 3**

**Grading Scheme:** Letter

Understanding fundamentals of management and organization behavior theory underlying provision of tourism, recreation, and park facilities and services. Influence of external environment on management procedures emphasized.

### **LEI 6514: Administrative Issues in Recreation, Parks, and Tourism**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* LEI 6513

Integration of prior courses through an in-depth study and discussion of the critical issues and concerns that influence provision of recreation, parks, and tourism services. Specific issues reflect students' concentration and interest, as well as recent developments in administrative practice.

### **LEI 6557: Recreation Management/Development in the Coastal Zone**

**Credits: 3**

**Grading Scheme:** Letter

Introduction to the coastal environment as a predominant setting for recreation activity and development. Examines specific recreational problems associated with coastal zone management within the framework of coastal resources. Survey of public-private issues, planning concerns, and user conflicts common in the coastal zone.

### **LEI 6562: Advanced Marketing for Recreation, Parks, and Tourism**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* LEI 6895.

Examination of multidimensional marketing functions common to complex recreation, park, and tourism organizations. Emphasis on strategic planning in marketing and its use by recreation, parks, and tourism organizations. Class project in tourism marketing helps develop more in-depth understanding and appreciation of application of marketing to local agency.

**LEI 6895: Tourism Theory and Concepts**

**Credits: 3                      Grading Scheme: Letter**

Analysis of theories, concepts, and issues related to tourism. Topics include sociocultural impacts of tourism, tourist roles, definitions of tourism, tourist motivations, issues of inequality, terrorism and tourism, sex tourism, and tourism and urban regeneration.

**LEI 6903: Readings in Recreation, Parks, and Tourism**

**Credits: 1-3    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* Intended for master's students.

Selected independent, in-depth readings on a specific topic. Readings will be supervised and evaluated.

**LEI 6905: Directed Independent Study**

**Credits: 1-5    Max: 10                      Grading Scheme: Letter**

Individual projects under faculty guidance.

**LEI 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**LEI 6931: Special Topics in Recreation, Parks, and Tourism**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* Intended for master's students.

**LEI 6935: Seminar in Recreation, Parks, and Tourism**

**Credits: 3    Max: 6                    Grading Scheme: S/U**

*Prerequisite:* Intended for master's students.

Discussion of research topics, including contemporary issues in recreation, parks, and tourism.

**LEI 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**LEI 6944: Practicum in Leisure Studies**

**Credits: 1-6    Max: 6                    Grading Scheme: Letter**

**LEI 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**LEI 7170: Foundations of Leisure Behavior**

**Credits: 3                    Grading Scheme: Letter**

Advanced examination of sociological, socio-psychological, and philosophical literature in leisure studies. Topics include leisure definitions debate; influence of gender, race, class, and age on leisure; time crunch and commodification of leisure; and role of leisure in 21st century society.

### **LEI 7901: Recreation, Parks, and Tourism in Higher Education**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* required for all doctoral students.

Examines current trends and issues impacting tourism, recreation, and sport management in higher education. Topics include curriculum development, accreditation, distance learning, university organization and governance, university economics, faculty responsibilities, and life in the academy.

### **LEI 7904: Advanced Readings in Recreation, Parks, and Tourism**

**Credits: 1-3    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* intended for doctoral students.

Selected independent in-depth readings on specific topics. Supervised and evaluated.

### **LEI 7905: Advanced Independent Study in Recreation, Parks and Tourism**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* intended for all doctoral students.

Individual projects completed under faculty guidance.

### **LEI 7910: Advanced Supervised Research**

**Credits: 1-5                      Grading Scheme: S/U**

### **LEI 7933: Advanced Special Topics in Recreation, Parks, and Tourism**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* intended for doctoral students.

**LEI 7936: Advanced Seminar in Recreation, Parks, and Tourism**

**Credits: 3    Max: 6            Grading Scheme: S/U**

*Prerequisite:* intended for doctoral students.

Discussion of research topics, including contemporary issues.

**LIN 5657: Gender and Language**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* LIN 3010.

Language in the construction of cultural, sex, and gender roles within a culture. A focal point is the grammaticalization of gender in languages of the world including non-Indo-European languages, and of the interactions of these grammatical structure with gender stereotypes. Consequences for linguistic science.

**LIN 5741: Applied English Grammar**

**Credits: 3                    Grading Scheme: Letter**

Survey of English grammar based on the principles of second language acquisition and social interaction, with implications for teachers.

**LIN 6084: Introduction to Graduate Research**

**Credits: 3                    Grading Scheme: Letter**

Scholarly and scientific approaches to study of linguistics. Scientific method, theory development, data processing, scholarly writing, and structure of research proposals.

**LIN 6165: Field Methods**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* LIN 3201.

Developing the basic linguistic skills of discovering the structure of a language previously unknown to the investigator, starting with paper and pencil. Students learn to listen and interact with a native speaker, to construct questions, to organize and analyze data, to construct and test hypotheses, and to write up discoveries. Emphasizes ethics as a requisite of good science.

### **LIN 6208: Phonetics for Linguists**

**Credits: 3**                      **Grading Scheme:** Letter

Understanding of issues in experimental phonetics and appreciation of research techniques in the acoustic, physiological, and perceptual study in speech.

### **LIN 6226: Advanced Phonetics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 4205 or LIN 6208 or SPA 3011.

Exposes students to advanced issues in linguistic phonetics, and to experimental phonetic methods and designs.

### **LIN 6323: Phonology 1**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 3201.

Phonemics, syllabic and prosodic phenomena, neutralization, distinctive features, morphophonemic alternation, phonological systems and processes. Terminology and notational conventions of generative phonology. Problems from a variety of languages.

### **LIN 6341: Phonology 2**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 6323.



Theoretical approaches to major problems of phonological theory and/or its relationship to areas such as morphology and SLA. Emphasis on linguistic argumentation and independent research.

### **LIN 6402: Morphology 1**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 3460.

Theory of word structure, derivation, and inflection. The position of morphology in a grammar, the relationship between morphology and the rest of the grammar, predictions of various theories of morphology. Examples and problems from a wide variety of the world's languages.

### **LIN 6410: Morphology 2**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 6402.

Technical articles from a variety of twentieth-century schools. Prominent inquiries include the place of morphology in grammar, its relationship with other components, and whether a unified theory of morphology can be constructed.

### **LIN 6501: Syntax 1**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 3460.

The generative-transformational model of syntax: phrase structure, lexicon, case and agreement, movement, government, and anaphora. Emphasizes problem solving and linguistic argumentation.

### **LIN 6520: Syntax 2**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 6501.

Further investigation of the generative-transformational model of syntax: advanced clause structure, binding theory, constraints on movement, and logical form.

### **LIN 6571: Structure of Specific Language**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* introductory linguistics course.

Linguistic examination of Aymara, Cakchiquel, Eskimo, Armenian, Bulgarian, Polish, Turkish, Quechua, Sanskrit, Tamil, or another rarely taught language.

### **LIN 6601: Sociolinguistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 6323, LIN 6501.

Major approaches to language in context: ethnographic, sociological, linguistic. Applications of sociolinguistics to applied linguistics, social sciences, and education. Collection and analysis of data.

### **LIN 6622: Bilingualism**

**Credits: 3**                      **Grading Scheme:** Letter

Psycholinguistic and sociolinguistic aspects of bilingualism, with implications for education.

### **LIN 6707: Psycholinguistics**

**Credits: 3**                      **Grading Scheme:** Letter

Explores basic issues in psycholinguistic research, including language production, comprehension, acquisition, and development.

### **LIN 6708C: Methods in Psycholinguistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 6702; STA 2023 or consent of instructor.

Hands-on experience designing and conducting psycholinguistic experiments and analyzing experimental data.

### **LIN 6720: Second Language Acquisition**

**Credits: 3**                      **Grading Scheme:** Letter

Neurolinguistic, psycholinguistic, and sociolinguistic bases of second language acquisition in childhood and adulthood.

### **LIN 6773: Topics in Computational Linguistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Overview of the field of natural language processing and computational linguistics.

### **LIN 6796: Cognitive Neuroscience of Language**

**Credits: 3**                      **Grading Scheme:** Letter

Overview and critical evaluation of brain imaging techniques and issues in language and brain research, covering speech perception, word recognition, reading syntax, discourse processing, production, language acquisition, and bilingualism.

### **LIN 6804: Semantics I**

**Credits: 3**                      **Grading Scheme:** Letter

Truth conditional semantics as opposed to pragmatics. Basic notions in classical logic since logic is assumed in truth conditional semantics.

### **LIN 6826: Introduction to Formal Pragmatics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Introduces Pragmatics, the study of utterance meanings determined by situated uses of language and linguistic communication as a social activity. Explores the role of linguistic and extra-linguistic contexts in the production and interpretation of utterances. Topics include deictic and anaphoric expressions, sense and reference, presupposition, implicature, speech acts and coherence.

### **LIN 6856: Semantics II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 6804

Introduction to doing formal semantics for linguists, based on the theory of Richard Montague and theories developed within his approach.

### **LIN 6905: Individual Study**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

### **LIN 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **LIN 6932: Special Topics**

**Credits: 3    Max: 27                      Grading Scheme: Letter**

**LIN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**LIN 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**LIN 7118: History of Linguistics**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* LIN 6323, LIN 6501.

The history of accounting for language data as evidenced by grammar-writing from Panini to the twentieth century, with primary focus on the development of linguistic thought in Europe and America.

**LIN 7641: Seminar in Language Variation**

**Credits: 3    Max: 9            Grading Scheme: Letter**

Possible topics include variation theory, conversational interaction, language contact, bilingualism, and pidgins and Creoles.

**LIN 7725: Topics in Second Language Acquisition**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* LIN 6720.

Focused topic in the area of second language acquisition.

**LIN 7885: Discourse Analysis and Pragmatics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* LIN 6601.

Methods of discourse analysis research and face-to-face discourse and pragmatics.

**LIN 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**LIN 7980: Research for Doctoral Dissertation**

**Credits: 1-15                      Grading Scheme: S/U**

**LIT 5335: Approaches to Children's and Adolescent Literature**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* at least 1 upper-division survey in children's or adolescent literature.

Exploration of controversies, trends, and critical problems.

**LIT 6037: Studies in Verse**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

**LIT 6047: Studies in Drama**

**Credits: 3    Max: 12            Grading Scheme:** Letter

**LIT 6236: Postcolonial Studies**

**Credits: 3    Max: 09            Grading Scheme:** Letter

Postcolonial literature and theory, including theories of colonialism and globalization, as well as the literature of Africa, Asia, the Caribbean, Australia, New Zealand, and Canada as they pertain to colonialism and its legacies.

**LIT 6308: Studies in Comics and Animation**

**Credits: 3    Max: 12            Grading Scheme:** Letter

Explores comics and comics theory, including intersections with visual rhetoric in graphic novels, manga, anime, animation, and other forms, from a variety of theoretical approaches.

**LIT 6309: Communications and Popular Culture**

**Credits: 3                    Grading Scheme:** Letter

Study of the origins and qualities of the popular arts in modern society.

**LIT 6327: Studies in Folklore**

**Credits: 3    Max: 12            Grading Scheme:** Letter

**LIT 6357: African-Amer. or African Diaspora Lit./Cultures**

**Credits: 3    Max: 12            Grading Scheme:** Letter

**LIT 6358: Theoretical Approaches to Black Cultural Studies**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Explorations of theory and black writing and the variety of theoretical approaches.

**LIT 6855: Issues in Cultural Studies**

**Credits: 3    Max: 12            Grading Scheme:** Letter

**LIT 6856: Cultural Studies: Interventions**

**Credits: 3    Max: 12            Grading Scheme:** Letter

Praxes, perspectives, and limitations of cultural and theoretical studies within the multiple contexts of their production.

**LIT 6857: Cultural Studies: Movements**

**Credits: 3    Max: 12            Grading Scheme:** Letter

Theories and histories of cultural groups, classification, or communities in various media.

**LIT 6934: Variable Topics**



**Credits: 1-5    Max: 12**

**Grading Scheme:** Letter

Studies in topics not normally offered in the regular curriculum, including intensive study of topics within a literary period, extensive study of motifs crossing several periods, and studies in various national or ethnic literatures (African, Afro-American, Jewish, Scots).

**LNW 5325: Roman Elegiac Poetry**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* graduate student status or consent of instructor.

Readings in Latin from one or all of the following: Catullus, Tibullus, Propertius, Ovid, or other Latin elegiac poetry.

**LNW 5655: Roman Poets: Horace**

**Credits: 3    Max: 6**

**Grading Scheme:** Letter

Horace's poetry and metrics.

**LNW 5665: Roman Poets: Vergil**

**Credits: 3    Max: 6**

**Grading Scheme:** Letter

The poetic art of Vergil and its literary, historical, and political background.

**LNW 5675: Roman Poets: Ovid**

**Credits: 3    Max: 6**

**Grading Scheme:** Letter

Ovid's poetic art against its literary, historical, and political background.

**LNW 5931: Comparative Study of Latin and Greek Literature**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Study by genre types (content varies).

**LNW 6105: The Roman Tradition**

**Credits: 3                    Grading Scheme: Letter**

Synoptic survey of Roman literature.

**LNW 6225: The Ancient Roman Novel**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Readings from Petronius and/or Apuleius.

**LNW 6315: Plautus and Terence**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Advanced reading proficiency

Reading in Latin selections from the twenty extant plays of Plautus and six extant plays of Terence, with an introduction to the genre of comedy.

**LNW 6335: Roman Oratory and Rhetoric**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Theory and practice of Roman oratory and rhetoric through Latin readings in Cicero, Seneca, and Quintilian, and other sources.

**LNW 6365: Studies in Roman Satire**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Readings from Horace, Persius, Petronius, Juvenal, Martial.

**LNW 6385: Roman Historians**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Readings from major historians: Sallust, Caesar, Livy, Tacitus, Suetonius, and others.

**LNW 6495: Late Latin Literature**

**Credits: 3                    Grading Scheme:** Letter

Readings from one or more of the following: Vulgate, Christian Church Fathers, Historia Apollonii, Peregrinatio Aetheriae, Harrington's Medieval Latin.

**LNW 6905: Individual Work**

**Credits: 1-4    Max: 10            Grading Scheme:** Letter

Readings and reports in language and literature.

**LNW 6933: Special Topics in Latin Literature**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prerequisite:* graduate standing or consent of instructor.

Intensive study of particular author, genre, period, or subject.

**LNW 6935: Proseminar in Classics**

**Credits: 3                    Grading Scheme: Letter**

Introduction to the study of classical literature, history of scholarship, bibliographies, areas of the discipline.

**LNW 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**LNW 6971: Research for Master's Thesis**

**Credits: 1-15                Grading Scheme: S/U**

**LNW 7979: Advanced Research**

**Credits: 3-12                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**LNW 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**MAA 5104: Advanced Calculus for Engineers and Physical Scientists I**

**Credits: 3**

**Grading Scheme: Letter**

**MAA 5105: Advanced Calculus for Engineers and Physical Scientists II**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* MAA 5104.

**MAA 5228: Modern Analysis I**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* advanced calculus.

Topology of metric spaces, numerical sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, sequences and series of functions, the Stone-Weierstrass theorem, and the Lebesgue theory.

**MAA 5229: Modern Analysis II**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* MAA 5228.

**MAA 5404: Introduction to Complex Variables for Engineers and Physical Scientists**

**Credits: 3**

**Grading Scheme: Letter**

**MAA 6236: Mathematical Analysis for Statisticians****Credits: 3****Grading Scheme:** Letter

*Coreq:* STA 6326. Numerical sequences and series, limits, continuity, differentiation, integration, series of functions. Applications to probability and statistics stressed.

**MAA 6406: Complex Analysis I****Credits: 3****Grading Scheme:** Letter

*Prerequisite:* MAA 5229.

Rapid survey of properties of complex numbers, linear transformations, geometric forms and necessary concepts from topology. Complex integration. Cauchy's theorem and its corollaries. Taylor series and the implicit function theorem in complex form. Conformality and the Riemann-Caratheodory mapping theorem. Theorems of Bloch, Schottky, and the big and little theorems of Picard. Harmonicity and Dirichlet's problems.

**MAA 6407: Complex Analysis II****Credits: 3****Grading Scheme:** Letter

*Prerequisite:* MAA 6406.

**MAA 6616: Analysis I****Credits: 3****Grading Scheme:** Letter

*Prerequisite:* MAA 5229.

Fundamentals of measure and integration theory, including  $L^p$  spaces and the Radon-Nikodym theorem. Introduction to functional analysis: Banach spaces, Hilbert spaces, and the theory of linear operators.

**MAA 6617: Analysis II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAA 6616.

Continuation of MAA 6616 Analysis I.

**MAA 7526: Advanced Topics in Functional Analysis I**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* MAA 6617, 6332.

Algebraic and topological approach to current material and methods in analysis.

**MAA 7527: Advanced Topics in Functional Analysis II**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* MAA 7526.

**MAD 6206: Combinatorial Theory I**

**Credits: 3                      Grading Scheme: Letter**

Matching theory, Ramsey's theorem, lattice theory, Mobius inversion, generating functions. Polya's theorem, matroids, applications, block designs, graph theory.

**MAD 6207: Combinatorial Theory II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAD 6206.

**MAD 6406: Numerical Linear Algebra**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAS 3114, 4105, or 4124; and programming language.

Topics most useful in applications with emphasis on numerical techniques: systems of linear equations, positive definite and toeplitz systems, least squares problems, singular value decomposition, and eigenvalues. Numerical stability and efficiency of algorithms as well as effect of perturbations on the problem. Companion to MAD 6407.

### **MAD 6407: Numerical Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAA 4212, MAA 5105, or MAA 5229; and programming language.

Numerical techniques to solve systems of nonlinear equations to approximate functions, to compute derivatives, to evaluate integrals, and to integrate systems of differential equations. Introduction to numerical techniques for partial differential equations. Companion to MAD 6406.

### **MAD 7396: Topics in Combinatorial Theory I**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* MAS 5312.

Topics chosen from among graph theory, coding theory, matroid theory, finite geometries, projective geometry, difference methods, and Latin squares.

### **MAD 7397: Topics in Combinatorial Theory II**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* MAD 7396.

### **MAE 5327: Middle School Mathematics Methods**

**Credits: 3                      Grading Scheme: Letter**

Mathematics materials, planning, and presentation.



### **MAE 5332: Secondary School Mathematics Methods and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* preparation in the subject area equivalent to the requirements for high school certification.

Patterns of mathematics curriculum; practices in teaching mathematics; preparing, selecting, and using instructional materials; assessment techniques.

### **MAE 5347: Teaching K-8 Mathematics for Understanding**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAE4310 or consent of instructor.

Instructional strategies to support young learners' mathematical understanding.

### **MAE 5395: Multicultural Mathematics Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAE 4310 or MAE 5318.

Mathematics education methods from a multicultural perspective.

### **MAE 5396: Using Formative Assessment to Improve Mathematical Learning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to graduate status.

Developing the use of formative assessment in the practicing teacher's mathematics classroom for selecting instructional strategies appropriate for the teacher's particular students. Topics include developing a definition of formative assessment, investigating tiered instruction, supporting low achieving students, challenging high achieving students, and implementing management strategies.

### **MAE 5945: Secondary School Mathematics Practicum**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, using instructional moves, and diagnosing student progress. Field and laboratory settings.

**MAE 6313: Problem Solving in School Mathematics**

**Credits: 3                    Grading Scheme: Letter**

Analyzes problem solving as an underlying theme in elementary mathematics for preservice teachers. Emphasizes development of pedagogical content knowledge in elementary school mathematics.

**MAE 6349: Classroom Contexts that Support Self-Regulated Learning and Mathematical Understanding**

**Credits: 3                    Grading Scheme: Letter**

Examining instructional strategies for supporting learners' self-regulated learning and mathematical understanding. Topics include mathematical proficiency and teaching for mathematical proficiency, classroom environments that support mathematical understanding, setting norms for classroom discourse, teaching via problem solving, and developing contexts that support self-regulated learning.

**MAE 6615: Individualizing Instruction in Mathematics**

**Credits: 3                    Grading Scheme: Letter**

Organizing a continuous progress program: objectives, diagnostic testing, student placement, record keeping, evaluation, and reporting. The role of the teacher and team teaching. Developing a bank of materials, games, and activities for an individualized mathematics program.

**MAE 6641: Readings and Research in Mathematics Education**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Examines readings and research that represent past, current, and future trends.

**MAE 6916: Inquiry in Mathematics Teaching**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* EDE 6325 Teacher Inquiry/Action Research

Promoting reflective practices in teaching mathematics, this online course will be centering around a self-directed classroom inquiry project. The course first solidifies expertise in key topics in mathematics education. It then moves to the teacher's development, implementation, and evaluation of the classroom inquiry project in his/her classroom.

**MAE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* consent of graduate adviser.

**MAE 6943: Internship in College Teaching**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* consent of graduate adviser.

**MAE 7899: Mathematics Education Seminar**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAE 6138.

Issues and problems in mathematics education. Investigating and planning research relevant to selected problems.

**MAN 5141: Leadership Skills**

**Credits: 1                      Grading Scheme: Letter**

*Corequisite:* master's students in business administration.

Concepts of leadership theory and methods to improve skills.

#### **MAN 5245: Organizational Behavior**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* designed for M.B.A. students.

Relationships among the individual administrator and supervisors, the employees supervised, and associates at a comparable level in the organization.

#### **MAN 5246: Organizational Behavior**

**Credits: 2                      Grading Scheme: Letter**

*Designed for M.B.A. students.* Behavior of individuals, groups, and organizations. Understanding organizations, how they work, and the people in them. Concepts presented in relation to core managerial competencies.

#### **MAN 5265: Managing Groups and Teams**

**Credits: 1                      Grading Scheme: Letter, S/U**

*Designed for master's students in business.* Development of critical team skills and techniques to improve team processes and effectiveness.

#### **MAN 5501: Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* QMB 5305. Designed for MBA students.

Introduction to the general class of problems associated with managing production facilities.

### **MAN 5502: Production and Operations Management**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* QMB 5305. Core course designed for traditional MBA students.

Introduction to POM, which focuses on design and control of productive systems within organizations.

### **MAN 6107: Motivation in Organizational Setting**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAN 5245 or consent of instructor.

Theory and research on motivational processes relevant to, and applied to, individual human behavior in complex organizations.

### **MAN 6128: Management Skills and Personal Development**

**Credits: 3                      Grading Scheme: Letter**

Explores the interpersonal skills needed to develop effective managers.

### **MAN 6149: Developing Leadership Skills**

**Credits: 2                      Grading Scheme: Letter**

*Designed for master's students in business administration.* Concepts of leadership theory and methods to improve skills.

### **MAN 6257: Power and Politics in Organizations**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor. Designed for advanced master's students in business administration.

Links between theory and practice in the use of power and political skills in organizations.

### **MAN 6266: Managing Groups and Teams in Organizations**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAN 5246 or equivalent.

Composing, developing, and motivating teams. Inter- and intra-team processes. Assessing barriers to effectiveness. Interventions to overcome team problems.

### **MAN 6286: Managing Strategic Processes and Change in Organizations**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAN 5246 or equivalent.

Organizational and managerial issues. Strategic decision-making. Managing research and development as a strategic resource. Simulation and experimentation. Organizational change. Interactions among organizational strategy, structure, and culture.

### **MAN 6296: Designing Effective Organizations**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAN 5246 or equivalent.

The nature of the firm. History of organizational design. Contemporary designs for vertical integration, diversification, low cost, differentiation, and mixed strategies. Organizational design problems.

### **MAN 6321: Human Resource Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Techniques for managing personnel functions such as recruitment, selection, performance evaluation, training, compensation, and labor relations.

### **MAN 6331: Compensation in Organizations**

**Credits: 2**                      **Grading Scheme: Letter**

*Designed for M.B.A. students.* Relevant practical and theoretical information regarding design of reward systems that support organizational strategies.

### **MAN 6351: Training and Development in Organizations**

**Credits: 2**                      **Grading Scheme: Letter**

*Designed for M.B.A. students.* Human resource management issues related to training and development. Methods for identifying training needs, developing content, conducting sessions, and evaluating effectiveness of programs according to organizational and individual objectives. Special topics such as developing management careers, identifying and developing management talent, and organizational change and development.

### **MAN 6365: Organizational Staffing**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* MAN 5245.

Overview of human resource selection. Recruitment, job analysis, psychometrics, criterion measurement, development and evaluation of selection devices, and practical applications.

### **MAN 6366: Organizational Staffing**

**Credits: 2**                      **Grading Scheme: Letter**

*Designed for M.B.A. students.* Personnel selection. Foundations of job analysis, measurement, and selection techniques. Psychometric principles, analyzing job requirements, and assessing relevant human characteristics. Assessing individual contributions to organizational effectiveness.

### **MAN 6385: Strategic Human Resource Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAN 5246 or equivalent.

Organizational human resource management. How organizations use human resources effectively to achieve organizational goals.

### **MAN 6446: Negotiations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* designed for M.B.A. students.

Theory and skills of negotiation and conflict resolution.

### **MAN 6447: Art and Science of Negotiation**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for advanced master's students in business administration.* Theory and processes of negotiation as practiced in variety of settings. Understanding behavior of individuals, groups, and organizations in competitive situations.

### **MAN 6508: Management of Service Operations**

**Credits: 2**                      **Grading Scheme:** Letter

Case studies and problems, including systems design, operation, and control. Emphasizes waiting-line systems.

### **MAN 6511: Production Management Problems**

**Credits: 2**                      **Grading Scheme:** Letter



Problems in the management of industrial enterprise;. Management principles and mathematical analysis applied to manufacturing. Product development and production. Materials and production control. Employee relations.

### **MAN 6528: Principles of Logistics/Transportation Systems**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* QMB 6755.

Logistics management in current business environment.

### **MAN 6537: Managing Technology in Organizations**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAN 5246 or equivalent.

Issues in developing, diffusing, and adopting new technologies. Interplay of technology, organizations, and work. Interplay of developing, transferring, and adopting new technologies. Research and development of new products and processes. Technology transfer. Diffusion of innovation.

### **MAN 6573: Purchasing and Materials Management**

**Credits: 2**                      **Grading Scheme:** Letter

Industrial/institutional purchasing cycle for operating supplies, raw materials, components, and capital equipment in the context of materials management organizational concepts. Basic principles, policies, and procedures for requirement determination; procurement decision process; purchasing function; and materials management concept, organization, and philosophy.

### **MAN 6575: Purchasing and Supplier Relationship Management**

**Credits: 3**                      **Grading Scheme:** Letter

Basic concepts and tools for purchasing and supply-chain management. Procurement cycle, information flow, supplier selection, and internet procurement.

#### **MAN 6581: Project Management**

**Credits: 2**                      **Grading Scheme:** Letter

Organizational role of the manager. Ways of structuring project organizations. Fundamentals of scheduling. Time and cost tradeoffs. Budgeting and cost estimation. Monitoring.

#### **MAN 6586: Project Management**

**Credits: 3**                      **Grading Scheme:** Letter

Principles, techniques, and methods used for effective project management.

#### **MAN 6598: Logistics and Distribution Management**

**Credits: 3**                      **Grading Scheme:** Letter

Activities that make products available to consumers at convenient locations, in the required quantities, and at minimum cost to the company.

#### **MAN 6599: Tactical Logistics Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Distribution value chain planning, tactical logistics decisions in vehicle routing, inventory management, and value chain contracts.

#### **MAN 6617: International Operations/Logistics**

**Credits: 2**                      **Grading Scheme:** Letter

Global delivery/distribution channels, coordinating production/delivery operations in international markets, optimizing use of transportation networks, and designing information/communications systems that span supply chain.

**MAN 6619: International Logistics**

**Credits: 3**                      **Grading Scheme:** Letter

Strategic issues in managing international supply chains, managing the exchange rate, and the operating risks in global supply chains.

**MAN 6627: Cross Cultural Negotiation**

**Credits: 2**                      **Grading Scheme:** Letter

Theory and processes of negotiation as practiced in multicultural environments. Fundamental elements of deal making and dispute resolution.

**MAN 6635: International Aspects of Human Resource Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for master's students in business administration. Perspectives of a multinational firm.*

**MAN 6636: Global Strategic Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for master's students in business administration. Strategic issues facing global and multinational organizations.*

### **MAN 6637: Global Strategic Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* designed for master's students in business administration.

Analyzes how firms compete in the multinational and global environment.

### **MAN 6721: Business Policy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* all MBA required courses. Designed for M.B.A. students. Taken the last semester before graduation.

Integrating and applying the various functional and support areas of business administration. Business policy making and administration from the general manager's perspective.

### **MAN 6724: Strategic Management**

**Credits: 2                      Grading Scheme: Letter**

*Designed for M.B.A. students and taken the last semester before graduation.* Complex strategic questions that confront general managers. Approaches learned in other courses combined with material particular to strategic management. Approaches used to formulate and implement overall strategies that allow firms to obtain and sustain competitive advantages while creating shareholder wealth.

### **MAN 6900: Capstone Project**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* MIB student

Analyzing a global company using a series of questions in three strategic module assignments. Explicit questions in the assignments are designed to help students define the company, analyze the industry in which it operates, perform an internal analysis of the company/division, and define the strategies and company organization.

**MAN 6905: Individual Work in Management**

**Credits: 1-5    Max: 10                    Grading Scheme: Letter**

*Prerequisite:* departmental approval.

Reading and/or research in management.

**MAN 6910: Supervised Research**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**MAN 6930: Special Topics**

**Credits: 1-3    Max: 12                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor/department.

Topics not offered in other courses and of special current significance.

**MAN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**MAN 6957: International Studies in Management**

**Credits: 1-4    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program, and departmental approval.

**MAN 6958: International Study Program**

**Credits: 1-6    Max: 6            Grading Scheme: S/U**

*Designed for master's students in business administration. Integrative experience in international business through onsite visits to major industries and related governmental and nongovernmental organizations.*

**MAN 6973: Project in Lieu of Thesis**

**Credits: 1-4    Max: 4            Grading Scheme: Letter**

**MAN 7108: Seminar in Research Concepts and Methods in Management**

**Credits: 1-3            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Design, execution, and evaluation of research in organizational behavior, human resource management, strategic management, and organization theory.

**MAN 7109: Seminar in Motivation and Attitudes**

**Credits: 1-3            Grading Scheme: Letter**

Various motivation theories, including expectancy and equity theories. Job satisfaction and other work attitudes, and their effects on individuals and organizations.

**MAN 7146: Seminar in Leadership**

**Credits: 1-3    Max: 3            Grading Scheme: Letter**

Theoretical and empirical work in leadership theory. Various theories including Ohio State studies, trait theory, LPC theory, path-goal theory, substitutes for leadership, and transformational/charismatic leadership theory.

**MAN 7207: Seminar on Foundations of Organizational Theory**

**Credits: 1-3**

**Grading Scheme:** Letter

Classical models of organizations as coordination and control mechanisms. Organizational boundaries, political processes, and contingency theory.

**MAN 7208: Seminar in Contemporary Approaches to Organizations**

**Credits: 1-3**

**Grading Scheme:** Letter

Recent organizational views such as population ecology, economic approaches to organizational design and control, organizations and technology, and network firms.

**MAN 7267: Seminar on Groups and Teams Research**

**Credits: 1-3**

**Grading Scheme:** Letter

Emerging research on groups and teams in organizations. Classic and contemporary theories and research on team composition and team performance.

**MAN 7275: Organizational Behavior**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Individual and group behavior.

**MAN 7328: Seminar on Staffing and Selection**

**Credits: 1-3**

**Grading Scheme:** Letter

Theory and methods that organizations use to staff their positions.

**MAN 7778: Seminar in Strategic Adaptation to Environment**

**Credits: 1-3**

**Grading Scheme:** Letter

How organizations make decisions to cope effectively with their environments. Theory and research on how firms operate in their environments, such as theories of the firm, resource and knowledge-based views of organizations, and various strategic choices.

**MAN 7779: Strategic Processes and Structure in Organizations**

**Credits: 1-3    not repeatable for credit**

**Grading Scheme:** Letter

Theories and research on how organizations implement strategic choices, covering decision making, corporate governance and control, strategy/structure issues, compensation strategies, and strategic change.

**MAN 7933: Seminar in Management**

**Credits: 3    Max: 9**

**Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Research topics and literature in strategic aspects of decision making.

**MAN 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the



field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**MAN 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**MAP 5304: Intermediate Differential Equations for Engineers and Physical Scientists**

**Credits: 3**

**Grading Scheme: Letter**

**MAP 5345: Introduction to Partial Differential Equations**

**Credits: 3**

**Grading Scheme: Letter**

**MAP 5489: Modeling in Mathematical Biology**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* undergraduate course in ordinary differential equations.

Mathematical models of biological systems. Models of growth, predator-prey populations, competition, chemostat, epidemics, excitable systems, and analytical tools such as linearization, phase-plane analysis, Poincare-Bendixson theory, Lyapunov functions, and bifurcation analysis.

**MAP 6208: Numerical Optimization**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* MAD 6406 and MAD 6407 or consent of instructor.

Unconstrained and constrained optimization, linear and nonlinear programming, gradient, multiplier, and quasi-Newton methods. Penalty, multiplier, and projection methods for constrained problems.

### **MAP 6327: Applied Differential Equations I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAA 5229.

Theory and methods for solving linear and nonlinear systems of differential equations and partial differential equations. Applications and computer techniques included.

### **MAP 6356: Partial Differential Equations I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAA 5229, MAP 5345 or MAP 6506.

Cauchy-Kowalewski theorem, first order equations, classification of equations, hyperbolic equations, elliptic equations, parabolic equations, hyperbolic systems, nonlinear hyperbolic systems, existence theory based on functional analysis. Applications to physical sciences.

### **MAP 6357: Partial Differential Equations II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 6356.

### **MAP 6375: Numerical Partial Differential Equations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAD 6406 and MAD 6407 or consent of instructor.

Introduction to partial differential equations and fundamental concepts. Parabolic equations: finite differences, consistency, convergence and stability, 2- and 3-dimensional problems. Elliptic equations: finite differences, solution to linear equations, boundary integral equation methods. Hyperbolic equations: finite differences and method of characteristics. Introduction to finite elements. Methods of lines.

### **MAP 6376: Finite Element Method**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAD 6406 and MAD 6407 or consent of instructor.

Variational formulations of partial differential equations, finite element approximations; addresses theoretical framework and numerical issues. Finite element spaces in one, two, and three dimensions. Error analysis. Nonconforming finite element spaces. Isoparametric approximations to boundary conditions.

### **MAP 6467: Stochastic Differential Equations and Filtering Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to random functions; Brownian motion process. Ito's stochastic integral; Ito's stochastic calculus; stochastic differential equations. Linear filtering; Kalman filtering; nonlinear filtering theory.

### **MAP 6468: Stochastic Differential Equations and Filtering Theory II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 6467.

### **MAP 6472: Probability and Potential Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAA 5229 or STA 6326.

Random variables, independence and conditioning. Laws of large numbers and the Central Limit Theorem. Stochastic processes, martingales, Gaussian processes, Markov processes, potentials and excessive functions.

### **MAP 6473: Probability and Potential Theory II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 6472

### **MAP 6487: Biomathematics Seminar I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAC 2312, MAP 2302, STA 6326 or MAP 4102.

Stochastic processes, differential equations, and reaction-diffusion equations used to model various biological processes. Among the applications covered are the following: population dynamics, epidemiology, genetics, enzyme kinetics, cell differentiation and morphogenesis, nerve impulse generation, and aggregation of slime mold. The course is designed to benefit graduate students in biological sciences, as well as mathematics.

### **MAP 6488: Biomathematics Seminar II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 6487.

Continuation of MAP 6487.

### **MAP 6505: Mathematical Methods of Physics and Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAA 5404, MAP 5304, MAP 5345, MAS 5157 or equivalent.

Orthogonal functions; theory of distributions; integral equations; eigenfunctions and Green's functions; special functions; boundary and initial value problems, with emphasis on potential theory (Laplace and Poisson equations); the wave equation; and the diffusion equation.

### **MAP 6506: Mathematical Methods of Physics and Engineering II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 6505.

### **MAP 6941: Internship in Applied Mathematics**

**Credits: 1-5    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* consent of supervisory committee chair.

Mathematical research on projects sponsored by a university laboratory or an off-campus industrial internship program.

**MAP 7436: Seminar in Applied Mathematics I**

**Credits: 3    Max: 6                    Grading Scheme: Letter**

Various topics in applications of mathematics both classical and in areas of current research.

**MAP 7437: Seminar in Applied Mathematics II**

**Credits: 3    Max: 6                    Grading Scheme: Letter**

**MAR 5805: Problems and Methods in Marketing Management**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* ACG 5065, QMB 5303. Designed for MBA students.

Concepts and techniques for resolving marketing management problems through the case method.

**MAR 5806: Problems and Methods in Marketing Management**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* ACG 5065, QMB 5305.

Concepts and techniques for resolving marketing management problems through the case method.

**MAR 6157: International Marketing**

**Credits: 2**                      **Grading Scheme:** Letter

*Designed for M.B.A. students. Analysis and strategies for international environment.*

**MAR 6158: International Marketing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5805. Designed for M.B.A. students.

Analysis and strategies for marketing in the international environment.

**MAR 6237: The Art and Science of Pricing**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MBA students.

Providing students with a good understanding of the strategy and tactics for an effective pricing decision. By the end of the course, students will be able to explain underlying mechanisms for the current pricing practices and apply their knowledge in improving pricing decisions.

**MAR 6256: Strategy and Tactics of Pricing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MBA students.

Providing students with a good understanding of the strategy and tactics for an effective pricing decision. By the end of the course, students will be able to explain underlying mechanisms for the current pricing practices and apply their knowledge in improving pricing decisions.

**MAR 6335: Building and Managing Brand Equity**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* QMB 5304, QMB 5305, MAR 5805.

Product and brand management decisions needed to build, measure, and manage branded equity. Focal objectives are to increase understanding of important issues in planning and evaluating brand strategies and to provide the appropriate theories, models, and other tools to make better branding decisions.

**MAR 6456: Business-to-Business Marketing**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5805.

Strategy concepts for marketing products and services to other businesses; institutions such as hospitals and universities, and government. Role of marketing strategy as part of overall business strategy. Developing and launching new products, managing channels of distribution and sales forces, and building and maintaining alliances and partnerships.

**MAR 6508: Customer Analysis**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5806. Designed for M.B.A. students.

Theory and research in the behavioral and social sciences applied to individual and aggregate behavior of consumers.

**MAR 6646: Marketing Research for Managerial Decision Making**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5805 and QMB 5303. Designed for M.B.A. students.

Examination of approaches and methods of marketing research with particular attention given to the perspective of the marketing manager.

**MAR 6648: Marketing Research for Managerial Decision Making**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5806 and QMB 5305. Designed for M.B.A. students.

Examination of approaches and methods with particular attention given to the perspective of the marketing manager.

### **MAR 6722: Web-Based Marketing**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Master's students in Warrington College of Business Administration and for students who either pursue a career in online business or have general interest in the current marketing environment. Designed for MBA students.

Provides an understanding of the current online marketing environment and the strategies and tactics of web-based marketing.

### **MAR 6725: Introduction to Electronic Commerce**

**Credits: 3                      Grading Scheme: Letter**

### **MAR 6816: Advanced Marketing Management (MBA)**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAR 5805. Designed for M.B.A. students.

Advanced case course dealing with the wide range of strategic problems faced by the marketing manager.

### **MAR 6818: Advanced Marketing Management**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* MAR 5806.

Advanced cases dealing with the wide range of strategic problems faced by the marketing manager.

### **MAR 6833: Product Development and Management**

**Credits: 2                      Grading Scheme: Letter**



*Prerequisite: Intended for masters students*

Management of new product development process including identifying new product opportunities, product concept testing, market feasibility analysis, prototype development, market testing, and commercialization.

#### **MAR 6834: Marketing of Science and Technology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5806 or consent of instructor.

Applying special marketing techniques and strategies to discoveries, inventions, and innovations embodied in products, services, and intellectual property. Emphasizes the particular characteristics of engineering- and science-driven market offerings.

#### **MAR 6835: Marketing of Science and Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5805.

Applying specialized marketing techniques and strategies to discoveries, inventions, and innovations embodied in products, services, and intellectual property. Focuses on particular characteristics of engineering- and science-driven market offerings.

#### **MAR 6837: Consumer-Centered Product Design**

**Credits: 3**                      **Grading Scheme:** Letter

Project-based. Elaboration on product-development model introduced in core marketing course. Focus on intersection of marketing, engineering, and design.

#### **MAR 6861: Customer Relationship Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MAR 5806.

Conceptual foundations, analytical techniques and marketing tactics for managing customer relationships.

### **MAR 6862: Customer Relationship Management**

**Credits: 3                      Grading Scheme: Letter**

Acquiring, building, and maintaining mutually beneficial relationships with customers. The customer as a financial asset that companies should measure, manage, and maximize.

### **MAR 6905: Individual Work**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* departmental approval.

Reading and/or research.

### **MAR 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **MAR 6930: Special Topics in Marketing**

**Credits: 1-4    Max: 16                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Selected topics in marketing management, research, or theory.

### **MAR 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**MAR 6957: International Studies in Marketing**

**Credits: 1-4    Max: 12                    Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and departmental approval.

**MAR 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**MAR 6973: Project in Lieu of Thesis**

**Credits: 3                    Grading Scheme: S/U**

**MAR 7507: Perspectives on Consumer Behavior**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* graduate standing or consent of instructor.

In-depth analysis of the field. Critically examines various theoretical and methodological approaches through marketing and consumer behavior literatures. Students must develop an original research project.

**MAR 7588: Consumer Information Processing and Decision Making**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MAR 7507 or consent of instructor.

In-depth treatment of consumer information processing and choice behavior as a function of psychological and environmental factors. Underlying concepts and theories of individual judgment and decision making; critical evaluation of research in this area.

### **MAR 7589: Judgment and Decision Making**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Literature review related to psychology of judgment and decision making. Discussion of normative and descriptive theories of decision making and empirical evidence that speaks to those theories.

### **MAR 7626: Multivariate Statistical Methods in Marketing**

**Credits: 3                      Grading Scheme: Letter**

Review of application of multivariate methods including multiple regression; factor discriminant and cluster analysis; and conjoint measurement to summarize and analyze marketing data.

### **MAR 7636: Research Methods in Marketing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* admission to Ph.D. in marketing or consent of instructor.

Experimental and quasi-experimental design; procedures for laboratory and field experiments; statistical conclusion, internal, external, and construct validity in research design; reliability and validity in measurement; creativity in hypothesis generation and theory testing in behavioral research.

### **MAR 7666: Marketing Decision Models**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ECO 7408 and departmental approval.

Development and implementation of model-based approaches to marketing decision making. Model-based analysis of advertising, pricing, promotion, distribution. Research project.

### **MAR 7786: Marketing Literature**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* admission to Ph.D. in marketing or consent of instructor.

Survey of academic marketing literature, with special focus on conceptual and empirical studies of marketing strategy and marketing program variables.

### **MAR 7925: Workshop in Marketing Research**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* consent of department.

In-depth analysis of current research topics. Emphasis on research programs of leading scholars. Students critically appraise the rationale, strengths, and weaknesses of each study.

### **MAR 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **MAR 7980: Research for Doctoral Dissertation**

**Credits: 1-15                      Grading Scheme: S/U**

### **MAS 5311: Introductory Algebra I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MAS 4105 and 4302.

The basic algebraic systems: groups, rings, vector spaces, and modules. Linear transformations, matrices, and determinants.

### **MAS 5312: Introductory Algebra II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 5311.

### **MAS 6331: Algebra I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 5312.

Solvable and nilpotent groups, Jordan-Holder theorem, abelian groups, Galois theory, Noetherian rings, Dedekind domains, Jacobson radical, Jacobson density theorem, Wedderburn-Artin theorem.

### **MAS 6332: Algebra II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 6331.

### **MAS 7215: Theory of Numbers I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 2 of MAA 6407, MAA 6617, MAS 6332.

Introduction to theory of numbers; theorems on divisibility; congruence, number-theoretic functions; primitive roots and indices; quadratic reciprocity law; Diophantine equations and continued functions.

### **MAS 7216: Theory of Numbers II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAS 7215.

**MAS 7396: Advanced Topics in Algebra I**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* MAA 6407, MAA 6617, MAS 6332 or MTG 6347.

Current topics in algebra.

**MAS 7397: Topics in Algebra II**

**Credits: 3                    Grading Scheme:** Letter

**MAT 6905: Individual Work**

**Credits: 3    Max: 9            Grading Scheme:** Letter

**MAT 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme:** S/U

**MAT 6932: Special Topics in Mathematics**

**Credits: 3    Max: 9            Grading Scheme:** Letter

*Prerequisite:* consent of graduate adviser, who should be consulted well in advance of registration.

**MAT 6971: Research for Master's Thesis**

**Credits: 1-15                Grading Scheme:** S/U

**MAT 7979: Advanced Research****Credits: 1-12****Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**MAT 7980: Research for Doctoral Dissertation****Credits: 1-15****Grading Scheme: S/U****MCB 5205: Microbiology of Human Pathogens****Credits: 3****Grading Scheme: Letter**

Surveying advanced topics and current scientific literature related to human host-pathogen interactions and microbial pathogenesis, focusing on emerging bacterial and viral pathogens as agents of human disease, biosecurity, molecular identification methods, spread of multi-drug resistance among bacterial pathogens, drug discovery and alternative treatment research.

**MCB 5252: Microbiology, Immunology, and Immunotherapeutics****Credits: 4****Grading Scheme: Letter**

*Prerequisite:* CHM 2210, 2211, and consent of instructor.

Microbiology and immunology for pharmacy students. Microorganisms and infection, control with antimicrobials, host immune response, immune disorders.



### **MCB 5305L: Microbial Genetics and Biotechnology Laboratory**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3023/3023L and 4303 or PCB 4522 with grade of C or higher.

Methods for mutagenesis, gene transfer and genetic mapping, plasmid isolation, restriction enzyme use, construction of chimeric (recombinant) plasmids, phage isolation and preparation.

### **MCB 5408: Anaerobic Microbiology and Biotechnology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3023/3023L, and BCH 4024 or CHM 4207.

Structure, physiology, metabolism, and biotechnology of anaerobes.

### **MCB 5458: Energy Transformation in Microorganisms**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* C or better in MCB 3020L; CHM 4207, BCH 3025, or 4024.

Energy transformations of dissimilatory and assimilatory processes in microorganisms with emphasis on regulation and energy cycles. Applications to microbial energy transformations to low energy technology.

### **MCB 5505: General Virology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3020/3020L and 4203 with grade of C or higher.

Basic information on families of viruses from humans, plants, insects, animals, and bacteria. Medical, clinical, diagnostic, biotechnological, and molecular aspects of these viruses.

### **MCB 6317: Molecular Biology of Gene Expression**

**Credits: 1**                      **Grading Scheme:** Letter

Synthesis, processing, transport, and translation of RNA in microorganisms and eukaryotes. Additional topics include epigenetic regulation of gene expression.

### **MCB 6318: Comparative Microbial Genomics**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 4522 and a working knowledge of basic bioinformatic tools.

Methods to allow experimental scientists to efficiently use genomic and post-genomic data that is publicly available. Examples taken primarily from the field of microbial metabolism and regulation.

### **MCB 6355: Microbial/Host Defense**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 4203 and PCB 5235: Immunology or equivalents, with the minimum grade of a C.

Principles of host defense to microbial invasion in a context of cellular biology involving both plants and animals.

### **MCB 6409: Microbial Cell Structure and Function**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate biochemistry and microbiology and consent of instructor.

Review of current knowledge concerning structure, function, and biosynthesis of microbial cells.

### **MCB 6417: Microbial Metabolism and Energetics**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 4403 and BCH 4024 or CHM 3218 or equivalent.

Principles of energy and biosynthetic metabolism in aerobic and anaerobic microorganisms. Current biotechnology which incorporates these principles.

### **MCB 6457: Metabolic Regulation**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* MCB 4403 and BCH 4024 or CHM 3218 or equivalent.

Environmental sensing and mechanisms of microbial response. Molecular signaling, regulation of genetic information at posttranscriptional and transcriptional levels, effects on metabolism and physiology.

### **MCB 6465: Microbial Metabolic Engineering**

**Credits: 1                      Grading Scheme:** Letter

*Prerequisite:* MCB 4403 and BCH 4024 or CHM 3218 or equivalent.

Principles of anaerobic fermentation and its role in production of fuels and chemicals from various feedstocks including lignocellulosic biomass. Evaluation of methods of depolymerization of complex carbohydrate feedstocks to simple sugars for fermentation.

### **MCB 6485: Advanced Techniques in Microbiology and Cell Science**

**Credits: 2-4    Max: 4                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Application of advanced techniques to experimental research in biochemistry, cell biology, and microbiology.

### **MCB 6772: Advanced Topics in Cell Biology**

**Credits: 1                      Grading Scheme:** Letter

In each semester a specific topic in cell biology with microbiological interest will be considered in a comparative discussion of animal and plant systems.

### **MCB 6905: Experimental Microbiology**

**Credits: 1-8    Max: 12                      Grading Scheme:** Letter, H

*Prerequisite:* eight credits in microbiology and cell science.

Application of physical, chemical and biological techniques to experimental problems in microbiology. Individual laboratory study.

**MCB 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**MCB 6930: Seminar**

**Credits: 1    Max: 8            Grading Scheme: S/U**

Attendance required of all graduate majors at all research presentations.

**MCB 6937: Special Topics in Microbiology**

**Credits: 1-4    Max: 12            Grading Scheme: Letter**

Contemporary research in a particular aspect of general microbiology.

**MCB 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**MCB 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**MCB 7922: Journal Colloquy**

**Credits: 1    Max: 8            Grading Scheme: Letter**

Critical presentation and discussion of recent original articles in the microbiological literature. Attendance required.

**MCB 7979: Advanced Research**

**Credits: 1-12                  Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**MCB 7980: Research for Doctoral Dissertation**

**Credits: 1-15                  Grading Scheme: S/U**

**MET 5504: Weather and Forecasting**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* familiarity with basic meteorology.

Skill development in predicting and discussing daily weather patterns using meteorological instruments to collect data and analyze weather events.

**MET 6530: Hurricanes**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* familiarity with basic meteorology.

Meteorological and climatological concepts related to hurricanes. Forecasting current activity; researching past storms; and analyzing storm structure, damage, and future trends.

### **MET 6565: Seminar in Atmospheric Teleconnections**

**Credits: 3**                      **Grading Scheme: letter**

Atmospheric teleconnections are recurring large-scale patterns of pressure and circulation anomalies. They can influence temperature, rainfall, storm tracks, and jet stream location/ intensity. We will examine how these patterns were discovered, how the index that characterizes the phase of each teleconnection is calculated, and the weather associated with different phases.

### **MET 6752: Atmospheric Data Analysis**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* MET 5504 or MET 6530, or consent of instructor.

How atmospheric data is collected and analyzed both for meteorologic and climatologic-scale research. Learn where to obtain various types of data and how to analyze data to answer specific research questions.

### **MHF 5107: Introduction to Set Theory**

**Credits: 3**                      **Grading Scheme: Letter**

Basic axioms and concepts of set theory, axiom of choice, Zorn's lemma, Schroder-Bernstein theorem, cardinal numbers, ordinal numbers, and the continuum hypothesis.

### **MHF 5207: Foundations of Mathematics**

**Credits: 3**                      **Grading Scheme: Letter**

Models and proofs. Foundations of the real and natural number systems. Algorithms. Turing Machines, undecidability and independence. Examples and applications in algebra, analysis, geometry, and topology.

**MHF 6306: Mathematical Logic I**

**Credits: 3**                      **Grading Scheme:** Letter

Languages, models, and theories; Godel's completeness and incompleteness theorems; formal number theory and axiomatic set theory; applications to other areas of mathematics.

**MHF 6307: Mathematical Logic II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHF 6306.

**MHS 5005: Introduction to Counseling**

**Credits: 3**                      **Grading Scheme:** Letter

**MHS 6000: Assessment and Treatment of Family Violence**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6401.

Clinically oriented, research-based overview of assessing and treating family violence.

**MHS 6020: Counseling in Community Settings**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 7800.

**MHS 6061: Spiritual Issues in Multicultural Counseling**

**Credits: 3**                      **Grading Scheme:** Letter

Spiritual/religious/transpersonal issues expressed in counseling from both client and counselor perspective.

**MHS 6071: Diagnosis and Treatment of Mental Disorders**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6400, MHS 6401.

**MHS 6200: Assessment in Counseling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* course in basic statistics.

**MHS 6340: Career Development**

**Credits: 3**                      **Grading Scheme:** Letter

**MHS 6401: Counseling Theories and Applications**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 5005.



**MHS 6421: Play Counseling and Play Process with Children**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MHS 6401.

**MHS 6428: Multicultural Counseling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MHS 6401.

**MHS 6430: Introduction to Family Counseling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MHS 6401, MHS 7800.

**MHS 6440: Marriage Counseling**

**Credits: 3                      Grading Scheme: Letter**

**MHS 6450: Substance Abuse Counseling**

**Credits: 3                      Grading Scheme: Letter**

**MHS 6464: Introduction to Disaster Mental Health Counseling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Mental health professional licensure OR state certification in school counseling

Providing an overview of the history, theories, and interventions associated with disaster mental health counseling. Special attention will be paid to working with culturally diverse individuals and other vulnerable client populations. Topics will include characteristics and outcomes of natural and human-made disasters, traumatic stress, and compassion fatigue.

#### **MHS 6466: Trauma and Crisis Intervention: Theory and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Theories and practice models related to trauma and crisis intervention.

#### **MHS 6467: Disaster Mental Health Counseling and Vulnerable Populations**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Mental Health Professional Licensure OR State Certification in School Counseling AND MHS 6464 Disaster Mental Health Counseling, MHS 6468 Multicultural Issues in Disaster Mental Health Counseling, and MHS 6469 Traumatic Stress and Disaster Mental Health Counseling.

Treatment planning for children, the elderly, and clients with physical and mental disabilities during disaster response. Specific attention will be paid to contextualizing clients' needs within a historical, cultural, and social context. Specific tools for individual, family, and community interventions will be covered.

#### **MHS 6468: Multicultural issues in disaster mental health counseling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Mental health professional licensure or state certification in school counseling and MHS 6464

Focusing on counselor efficacy and expediency during service provision to culturally diverse disaster-affected communities. Course content covers culturally diverse perspectives on resilience and coping, counselor expectations as barriers to competence, and systemic oppression.

#### **MHS 6469: Traumatic Stress and Disaster Mental Health Counseling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Mental health professional licensure OR state certification in school counseling AND MHS 6464

Introduction to Disaster Mental Health Counseling and MHS 6468 Multicultural Issues in Disaster Mental Health Counseling

Extending the counselor education curriculum by providing professional development training for licensed/certified mental health professionals. This course is positioned in the latter segment of the disaster mental health counseling sequence, following the introductory and multicultural courses.

**MHS 6471: Sexuality and Mental Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6400, MHS 6401.

**MHS 6480: Developmental Counseling Over the Life Span**

**Credits: 3**                      **Grading Scheme:** Letter

**MHS 6495: Counseling Lesbian, Gay, Bisexual, and Transgender Clients**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 5005, MHS 6401; or EDA 6931 Diversity Issues in Higher Education and EDA 6931 Theory and Assessment of Student Development.

Explores lesbian, gay, bisexual, and transgender (LGBT) identity formation and theory, vocabulary, resources, and developmental life stages.

**MHS 6500: Group Counseling: Theories and Procedures**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6401.

**MHS 6602: Educational Mediation**

**Credits: 3                      Grading Scheme: Letter**

Negotiation and mediation in educational and other settings.

**MHS 6705: Professional, Ethical, and Legal Issues in Marriage and Family Counseling**

**Credits: 3                      Grading Scheme: Letter**

**MHS 6720: Professional Identity and Ethics in Counseling**

**Credits: 3                      Grading Scheme: Letter**

**MHS 6831: Supervision for a Split Internship**

**Credits: 3    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* adviser's consent, completion of practicum sequence, and written application to internship coordinator at least 6 weeks before registering.    *Corequisite:* MHS 7804, MHS 7807, SDS 7820, or 7802.

Required first enrollment for students participating in internship over two semesters.

**MHS 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor and graduate coordinator; approval of proposed project.

**MHS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**MHS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**MHS 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**MHS 7402: Brief Therapy**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* 24 graduate-level credits in counseling and/or psychology, successful completion of practicum.

Examines contemporary theories of brief counseling and psychotherapy. Survey of theories, emphasizing application and research.

**MHS 7407: Advanced Counseling Theories**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* enrollment in doctoral program.

Advanced preparation in individual, group, career, multicultural, and ecosystemic (marriage and family) theories of counseling.

**MHS 7431: Advanced Family Counseling**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* MHS 6430.

**MHS 7600: Consultation Procedures**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 7800.      *Corequisite:* registration in practicum or internship.

**MHS 7610: Practicum in Counseling Supervision**

**Credits: 4**    **Max: 8**                      **Grading Scheme:** S/U

*Prerequisite:* MHS 6401, adviser's consent, and written application to practicum coordinator at least 6 weeks before registration. Open only to advanced doctoral students.

**MHS 7730: Seminar in Counseling Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* satisfactory completion of EDF 6403.

Issues in designing and implementing counseling and psychotherapy dissertation research.

**MHS 7740: Research in Counseling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6200.

**MHS 7800: Practicum in Counseling**

**Credits: 4**                      **Grading Scheme:** S/U

*Prerequisite:* MHS 6401, adviser's consent, and written application to practicum coordinator at least 6 weeks before registration.

#### **MHS 7804: Group Supervision in Agency Counseling**

**Credits: 3    Max: 15    Grading Scheme: S/U**

*Prerequisite:* written application to practicum/internship coordinator at least 6 weeks before registration.

*Corequisite:* MHS 7800, 6805; SDS 7380 or MHS 6831.

Clinical aspects of intervention for children and adults who have language disabilities, focusing on identification, diagnosis, and treatment of emergent literacy and language disorders.

#### **MHS 7805: Practicum in Agency Counseling**

**Credits: 3    Grading Scheme: S/U**

*Prerequisite:* MHS 5005, MHS 6200, MHS 6401, MHS 6500, MHS 6720.    *Corequisite:* MHS 6071, 6420, MHS 6430.

#### **MHS 7806: Practicum in Marriage and Family Counseling**

**Credits: 3    Grading Scheme: S/U**

*Prerequisite:* MHS 5005, MHS 6200, MHS 6401, MHS 6500, MHS 6720.    *Corequisite:* MHS 6071, 6420, MHS 6430.

#### **MHS 7807: Group Supervision in Marriage and Family Counseling**

**Credits: 3    Max: 15    Grading Scheme: S/U**

*Prerequisite:* written application to practicum/internship coordinator at least 6 weeks before registration.

*Corequisite:* MHS 7800, MHS 7806; SDS 7830 or MHS 6831.

#### **MHS 7830: Internship in Counseling and Development-600 Hours**

**Credits: 5    Max: 15    Grading Scheme: S/U**

*Prerequisite:* adviser's consent, completion of all practica required for M.Ed. or Ed.S. degree, and written application to internship coordinator at least 6 weeks before registering.

**MHS 7840: Internship in Counselor Education**

**Credits: 6    Max: 12            Grading Scheme: S/U**

*Prerequisite:* written application to internship coordinator at least 6 weeks before registration. Open only to advanced doctoral students.

**MHS 7946: Internship in Agency Program Management**

**Credits: 6    Max: 12            Grading Scheme: S/U**

*Prerequisite:* written application to internship coordinator at least 6 weeks before registration. Open only to advanced doctoral students.

**MHS 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

*Prerequisite:* research for doctoral students before admission to candidacy.

Designed for students with a master's degree in the field of study or for students who have been admitted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**MHS 7980: Research for Doctoral Dissertation**

**Credits: 1-15            Grading Scheme: S/U**

**MMC 5005: Mass Communication History**

**Credits: 3            Grading Scheme: Letter**

Origin, development, and potentiality of print and electronic media. Evolution of standards, policies, methods, controls.



### **MMC 5006: Introduction to Multimedia Communication**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* No prerequisites. Open to Graduate Students Only.

Introducing media, journalism and communication themes, issues and how to's of an integrated approach to new multi-media communications to ensure the brand message reaches its intended audience. Taking a real-world viewpoint, students examine the various channels available to communication professionals.

### **MMC 5015: Electronic Publishing**

**Credits: 3**                      **Grading Scheme:** Letter

Services and technology of major forms of electronic publishing and videotex. Nature and economics of information. Impact of new mass communication technologies.

### **MMC 5206: Advanced Law of Mass Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Problems of constitutional law, libel, privacy, and governmental regulation. Not open to students who have taken MMC 4200 or equivalent.

### **MMC 5277: Web Design Principles**

**Credits: 4**                      **Grading Scheme:** Letter

Completing the course will allow students to be comfortable creating, coding and posting basic HTML and CSS files to the Internet. Gaining a foundational knowledge of website creation and apply it to the planning, design and development of your own web page over the course of the semester.

### **MMC 5306: International Communication**

**Credits: 3                      Grading Scheme: Letter**

Analysis and comparison of print and electronic communication systems among nations and cultures; barriers and stimuli to international communications; mass media in national development.

**MMC 5315: Survey of Foreign Correspondence**

**Credits: 3                      Grading Scheme: Letter**

Nature and history of foreign correspondence. Impact on nations and international relations.

**MMC 5427: Research Methods in Digital Communication**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* None.

Teaching research techniques crucial for understanding Web audiences. Specific tools and techniques of applied research are discussed and students do a research project.

**MMC 5636: Introduction to Social Media**

**Credits: 3                      Grading Scheme: Letter**

Social media and internet marketing have given businesses a new way to brand, promote and sell, allowing them to grow and shift their marketing efforts. Explore the various ways consumers communicate online and discuss how businesses may join the conversation. Students design and implement a social media marketing plan.

**MMC 5708: Foundations of Intercultural Communication**

**Credits: 3-4    Max: 4                      Grading Scheme: Letter**

Theory and practice of intercultural communication.

### **MMC 6145: Web Interactivity and Engagement**

**Credits: 3                      Grading Scheme: Letter**

Provides the student with an understanding of the most practical tool of a web manager, the content management system (CMS). Using WordPress, you will gain an understanding of CMSs and how they are valuable tools for saving time and handling large amounts of data. You will also learn more about server scripting using PHP and database integration with MySQL

### **MMC 6202: Legal Problems of Mass Communication**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MMC 5206 or previous research or equivalent.

Constitutional interpretation, conflicts between media and rights of others, regulation, the nature of jurisprudence.

### **MMC 6205: Social Media Ethics**

**Credits: 3                      Grading Scheme: Letter**

Introduces students to critical issues, including accuracy, privacy and trust. Social media ethics is an ever evolving area of study and issues will be explored using real life case studies, readily updated. Issues will be discussed in relation to how they impact social media content and the relationships between communications organizations and their audiences.

### **MMC 6213: Strategic Communication Ethics and Concepts**

**Credits: 3                      Grading Scheme: Letter**

Introduces strategic communication's fundamentals and ethical issues arising from its practice. Students are given a background in concepts such as branding, target audiences, technologies, and historical evolution. Armed with this

knowledge, students are introduced to the schools of ethical thought, and via assignments apply these to real-world contexts.

### **MMC 6278: Advanced Web Topics II**

**Credits: 4                      Grading Scheme:** Letter

*Prerequisite:* MMC 5326--Digital Design, MMC 6936 Web Design Principles, VIC 5325 --Digital Imagery, VIC 5315 --Corporate Brand Identity, COM 6338 --Advanced Web Design 1

This class will be teaching students about the concept of the semantic web, the features of HTML5 and CSS3 that are used professionally, and the concept of "progressive enhancement". It will also explore, in depth, JavaScript, the integration of third-party APIs, jQuery, and some of the essential jQuery plugins.

### **MMC 6307: Seminar in International Communication**

**Credits: 4    Max: 8                      Grading Scheme:** Letter

*Prerequisite:* MMC 5306 or equivalent, and consent of instructor.

Specialized or regional aspects of international communication; in-depth investigation of particular concepts and research literature. Student research required.

### **MMC 6400: Mass Communication Theory**

**Credits: 3                      Grading Scheme:** Letter

Structure, content, process, effects of communication; contributions of other disciplines; barriers to effective communication; use of research concepts.

### **MMC 6402: Seminar in Mass Communication Theory**

**Credits: 4    Max: 16                      Grading Scheme:** Letter

*Prerequisite:* MMC 6400, MMC 6421, or equivalents, statistics, and consent of instructor.

Specialized aspects of mass communication theory; in-depth investigation of particular concepts and research literature. Student research required.

### **MMC 6405: Seminar in Mass Communication and Public Opinion**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 6400, MMC 6421 or equivalents, and consent of instructor.

Conceptualizations of public opinion as a collective process. The role of mass communication in describing and shaping perceptions of public opinion. Student research required.

### **MMC 6409: Science/Health Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of the field of mass communication. Nexus of scientists, journalists, public information officers and audiences. Topics include science literacy, framing of science, issues, public involvement, and the impact of science communication on policy.

### **MMC 6417: Seminar in Mass Media and Health**

**Credits: 3**                      **Grading Scheme:** Letter

Mass communication and health communication theories examined as they related to intended and unintended effects on individual behavior and on public health policy. Focus on effects other than those associated with mass mediated public health campaigns.

### **MMC 6421: Research Methods in Mass Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to experiments, surveys, content analysis, sampling, measurement. Laboratory applications.

### **MMC 6423: Content-Analysis Methods**

**Credits: 3                      Grading Scheme: Letter**

Sampling, category construction, calculation of intercoder reliability, and analysis of data. Evaluation of content analysis methods and opportunity to undertake project using this methodology. Focus on analysis of mass media messages, but includes content analysis of other communication content.

**MMC 6426: Seminar in Qualitative Research**

**Credits: 4                      Grading Scheme: Letter**

Theory and application in social science and communication. Qualitative data analysis, evaluation, ethical considerations, and writing.

**MMC 6428: Collaborative Communication Research**

**Credits: 4    Max: 8                      Grading Scheme: Letter**

Experience in conducting team research. Student-faculty teams select and work through projects with intent to produce scholarly work for conference presentation, publication, or research grant proposal.

**MMC 6429: News and Numbers**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite: None.*

Learn to develop and evaluate how numbers and statistics are employed in news-related content. Students will learn to critique and interpret public opinion polls. Employing various story platforms, students will work to create data-driven material in an applied media setting.

**MMC 6560: Seminar in History of Mass Communication**

**Credits: 4    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* JOU 5007, MMC 5005, or equivalent, and consent of instructor.

Reading, critical study. Advanced investigative report on an approved research subject.

### **MMC 6612: New Media and a Democratic Society**

**Credits: 3**                      **Grading Scheme:** Letter

Relationships among new media, citizens, and governments; effects of Internet on democracy and globalization; role of journalism in democratic society.

### **MMC 6615: Race, Class, Gender, and Media**

**Credits: 3-4**    **not repeatable for credit**                      **Grading Scheme:** Letter

Examination of race, class, and gender portrayals in media, from critical and cultural studies perspectives.

### **MMC 6618: Survey of Political Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Role of communication in political process, including study of news coverage of political events, political advertising, political debates, international political communication, and politics and new technologies.

### **MMC 6619: Seminar in Political Advertising**

**Credits: 3**                      **Grading Scheme:** Letter

Role of advertising in politics. Political advertising theories, research on negative advertising, political advertising and women candidates, international political advertising, and news media coverage of political advertising.

**MMC 6638: Global Activism and Social Change Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Delves into activism and social change from a global perspective to enhance student understanding of social change as manifested via media and community action. Students will analyze and apply activist rhetoric, strategies for social justice, and methods for inter-movement organizing. They will learn engagement tools in strategic communication.

**MMC 6647: Financial Business Essentials for Communication Professionals**

**Credits: 3**                      **Grading Scheme:** Letter

Helps students in learning and applying the theoretical and practical concepts related to the business and financial responsibilities of communication professionals. Through projects and assignments students will develop a business acumen related to communication activities. It provides an understanding of these responsibilities whether employed at agencies or organizations.

**MMC 6660: Mass Communication and Society**

**Credits: 3**                      **Grading Scheme:** Letter

Rights, responsibilities, ethics of communication media; government and media; economic, political, and social determinants of media content.

**MMC 6665: Seminar in First Amendment Theory**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 5206L or equivalent, and consent of instructor.

Investigation into meaning and purpose of press, speech, petition, and assembly clauses of First Amendment. Offered in fall semester, even-numbered years.

**MMC 6666: Seminar in Research in Mass Communication Law**



**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 5206 or equivalent, and consent of instructor.

Investigation of legal research techniques for the mass communication scholar and of literature of a particular mass media law topic. Offered in fall semester, odd-numbered years.

#### **MMC 6667: Seminar in Advanced Topics in Mass Communication Law**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 6666 or LAW 5792 or equivalent, and consent of instructor.

Execution of individual or group research project on specialized topic under close supervision of instructor. Offered in spring semester, even-numbered years.

#### **MMC 6668: Seminar in Public Policy Toward Mass Media**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 5206 and RTV 5702 or equivalents, and consent of instructor.

Examination and application of major theoretical perspectives of public policy-making as they apply to the American mass media.

#### **MMC 6706: Covering the Arts**

**Credits: 3**                      **Grading Scheme:** Letter

This course focuses on fundamentals of arts coverage and marketing arts journalism pieces. It also includes critiques of arts journalism and provides an overview of current trends in the business of the arts. The class features tours of local arts venues and multiple guest speakers from the arts community.

#### **MMC 6725: Social Media and News**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MMC 5006: Introduction to Multimedia Communication, MMC 5427: Research Methods in Digital

Communication, MMC 5636: Introduction to Social Media, MMC 6400: Mass Communication Theory

This course explores questions such as: What impact does tweeting, status-updating, blogging, etc. have on society? How is the public's use of social media changing the way we work, study, socialize, vote, invest, pursue interests? What are the effects on our health, our political systems, our relationships and our careers?

### **MMC 6726: Social Media and Virtual Worlds**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MMC 5006: Introduction to Multimedia Communication, MMC 5427: Research Methods in Digital Communication, MMC 5636: Introduction to Social Media, MMC 6400: Mass Communication Theory

Introducing research and communication uses of 3D virtual environments and online games. using Second Life as a virtual platform, students will be required to create an online persona and be trained on navigating, building and communicating in the environment.

### **MMC 6727: Social Media Metrics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MMC 5006: Introduction to Multimedia Communication, MMC 5427: Research Methods in Digital Communication, MMC 5636: Introduction to Social Media, MMC 6400: Mass Communication Theory

Students gain clear foundation in marketing strategy and apply it to social media marketing. Examine international case studies and determine if social media drive incremental sales volume and earnings. Understand what the drivers of value are for a brand and how social media messages differ from messages in traditional media.

### **MMC 6728: Branding Using Social and Mobile Media**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MMC 5006: Introduction to Multimedia Communication, MMC 5427: Research Methods in Digital Communication, MMC 5636: Introduction to Social Media, MMC 6400: Mass Communication Theory

Special attention focusing on how online tools can enhance and strengthen a product or service's brand strategy. Using current case studies and step-by-step process, students will be learning to maximize the online efforts while maintaining brand continuity and consistency.

### **MMC 6730: Social Media Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MMC 5006: Introduction to Multimedia Communication, MMC 5427: Research Methods in Digital Communication, MMC 5636: Introduction to Social Media, MMC 6400: Mass Communication Theory

Practicing necessary skills for creating high-touch customer experiences, driving community across multiple social media platforms.

**MMC 6905: Individual Work**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

Reading or research.

**MMC 6910: Supervised Research**

**Credits: 1-3    Max: 5                      Grading Scheme: S/U**

**MMC 6920: Communication Proseminar**

**Credits: 1                      Grading Scheme: S/U**

*Required at beginning of each student in the law track.* Introduction to mass communication and graduate study.

**MMC 6929: Communication Colloquium**

**Credits: 2    Max: 8                      Grading Scheme: S/U**

Provides common grounding in subjects across doctoral students' research approaches. Students enroll in the fall during the first year.

**MMC 6930: Seminar in Mass Communication Teaching**

**Credits: 3                      Grading Scheme: Letter**

Research and training for teaching and supervision of student mass media.

**MMC 6936: Special Topics in Mass Communication**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* Consent of instructor or graduate adviser.

**MMC 6949: Professional Internship**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

Training in an approved mass communication office; instructor receives reports from on-site supervisor.

**MMC 6951: Masters Project Seminar**

**Credits: 1                      Grading Scheme: Letter**

Working through the process of creating a masters-level project that will showcase professional skills and serve as a capstone for a masters program. The class will assist with with conceptualizing and producing a professional quality journalism project by the last semester of the masters program.

**MMC 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**MMC 6973: Project in Lieu of Thesis**

**Credits: 1-9                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Developing, testing, and evaluating an original mass communication project.

**MMC 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**MMC 7980: Research for Doctoral Dissertation**

**Credits: 1-12                      Grading Scheme: S/U**

**MTG 5316: Introduction to Topology I**

**Credits: 3                      Grading Scheme: Letter**

Basic axioms and concepts of point-set topology, compactness, connectedness, separation axioms, metric spaces, metrization. Tietze extension theorem. Urysohn lemma, Tychonoff theorem, fundamental group.

**MTG 5317: Introduction to Topology II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MTG 5316.

### **MTG 5411: Introduction to Fractal Geometry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* advanced calculus or consent of instructor.

Introduction to techniques for generating and analyzing fractal sets. Hausdorff dimension, self-similarity, and iterated function systems. If time permits, Brownian paths, Julia sets, and Mandelbrot set.

### **MTG 5412: Introduction to Dynamical Systems and Chaos**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* advanced calculus or consent of instructor.

Introduction to nonlinear dynamical systems and chaos. One-dimensional systems, bifurcation theory, symbolic dynamics, Sarkovskii's theorem, Schwarzian derivative, Bernoulli shifts and subshifts of finite type, and kneading theory. If time permits, toral automorphisms, Henon map and complex dynamics.

### **MTG 6256: Differential Geometry I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Foundations of the theory of smooth manifolds, vector fields, and differential forms. Topics chosen from a list including differential topology, Lie groups, symplectic geometry, Riemannian geometry, and applications to physics.

### **MTG 6257: Differential Geometry II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 6256.

### **MTG 6346: Topology I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 5317.

A basic introduction to advanced topology. Topics covered include general topology, algebraic topology, homotopy theory and topology of manifolds.

### **MTG 6347: Topology II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 6346.

### **MTG 6401: Ergodic Theory and Dynamical Systems I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 5317, MAA 6617, or consent of instructor.

Periodic points, recurrence, nonwandering and chain recurrent sets, topological conjugacy, minimal sets. Topological entropy, metric entropy. Measure preserving transformations, ergodicity, mixing. Birkhoff's ergodic theorem. Bernoulli shifts. Anosov diffeomorphisms, structural stability, hyperbolic sets. Basic sets, symbolic dynamics, Markov partitions. Lyapunov exponents, KAM (Kolmogorov, Arnold, Moser) theory.

### **MTG 6402: Ergodic Theory and Dynamical Systems II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 6401.

Continuation of MTG 6401.

### **MTG 7396: Advanced Topics in Topology I**

**Credits: 3**    **Max: 6**                      **Grading Scheme:** Letter

*Prerequisite:* MTG 6347.

Topics change yearly.

### **MTG 7397: Advanced Topics in Topology II**

**Credits: 3    Max: 6            Grading Scheme: Letter**

**MUC 5315: Introduction to Electroacoustic Music**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MUC 2102 or equivalent.

Survey of techniques, history, literature, and materials of electroacoustic music.

**MUC 6444: Composition of Electronic Music**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MUC 4311 or MUC 5315.

Experimental electroacoustic art music composition using interactive software and digital recording.

**MUC 6445: Electroacoustic Music Composition: Digital I**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MUC 4401 or MUC 6444 or consent of instructor.

Introduction to direct-digital software synthesis systems through flowcharting, programming, and instrument design. Focuses on using Csound software.

**MUC 6446: Electroacoustic Music Composition--Digital II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* MUC 6445 or consent of instructor.

Continuation of MUC 6445. Composition and research in direct-digital software synthesis systems. Includes advanced instrument design, algorithmic composition, and interactive digital signal processing.



**MUC 6900: Secondary Graduate Composition**

**Credits: 3    Max: 15            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Individual music composition instruction for graduate students in music.

**MUC 6930: Graduate Composition**

**Credits: 3    Max: 6            Grading Scheme:** Letter

Composition of chamber works for instrumental and/or vocal ensembles.

**MUC 6932: Composition Seminar**

**Credits: 1-3    Max: 12            Grading Scheme:** Letter

Identifying problematic techniques in developing compositional craft for research, presentation, and discussion.

**MUC 7447: Advanced Seminar in Electroacoustic Music**

**Credits: 3            Grading Scheme:** Letter

*Prerequisite:* MUC 6446 or consent of instructor.

Composition and research in advanced topics in computer music.

**MUC 7931: Advanced Graduate Composition**

**Credits: 3    Max: 18            Grading Scheme:** Letter

Composition for large instrumental and/or vocal ensembles.

**MUC 7938: Seminar in Digital Sound Processing, Control, and Composition**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MUC 6646 or consent of instructor.

Topics in current research and digital audio theory, languages, algorithms, and applications for electroacoustic music.

**MUE 6080: Historical and Philosophical Foundations of Music Education**

**Credits: 3**                      **Grading Scheme:** Letter

Historical development and philosophy. Compares the U.S. with other countries and cultures. Individuals, associations and institutions that shape the music education program.

**MUE 6385: Music in Higher Education**

**Credits: 3**                      **Grading Scheme:** Letter

Various aspects and programs of music in higher education for persons who intend to teach in or administer departments of music.

**MUE 6399: Creative Thinking in Music**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the study of musical creativity by examining literature in and outside of music, emphasizing the process and its role in teaching/learning. The class explores how the mind works with music to produce creative results. Students engage in activities to explore the creative process and derive applications to K-12 music.

**MUE 6444: Materials and Methods of String Class Teaching**

**Credits: 2                      Grading Scheme: Letter**

Survey of materials and methods suitable for public school string classes and orchestras.

**MUE 6497: Public School Orchestral Literature**

**Credits: 2                      Grading Scheme: Letter**

Survey of materials suitable for various educational levels.

**MUE 6647: Trends in Teaching and Learning Music**

**Credits: 3                      Grading Scheme: Letter**

**MUE 6696: Technology Assisted Music Learning**

**Credits: 3                      Grading Scheme: Letter**

Exploring the role of technology in creating, performing, and responding to music, with applications to music learning/participation. A primary emphasis is the development of students' Musical Technological Pedagogical and Content Knowledge (M-TPACK). The technological focus includes notation software, MIDI, instructional programs, digital media, Internet resources, and productivity tools.

**MUE 6747: Assessing Music Learning**

**Credits: 3                      Grading Scheme: Letter**

Providing a foundation in all aspects of assessment in music teaching, from learning theory to practical application of assessment techniques, data management, critical thinking, progress reporting, and portfolio building. Assessment

task design in the artistic response modes, item, and rubric development is covered. Students develop a series of assessments.

**MUE 6785: Research in Music Education**

**Credits: 3**                      **Grading Scheme:** Letter

Materials and specialized techniques of research in music education.

**MUE 6790: Capstone Project for Music Education**

**Credits: 3**                      **Grading Scheme:** letter, S/U

*Prerequisite:* Advanced standing in the graduate program; MUE 6785 ; permission of instructor

Completing an original research project that addresses an identified issue or need within the field of music education.

**MUE 6931: Instructional Design in Music Education**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the ways in which artistic forms of understanding and reflection can be useful in designing and evaluating education programs.

**MUE 7746: Measurement and Evaluation of Music**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MUS 6685.

Examines methods and techniques for measuring and evaluating learning in music.

**MUE 7938: Music Education Seminar**

**Credits: 3                      Grading Scheme: Letter**

Contemporary issues and problems in music education. Investigating and planning research relevant to selected problems.

**MUG 6105: Graduate Conducting**

**Credits: 3    Max: 15                      Grading Scheme: Letter**

Conducting larger works from the standard repertoire for band, orchestra, and chorus.

**MUG 7106: Advanced Graduate Conducting**

**Credits: 3    Max: 15                      Grading Scheme: Letter**

*Prerequisite:* MUG 6105.

*For conducting emphasis.* Conducting major works for band, orchestra, and chorus. Emphasizes analysis and interpretation.

**MUH 5219: Graduate Music History Review**

**Credits: 3                      Grading Scheme: Letter**

*Credit earned will not apply to the credit-hour requirement of any graduate degree offered in the School of Music.*

**MUH 5505: Introduction to Ethnomusicology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Field research. Using oral, written, and media sources. Transcription and analysis. Interpretative techniques.

### **MUH 5684: Introduction to Historical Musicology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* successful completion of the complete undergraduate music history sequence; graduate student status; and successful completion of the music history entrance exam or the review course.

Critical approaches to the history of the discipline, fundamental concepts and methodologies, and significant musicological writings representing style periods and conceptual issues.

### **MUH 6515: Musics of the World**

**Credits: 3**                      **Grading Scheme:** Letter

Providing students with knowledge and experiences to allow them to accurately distinguish musical characteristics of musics from around the world, identify local examples of diverse musical traditions, explore the methods used in ethnomusicology, and develop approaches to world music pedagogy.

### **MUH 6526: American Vernacular Music**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing American vernacular music from the 1840s to the recent past, examining the cultural/social history and an analytic study of multiple musical styles. Processes used by vernacular musicians – playing, improvising, songwriting, collaboration, listening, facility on multiple instruments – will be explored, as will curricular implications for K-12 settings.

### **MUH 6545: The Guitar in Latin American Culture**

**Credits: 3**                      **Grading Scheme:** Letter

Cultural view of Latin American peoples through the sounds of the guitar, focusing on the history of modern classical guitar and its role in mediating Iberian and Latin American music.

**MUH 6548: Seminar in Caribbean Music**

**Credits: 3**                      **Grading Scheme:** Letter

Examines historical, social, and aesthetic dimensions of Caribbean music and music making.

**MUH 6549: Seminar in Brazilian Music**

**Credits: 3**                      **Grading Scheme:** Letter

Examines historical, social, and aesthetic dimensions of Brazilian music and music making.

**MUH 6635: Seminar in American Music**

**Credits: 3**                      **Grading Scheme:** Letter

History and literature of American music from the landing of the pilgrims to the present.

**MUH 6665: History of Opera**

**Credits: 3**                      **Grading Scheme:** Letter

Historical development of opera and its literature from the Florentine Camerata to the present.

**MUH 6671: Seminar in Renaissance Music**

**Credits: 3**                      **Grading Scheme:** Letter

Selected topics from the Renaissance era for research and study.

**MUH 6672: Seminar in Baroque Music**

**Credits: 3**                      **Grading Scheme:** Letter

Selected topics from the Baroque era for research and study.

**MUH 6673: Seminar in Classical Music**

**Credits: 3**                      **Grading Scheme:** Letter

Selected topics from the Classical era for research and study.

**MUH 6674: Seminar in Nineteenth-Century Music**

**Credits: 3**                      **Grading Scheme:** Letter

Selected topics from the nineteenth century for research and study.

**MUH 6675: Seminar in Twentieth-Century Music**

**Credits: 3**                      **Grading Scheme:** Letter

Selected topics from the 20th century for research and study.

**MUH 6931: Nationalism in Music**

**Credits: 3**                      **Grading Scheme:** Letter



Historical development of nationalist movements in music. Emphasizes the 19th and 20th centuries.

**MUH 6935: Special Topics in Music History**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* MUH 5219 or passing grade on music history diagnostic exam.

Centering around topics of current interest or of special interest to students or instructors. Topics or focus may vary from semester to semester.

**MUH 7411: Medieval and Renaissance Notation**

**Credits: 3                      Grading Scheme:** Letter

Practical, theoretical, and reportorial study of notation from ca. 1000-1600.

**MUH 7938: Musicology Seminar**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* MUS 6716.

Contemporary issues and selected topics in musicology.

**MUL 6435: String Literature**

**Credits: 3                      Grading Scheme:** Letter

Survey of solo study materials suitable for preparatory departments affiliated with conservatories and universities.

**MUL 6486: Piano Literature**

**Credits: 3                      Grading Scheme: Letter**

Survey of piano literature from Baroque to present.

**MUL 6495: Graduate Organ Literature**

**Credits: 3                      Grading Scheme: Letter**

An historical survey of the major trends and styles of organ composition from the Renaissance to the present.

**MUL 6555: Survey of Wind Literature**

**Credits: 3                      Grading Scheme: Letter**

Literature for chamber and larger wind ensembles from Baroque to present.

**MUL 6565: Chamber Music Literature**

**Credits: 3                      Grading Scheme: Letter**

Survey of music literature for chamber ensemble from Baroque to present.

**MUL 6645: Choral Literature**

**Credits: 3                      Grading Scheme: Letter**

Survey of choral music from Renaissance to present.

**MUN 6010: Graduate Ensemble**

**Credits: 1    Max: 3            Grading Scheme:** Letter

*For graduate students holding positions of leadership and participating in music ensembles.*

**MUN 6125: Concert Band**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Performance of general and popular band literature.

**MUN 6135: Symphonic Band**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Performance of traditional and contemporary band literature.

**MUN 6145: Symphonic Wind Ensemble**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Performance of wind ensemble literature.

**MUN 6215: University Orchestra**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Standard orchestra literature.

**MUN 6315: University Choir**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Advanced choral group providing specialized study performance opportunities for vocally qualified students.

**MUN 6325: Women's Chorale**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Vocal training and public performance of standard female chorus repertoire.

**MUN 6335: Men's Glee Club**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Vocal training and public performance of standard male chorus repertoire.

**MUN 6445: Percussion Ensemble**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Study and performance of ensemble literature for percussion instruments.

**MUN 6495: Steel Drum Ensemble**

**Credits: 1    Max: 8            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Rehearsal, performance and historical aspects of steel drum.

**MUN 6496: World Music Ensemble**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Rehearsal and performance of folk and traditional music of the world.

**MUN 6497: New Music Ensemble**

**Credits: 1    Max: 15            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Rehearsal and performance of repertoire for small ensembles written in the 20th and 21st centuries.

**MUN 6715: Jazz Band**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Standard and experimental jazz ensemble. Jazz laboratory.

**MUR 6206: Survey of Hymnody**

**Credits: 3                    Grading Scheme:** Letter

Historical development of hymns in liturgical use, the scope of hymnic literature, and the major trends in hymnal compilation and editing.

**MUR 6705: Sacred Music Literature**

**Credits: 3**

**Grading Scheme:** Letter

The development of congregational and choral song from the early church to the present. Survey of instrumental forms in worship music.

**MUS 5911: Directed Study**

**Credits: 1-3    Max: 12**

**Grading Scheme:** S/U

*Prerequisite:* may not count toward completion of degree requirements.

Allows graduate students changing their degree concentration to acquire knowledge and skills not acquired in previous programs.

**MUS 6685: Psychology of Music**

**Credits: 3**

**Grading Scheme:** Letter

Cultural influences, learning conditions, biological constraints, psychoacoustical phenomena, and musical taste. Measuring and predicting musical taste and ability.

**MUS 6716: Methods of Musical Research and Bibliography**

**Credits: 3**

**Grading Scheme:** Letter

Materials and specialized techniques of research in musicology.

**MUS 6905: Projects and Problems**

**Credits: 1 to 3    Max: 12 including MUS 7905**

**Grading Scheme:** Letter

Approved problems for study and research.

**MUS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**MUS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**MUS 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**MUS 6973: Individual Project**

**Credits: 1-10    Max: 10            Grading Scheme: S/U**

Creative project or graduate recital in lieu of written thesis. Project or recital must be acceptable to the candidate's supervisory committee and to the Graduate School.

**MUS 7656: Teaching Music and the Creative Process**

**Credits: 3            Grading Scheme: Letter**

*Prerequisite:* graduate composition major or consent of instructor.

Examines the creative process, appropriate pedagogical applications, and curricular implications.

### **MUS 7905: Projects and Problems**

**Credits: 1 to 3    Max: 12 including MUS 6905**

**Grading Scheme:** Letter

For doctoral students. Approved problems for study and research.

### **MUS 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **MUS 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme:** S/U

### **MUT 6051: Graduate Music Theory Review**

**Credits: 3**

**Grading Scheme:** Letter

Review of core materials in preparation for graduate course in music theory.

### **MUT 6445: Advanced Counterpoint**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* MUT 4411, 4421.

Emphasizes advanced harmonic techniques and fugal writing.



### **MUT 6531: Figured Bass and Continuo Performance**

**Credits: 3**                      **Grading Scheme:** Letter

Theoretical principles and practical application of figured bass realization and continuo performance practice techniques.

### **MUT 6565: Late Nineteenth- and Twentieth-Century Styles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MUT 6629.

Analysis of exemplary works of the late 19th and 20th centuries.

### **MUT 6576: Contemporary Styles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MUT 6629.

Recent trends in music through score study and analysis, composition exercises, and supplementary readings.

### **MUT 6617: Approaches to Theoretical Analysis in Music Education**

**Credits: 3**                      **Grading Scheme:** Letter

Developing and enhancing skills in analyzing Western classical music, with an emphasis on application to the field of Music Education. Students will synthesize the essential concepts of music theory and analysis through examining selections from the repertoire to expand upon and refine analytical approaches learned in the undergraduate theory curriculum. Course activities will include analysis of music using visual and aural processes.

### **MUT 6624: Seminar in Set Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MUT 6629.

Advanced study in set theory for analysis of music.

**MUT 6627: Seminar in Reductive Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MUT 6629.

Advanced study in reductive approach to analysis of music.

**MUT 6629: Analytical Techniques**

**Credits: 3                      Grading Scheme: Letter**

Study of analytical systems and methodology emphasizing style analysis and the integration of all elements of music.

**MUT 6751: Pedagogy of Music Theory**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* MUT 6629.

Techniques and art of teaching music theory and conditions for effective learning.

**MUT 6936: Music Theory Seminar**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* MUT 6629.

Selected topics from current research for study, presentation, and discussion.

**MUT 7316: Advanced Orchestration**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of 19th- and 20th-century compositions for full orchestra. Orchestration of original scores and arrangements for full orchestra.

**MUT 7585: Seminar in Musical Style**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MUT 6629.

Analysis of exemplary works from the Medieval period to the early 19th century.

**MUT 7760: History of Music Theory**

**Credits: 3**                      **Grading Scheme:** Letter

The study of musical theories, primarily through readings, from ancient Greece to the present.

**MVK 5156: Improvisational Keyboard Skills and Related Technology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* upper-division and graduate keyboard majors and minors, or consent of instructor.

Improvisational skills, electric keyboard technology, and musical styles outside the classical realm.

**MVK 6605: Organ Pedagogy**

**Credits: 3**                      **Grading Scheme:** Letter

Principles, methods, and practices currently used in the teaching of organ.

**MVK 6651: Piano Pedagogy**

**Credits: 3                      Grading Scheme:** Letter

Introduction to teaching basic piano performance and literature.

**MVK 6661: Advanced Piano Pedagogy**

**Credits: 3                      Grading Scheme:** Letter

Teaching materials for the intermediate and advanced student; methodologies of piano technique.

**MVO 6250: Secondary Music Performance**

**Credits: 3    Max: 15                      Grading Scheme:** Letter

Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.

**MVO 6460: Music Performance**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.

**MVO 7460: Music Performance**

**Credits: 3    Max: 9            Grading Scheme: Letter**

For doctoral students. Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.

**MVS 6651: String Pedagogy I**

**Credits: 3                    Grading Scheme: Letter**

Survey of Suzuki violin pedagogy from Unit IA (Pre-Twinkle) through Unit IV (Vivaldi A Minor Concertos).

**MVV 6651: Vocal Pedagogy**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* SPA 3101 or equivalent.

Study and teaching of vocal techniques.

**NEM 5004C: Graduate Survey of Nematology**

**Credits: 3                    Grading Scheme: Letter**

Morphology, anatomy, development, feeding habits, life cycles, disease cycles, and control of nematodes that parasitize plants and animals. Role of plant parasitic nematodes in disease complexes and as vectors of plant viruses. "Free-living" nematodes that inhabit oceans, fresh water, and soil.

**NEM 5707C: Plant Nematology**

**Credits: 3                    Grading Scheme: Letter**

Identification of plant parasitic nematodes, diseases they cause, interactions with other plant parasites, and management schemes to control population densities.

### **NEM 6101C: Nematode Morphology and Anatomy**

**Credits: 2**                      **Grading Scheme:** Letter

Morphology, anatomy, and function of structures, organs, and systems.

### **NEM 6102: Nematode Systematics and Molecular Phylogeny**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* NEM 6942 (Nematode Diagnosis)

Theory and practice of using molecular evidence, particularly DNA sequence data, for addressing diverse systematic and evolutionary questions will be explored. Morphological, molecular, and basic bioinformatics tools will be addressed.

### **NEM 6102L: Nematode Systematics and Molecular Phylogeny Laboratory**

**Credits: 2**                      **Grading Scheme:** Letter

*Corequisite:* NEM6102 (Nematode Systematics and Molecular Phylogeny)

Morphological, molecular, and basic bioinformatics tools used in nematode species identification will be explored. Emphasising basic molecular techniques, such as DNA extraction and quantification, restriction enzyme digestion, polymerase chain reaction and agarose gel electrophoresis.

### **NEM 6103: Insect Parasitic Nematodes**

**Credits: 1**                      **Grading Scheme:** Letter

Insect-parasitic nematodes in all taxons, including their pathogenicity, life cycles, etc. Steinernematidae and Heterohibditidae emphasized.

**NEM 6104L: Insect Parasitic Nematodes Laboratory**

**Credits: 1                      Grading Scheme: Letter**

*Corequisite:* NEM 6103.

Field survey and pathogenicity experiments, survival mechanisms determined, selected nematodes produced in vivo, and DNA extracted and sequenced.

**NEM 6201: Nematode Ecology**

**Credits: 3                      Grading Scheme: Letter**

Population and community ecology of plant-parasitic and other soil-inhabiting nematodes. Mathematical descriptions and relationships will be emphasized where appropriate.

**NEM 6708: Field Plant Nematology**

**Credits: 2    Max: 4                      Grading Scheme: Letter**

Field trips to various agricultural research stations and production areas in Florida to learn plant symptoms and current research methods.

**NEM 6905: Problems in Nematology**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

**NEM 6931: Nematology Seminar**

**Credits: 1    Max: 6                      Grading Scheme: Letter, S/U**

Presentation and discussion of current research, research topics.

**NEM 6932: Special Topics in Nematology**

**Credits: 1-4    Max: 4            Grading Scheme: S/U**

Reports and discussions.

**NEM 6934: Selected Studies in Nematology**

**Credits: 1-4    Max: 4            Grading Scheme: Letter**

Current issues with subject matter variable.

**NEM 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**NEM 6942: Nematode Diagnostics**

**Credits: 2            Grading Scheme: Letter**

Diagnosing nematode problems from soil and plant samples.

**NEM 6943: Nematode Internship**

**Credits: 1-3    Max: 6            Grading Scheme: S/U**



Diagnosing complex plant disorders caused by nematodes and other factors.

**NEM 6944: Nematode Extension Internship**

**Credits: 1-3    Max: 6                    Grading Scheme: S/U**

Diagnosing nematode damage to plants in field or greenhouse.

**NEM 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**NEM 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**NEM 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**NGR 6002C: Advanced Health Assessment**

**Credits: 4                    Grading Scheme: Letter**

*Prereq or coreq: NGR 6140. Required core course.* Diverse clients across the life span. Emphasizes data analysis and diagnostic reasoning.

### **NGR 6006: Principles of Clinical Outcomes Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6140, NGR 6727, NGR 6850.      *Corequisite:* NGR 6726, NGR 6771

Provides the student with knowledge of health care management, utilizing principles of evidence-based practice. Emphasis on on health promotion and disease prevention with selected clients and client populations across the life span.

### **NGR 6052C: Adult Nursing: Diagnostics and Procedures**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6002C, NGR 6101, NGR 6140, NGR 6636. *Prereq*      *Corequisite:* or coreq: NGR 6241, NGR 6241L or NGR 6245L , NGR 6172, NGR 6850.

Selected advanced practice nursing interventions used in caring for acutely ill adults.

### **NGR 6054C: Advanced Neonatal Health Assessment and Diagnostic Reasoning**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6140.

Symptom/health problem assessment in the neonate. Interpretation of screening and diagnostic tests to formulate a differential diagnosis.

### **NGR 6101: Theory and Research for Nursing**

**Credits: 3**                      **Grading Scheme:** Letter

Critical examination of theory and research from nursing and related fields. Emphasis on relationships among theory, research, and practice.

#### **NGR 6140: Physiology and Pathophysiology for Advanced Nursing Practice**

**Credits: 4**                      **Grading Scheme:** Letter

*Required core course.* Human physiology, including normal changes throughout the life span, pathophysiology, and their implications for nursing.

#### **NGR 6172: Pharmacotherapeutics for Advanced Practice Nursing**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6002C, NGR 6140. Required core course.

Selection and management of clinical drug applications in advanced nursing practice in primary care settings.

#### **NGR 6230C: Acute Care Nurse Practitioner: Diagnostics and Procedures for the Critically Ill**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6002C, NGR 6101, NGR 6140, NGR 6636. Prereq      *Corequisite:* or coreq: NGR 6052C, NGR 6241, NGR 6241L or NGR 6245L , NGR 6172, NGR 6850.

Necessary nursing skills in caring for the critically ill in acute-care settings.

#### **NGR 6241: Adult Nursing: Common Health Problems**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6002C, NGR 6636, NGR 6101, NGR 6140. Prereq      *Corequisite:* or coreq: NGR 6052C, NGR 6172, NGR 6241L or NGR 6245L , NGR 6850.

Advanced nursing management of common health problems. Caring for adults with single and multisystem diseases in acute and outpatient settings.

### **NGR 6241L: Adult Nurse Practitioner: Common Health Problems Laboratory**

**Credits: 2**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6002C, NGR 6636, NGR 6101, NGR 6140.

*Prereq or coreq:* NGR 6052C, NGR 6172, NGR 6241, NGR 6850. Advanced nursing management of common health problems in adults with single and multisystem diseases in acute and outpatient settings. Clinical application by nurse practitioners.

### **NGR 6243: Acute Care Nurse Practitioner: Critically Ill Adult**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6052C, NGR 6230C, NGR 6241, NGR 6241L.      *Corequisite:* NGR 6243L.

Caring for physiologically unstable adults with multiple complex health problems requiring critical care and emergency stabilization.

### **NGR 6243L: Acute Care Nurse Practitioner: Critically Ill Adult Laboratory**

**Credits: 2**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6052C, NGR 6230C, NGR 6241, NGR 6241L.      *Corequisite:* NGR 6243.

Advanced management of critically ill adults. Clinical application. Focuses on caring for physiologically unstable adults.

### **NGR 6244: Adult Nursing: Chronic Health Problems**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6052C, NGR 6241: Adult Nursing: Common Health Problems, NGR 6241L.      *Corequisite:* NGR 6244L or NGR 6246L , NGR 6255.

Advanced nursing management of chronic health problems. Focuses on caring for adults with multisystem health problems requiring ongoing management in acute and out-patient settings.

### **NGR 6244L: Adult Nurse Practitioner: Chronic Health Problems Laboratory**

**Credits: 2**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6052C, NGR 6241, NGR 6241L.      *Corequisite:* NGR 6244, NGR 6255.

Advanced nursing management of health problems in adults. Clinical application. Focuses on providing adult care in acute and outpatient settings.

#### **NGR 6247: Complex High Prevalence Illnesses Of Adults**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6244, NGR 6244L      *Corequisite:* NGR 6247L

Provides the students with in depth knowledge of the advanced nursing practice management of complex high prevalence illness in the United States.

#### **NGR 6247L: Complex High Prevalence Illnesses Of Adults**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6244, NGR 6244L      *Corequisite:* NGR 6247

Provides the student with clinical experiences necessary for the management of complex high prevalence illnesses in adults managed in both acute and out-patient settings.

#### **NGR 6248: Adult Acute Care Nurse Practitioner 3**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6243, NGR 6243L      *Corequisite:* NGR 6248L

Provides the student with in-depth knowledge of advanced nursing practice management of acutely and critically ill adults from diverse populations.

#### **NGR 6248L: Adult Acute Care Nurse Practitioner 3**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6243, NGR 6243L      *Corequisite:* NGR 6248, current ACLS certification

Clinical experiences allow the student to apply safe, cost effective, legal and ethical management strategies to the care of post-pubescent adults with complex health problems from diverse backgrounds. The focus of this course is care of adults with complex endocrine, neurologic, gastrointestinal, and commonly occurring health care problems.

### **NGR 6255: Advanced Nursing Care of Older Adult**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6241: Adult Nursing: Common Health Problems, NGR 6241L, NGR 6172.      *Corequisite:* NGR 6244: Adult Nursing: Chronic Health Problems, NGR 6244L.

Health care problems that result from normal and pathologic aging. Emphasize on gaining the knowledge needed to prevent, diagnose, and manage both acute and chronic age-related health problems.

### **NGR 6301: Advanced Child Health Nursing I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6002C, NGR 6636, NGR 6101, NGR 6140, and NGR 6172      *Corequisite:* NGR 6172 , NGR 6372C , and NGR 6301L

Management of child health care, including wellness promotion, illness prevention, and treatment of common health problems in children from newborns through young adulthood.

### **NGR 6301L: Advanced Child Health Nursing I**

**Credits: 3**                      **Grading Scheme:** S/U

*Prerequisite:* NGR 6002C NGR 6636, NGR 6140, and NGR 6172      *Corequisite:* NGR 6172 , NGR 6372C , and NGR 6301

Clinical experiences in primary health care settings necessary for the management of primary child health care.

### **NGR 6302: Advanced Child Health Nursing II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6301, NGR 6301L      *Corequisite:* NGR 6302L

Management of complex acute and chronic illnesses in children from newborns through young adulthood.

### **NGR 6302L: Advanced Child Health Nursing II**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6301 NGR 6301L    *Corequisite:* NGR 6302

Clinical experiences in a variety of settings necessary for the management of complex acute conditions and chronic illnesses in children.

### **NGR 6307: Advanced Child Health Nursing III**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6302 NGR 6302L    *Corequisite:* NGR 6307L

Management of selected chronic illnesses and disabilities in children from newborns through young adulthood.

### **NGR 6307L: Advanced Child Health Nursing III**

**Credits: 3**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 6302, NGR 6302L    *Corequisite:* NGR 6307

Clinical experiences in a variety of health care settings for the management of children with chronic illnesses and disabilities.

### **NGR 6350: Family Nurse Practitioner: Women, Adolescents, And Children**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* NGR 6241, NGR 6241L, and NGR 6052C    *Corequisite:* NGR 6350L

Clinical experiences necessary for the management of community-based family health care, including wellness promotion, illness prevention, and treatment of acute and chronic health problems in adults, including pregnant women, adolescents and/or children from diverse backgrounds.

### **NGR 6350L: Family Nurse Practitioner: Women, Adolescents, And Children**

**Credits: 2                      Grading Scheme: S/U**

*Prerequisite:* NGR 6241, NGR 6241L, and NGR 6052C      *Corequisite:* NGR 6350

This lab provides the student with clinical experiences necessary for the management of community-based family health care, including wellness promotion, illness prevention, and treatment of acute and chronic health problems in adults, including pregnant women, adolescents and/or children from diverse backgrounds.

#### **NGR 6364: Seminar: The Nurse Midwife**

**Credits: 2                      Grading Scheme: Letter**

*Prereq or coreq:* NGR 6361C . *Required for nurse-midwifery students.* Analyzing and synthesizing role behaviors of the nurse-midwife as a clinical specialist in selected settings.

#### **NGR 6371: Pharmacotherapeutics for Advanced Neonatal Nursing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6320C , NGR 6054C, NGR 6140.

Selection and management of drug therapy and monitoring therapeutic responses in the neonate.

#### **NGR 6372C: Advanced Pediatric Procedures and Diagnostics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6002C, NGR 6101, NGR 6140, NGR 6636      *Corequisite:* NGR 6301, NGR 6301L

Theoretical knowledge and emphasizes psychomotor skills necessary to provide selected advanced practice nursing interventions utilized in the care of infants, children and adolescents in a variety of settings.

#### **NGR 6538: Psychopharmacology for Psychiatric Nursing**

**Credits: 3                      Grading Scheme: Letter**



*Prereq or coreq: NGR 6172.* Knowledge base for prescribing and managing psychotropic medications in treating psychiatric disorders.

**NGR 6612: Family Nurse Practitioner: Complex Family Health Care (Focus On Gerontology)**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6350 and NGR 6350L      *Corequisite:* NGR 6612L

Management of adults with age-related changes and complex health comorbidities.

**NGR 6612L: Family Nurse Practitioner: Complex Family Health Care (Focus On Gerontology)**

**Credits: 4**                      **Grading Scheme:** S/U

*Prerequisite:* NGR 6350 and NGR 6350L      *Corequisite:* NGR 6612

This lab provides the student with clinical experiences in the primary care management of older adults experiencing age-related changes in function and complex health comorbidities, and the management of children, adolescents, and adults experiencing health problems and/or women experiencing pregnancy.

**NGR 6636: Wellness Promotion and Disease Prevention**

**Credits: 3**                      **Grading Scheme:** Letter

*Required core course.* Theory and research to promote and preserve wellness lifestyles in client populations using epidemiological principles, disease risk appraisal and reduction, and other tools.

**NGR 6726: Management of the Care Environment II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6081 , NGR 6727.      *Corequisite:* NGR 6005 , NGR 6771, NGR 6850.

Functions of the health care team in maintaining high-quality care.

## **NGR 6727: Management of the Care Environment I**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* NGR 6880 , NGR 6002C, NGR 6770.      *Corequisite:* NGR 6081 , NGR 6893 .

Functions of health care systems and organizational structure.

## **NGR 6740: Role Transition: Issues in Advanced Practice Nursing**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* 1 clinical course, NGR 6893 .

Analysis of current practice issues and roles of nurses in advanced practice.

## **NGR 6770: Leadership/Role of Clinical Nurse Leader**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* admission to the CNL track of the M.S.Nsg. program.      *Corequisite:* NGR 6880 , NGR 6893 .

Introduction to the role of a clinical nurse leader.

## **NGR 6771: Clinical Nurse Leader Role Seminar**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* NGR 6081 , NGR 6727;      *Corequisite:* coreq: NGR 6005 , NGR 6726.

Synthesis of concepts presented within clinical nurse leader curriculum.

## **NGR 6773: Clinical Nurse Leader Residency/Internship**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

*Prerequisite:* all required courses in the CNL track.

Full-time residency experience provides an opportunity for immersion in the CNL role.

### **NGR 6815: Foundations of Qualitative Research in Nursing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6101 or equivalent, and NGR 6850 or equivalent.

Introduction to philosophical, historical, and theoretical bases.

### **NGR 6840: Applied Statistical Analysis I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6850 or equivalent and doctoral statistics orientation.

Advanced procedures for data analysis and statistical inference in nursing research.

### **NGR 6845: Applied Statistical Analysis II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6840.

Analysis and application of advanced multivariate statistical procedures to develop design for individual research questions.

### **NGR 6850: Research Methods and Utilization for Nursing**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6101.

Knowledge and skills to critique theory and research from nursing and related fields as a basis for evidence-based practice.

### **NGR 6905: Individual Study**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

**NGR 6930: Special Topics in Nursing**

**Credits: 1-3    Max: 6                    Grading Scheme: Letter**

**NGR 6941: Practicum in Nursing**

**Credits: 3 or 6    Max: 6                    Grading Scheme: S/U**

*Prerequisite:* satisfactory completion of core and clinical courses. Required for all students.

**NGR 6944: Individual Clinical Practice**

**Credits: 1-4    Max: 6                    Grading Scheme: S/U**

*Prerequisite:* enrollment in or completion of graduate-level courses in clinical nursing.

Additional opportunities for advanced nursing practice. Objectives to be developed collaboratively by the student and faculty.

**NGR 6970: Research for Master's Project**

**Credits: 1-4                            Grading Scheme: S/U**

**NGR 6971: Research for Master's Thesis**

**Credits: 1-15                            Grading Scheme: S/U**

### **NGR 7003: Advanced Diagnostic Reasoning**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 7827.

Students engage in inductive or inferential processes to derive diagnoses using data sets and information technology.

### **NGR 7115: Philosophy of Nursing Science**

**Credits: 3**                      **Grading Scheme:** Letter

Critical examination of the meaning, method, and logical structures of science and nursing sciences. Emphasizes the logical methodological analyses of aims, methods, criteria, concepts, laws, and theories.

### **NGR 7124: Theory Development in Nursing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 7115.

Analysis of existing paradigms, theories, and theoretical models, derived or tested through research in nursing.

### **NGR 7176: Advanced Topics in Pharmacotherapeutics in Nursing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6140, NGR 6172.

Complex care issues related to pharmacotherapeutics as an integral part of overall treatment.

### **NGR 7700: Leadership and Role Development in Advanced Nursing Practice**

**Credits: 3**    **Max: 3**                      **Grading Scheme:** Letter

*Prerequisite:* NGR 6636.

Knowledge and skills needed to manage change, empower others, and influence political processes.

**NGR 7709: Nurse Scientist and Scholar I**

**Credits: 1    Max: 2            Grading Scheme: S/U**

The goal of the seminar is to socialize students into the roles and activities of research scholars and members in a global community of scholars.

**NGR 7814: Field Methods for Health Related Research**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* NGR 6815.

Data collection methodologies used in qualitative nursing research.

**NGR 7816: Quantitative Research Design and Measurement in Nursing**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* NGR 6101 or equivalent and NGR 6850 or equivalent.

Evaluation of quantitative research methods and designs with attention to internal and external validity.

**NGR 7827: Outcomes Research and Evaluation**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* NGR 7871, PHC 6050.

Measurement and evaluation of the end results of clinical nursing care practices and interventions.

**NGR 7831: Quality Indicators in Nursing Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHC 6001, NGR 6101.

Evaluation activities that support creation and management of knowledge in nursing systems.

**NGR 7835: Nurse Scientist and Scholar II**

**Credits: 1    Max: 2                      Grading Scheme: S/U**

*Prerequisite:* NGR 7709

Continuing the socialization of students into the roles and activities of research scholars and members in a global community of scholars.

**NGR 7871: Nursing Informatics and Data**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* NGR 6101.

Technological applications for nursing.

**NGR 7882: Ethical Theories and Rational Decision Making in Health**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* admission to doctoral program or consent of instructor.

Analyzing ethical theories and testing the applicability of theory in nursing.

**NGR 7891: Health Policy and Finance in Advanced Nursing Practice**

**Credits: 3                      Grading Scheme: Letter**

Health policy development, analysis, and implementation.

**NGR 7940L: Residency in Advanced Nursing Practice**

**Credits: 3 or 6**                      **Grading Scheme: S/U**

*Prerequisite:* NGR 7003. *Pre-*      *Corequisite: or Coreq:*NGR 7970L.

Concentrated clinical experience for the role of advanced nursing practitioner.

**NGR 7970L: Advanced Nursing Project**

**Credits: 1-3**                      **Grading Scheme: S/U**

*Pre- or coreq:* NGR 7003. Terminal project. Student demonstrates synthesis of learning and expertise in clinical practice commensurate with a Doctor of Nursing Practice degree.

**NGR 7979: Advanced Research**

**Credits: 1-12**                      **Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**NGR 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

**OCP 5293: Coastal Processes**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* EGN 3353C (or CWR 3201), MAP 2302 or equivalent.



Coastal wave and water level fluctuations, littoral transport; tidal inlet dynamics, estuarine hydrodynamics, and sediment transport; techniques of measurements.

### **OCP 6050: Physical Oceanography**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302, EGN 3353C (or CWR 3201).

Structure of ocean basins; physical and chemical properties of sea water; basic physical laws used in oceanography; ocean current; thermohaline effects; numerical models; heat budget.

### **OCP 6165: Ocean Waves I: Linear Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 2302, EGN 3353C (or CWR 3201).

Ocean wave classification, solution of the linearized boundary value problem; simple harmonic waves; shoaling effects; internal waves.

### **OCP 6165L: Ocean Waves Laboratory**

**Credits: 1**                      **Grading Scheme:** Letter

Laboratory for linear wave theory. Basic measurement techniques and properties of water waves.

### **OCP 6167: Ocean Waves II: Nonlinear Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* OCP 6165: Ocean Waves I: Linear Theory.

Perturbation development of nonlinear water wave theories; regions of validity of various theories; dynamics and kinematics of nonlinear wave trains composed of single and multiple fundamental components.

### **OCP 6168: Data Analysis Techniques for Coastal and Ocean Engineers**

**Credits: 3**                      **Grading Scheme:** Letter

Data editing, fundamentals of spectral analysis, subsurface and surface signal analysis, directional spectral analysis.

**OCP 6169: Random Sea Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* OCP 6165.

Mathematical presentation of random seas; wave spectral analysis, spectral formulations; joint prediction of wave height and period, directionality of random seas, bispectral analysis; principles of hindcasting and forecasting seas.

**OCP 6295: Estuarine and Shelf Hydrodynamics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* OCP 6050.

Kinematics and dynamics of estuaries, small scale motions, tidal hydrodynamics, nontidal circulations, shelf waves, estuary and shelf interactions, mathematical models.

**OCP 6297: Coastal and Estuarine Sediment Transport**

**Credits: 3**                      **Grading Scheme:** Letter

Sediment properties including size, mineralogy and plasticity, cohesion and flocculation; settling velocity and initiation of motion; coarse and fine sediment transport; wave-sediment interaction; fluid mud rheology and transport; consolidation; sedimentation in estuaries and at coasts.

**OCP 6298: Coastal Sediment Transport Processes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CWR 6236, OCP 6165.

Physical sedimentation processes, including boundary layer hydrodynamics, suspended sediment dynamics, and bedload mechanics under wave and current conditions.

### **ORH 5026C: Advanced Annual and Perennial Gardening**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken ORH 4808C.

Identification, selection, use, and management of annuals, perennials, herbs, and ornamental grasses in the landscape.

### **ORH 5086: Advanced Golf and Sports Turf Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken ORH 4223.

Golf course and sports turf management.

### **ORH 5282: Orchid Biology and Culture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken ORH 4280; or consent of instructor.

Orchid plants and flowers, including nomenclature, breeding, seed culture, harvesting, and handling.

### **ORH 5322C: Palm Biology and Culture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken ORH 4321C; or consent of instructor.

Biology, vegetative and reproductive morphology, identification, container, liner, and field production of palms.

### **ORH 5817C: Advanced Florida Native Landscaping**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* ORH 1520 or 3513.

Introduction to nomenclature, effective use, and design elements of plants native to Florida.

**ORH 7941: Doctor of Plant Medicine: Internship in Environmental Horticulture**

**Credits: 1-6    Max: 10                      Grading Scheme: S/U**

Environmental horticulture internship in an industrial or academic setting.

**OTH 5002: Foundations of Occupational Therapy**

**Credits: 3                      Grading Scheme: Letter**

Foundations, development, and professional ethics, values and responsibilities of profession.

**OTH 5115C: Therapeutic Skills II: Areas of Occupation**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* OT graduate student.

Pre-activity and activity techniques for participation in human occupation.

**OTH 5324: Psychosocial Intervention**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* OT graduate student.

Historical and current models for application of occupational therapy to psychosocial problems.

### **OTH 5435: Therapeutic Skills I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Basic skills in assessment and intervention with biomechanical factors.

*Intended for OT graduate students.* Addresses the evaluation and treatment of biomechanical factors in Occupational Therapy.

### **OTH 5722: Professional Development in Occupational Therapy**

**Credits: 1**                      **Grading Scheme:** S/U

*Prerequisite:* Graduate student in the Master in Occupational Therapy Program.

Provides structured learning experiences that facilitate professional development and the transition to professional roles.

### **OTH 5726C: Service Delivery and OT Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* OT graduate status.

Basic principles of management and systems in providing occupational therapy to individuals and organizations.

### **OTH 5770C: Research for Occupational Therapy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* OT graduate student.

Principles and skills necessary for critical review of the occupational therapy literature.

### **OTH 5812: Practicum I**

**Credits: 2**                      **Grading Scheme:** LetterS/U

*Prerequisite:* OT graduate student.

Initial practicum site experience to aid socialization process into roles and styles of occupational therapists.

**OTH 5816: Practicum II**

**Credits: 3**                      **Grading Scheme:** LetterS/U

*Prerequisite:* OT graduate student.

Second of series designed to acquaint future professionals with practice skills such as documentation and activity analysis.

**OTH 5848: Internship I**

**Credits: 6**                      **Grading Scheme:** S/U

Initial full-time experience under direct supervision of licensed occupational therapist.

**OTH 5849: Internship II**

**Credits: 6**                      **Grading Scheme:** S/U

Second full-time experience under direct supervision of licensed occupational therapist.

**OTH 6008: Neuroscience of Human Occupation**

**Credits: 6**                      **Grading Scheme:** Letter

Theoretical explanations of occupation in human functioning. Contemporary concepts of brain function that support occupation with emphasis on sensory, motor, and cognitive processes.

**OTH 6106: Assistive Technology and Occupational Performance**

**Credits: 6**                      **Grading Scheme:** Letter

Technology and strategies to support health and performance of daily occupations and to foster independent living and risk/injury reduction. Lifestyle and health consulting.

**OTH 6539: Occupational Therapy Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Preparation for entry-level position through introduction of basic principles of management and systems.

**OTH 6635: Principles of Occupational Therapy Screening and Evaluation I**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to principles of tests and measurement and outcomes-based assessment relevant to infants, children, and adolescents.

**OTH 6636: Principles of Occupational Therapy Screening and Evaluation II**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* OTH 6635.

Builds on OTH 6635. Application of screening and evaluation principles to evaluation process and learning to administer tools to adult population.

**OTH 6641: Occupational Therapy Interventions I**

**Credits: 4**                      **Grading Scheme:** Letter

Occupational therapy theory and treatment as it relates to infants, children, adolescents, and their families.

## **OTH 6642: Occupational Therapy Interventions II**

**Credits: 6**                      **Grading Scheme:** Letter

*Prerequisite:* OTH 6641.

Basic interventions for adults through elders using ICDH systems as framework. Planning and applied treatment approaches including acquisition, restorative, and compensatory strategies.

## **OTH 6707: OT Manager**

**Credits: 6**                      **Grading Scheme:** Letter

Leadership development, developing independent practice for consultation, client and professional advocacy, case management, and business entrepreneurship.

## **OTH 6708: Issues in Occupational Therapy Practice I**

**Credits: 2**                      **Grading Scheme:** Letter

Current health care issues.

## **OTH 6709: Issues in Occupational Therapy Practice II**

**Credits: 2**                      **Grading Scheme:** Letter

Forum for debating viewpoints regarding current practice issues relevant to occupational therapy.

## **OTH 6720: Trends and Issues in Health Care**

**Credits: 6**                      **Grading Scheme:** Letter



Managed health care, public policy, and intervention within social and behavioral contexts. Effects on occupational therapy service delivery.

**OTH 6763: Evidence Based Practice**

**Credits: 6**                      **Grading Scheme:** Letter

Concepts and strategies for assessment of practice outcomes and program evaluation.

**OTH 6861: Specialty Internship**

**Credits: 2-9**    **Max: 9**                      **Grading Scheme:** S/U

*Prereq or coreq:* OTH 6780 . Field experience in clinical, community, educational, and administrative settings approved by the department.

**OTH 6905: Individual Work**

**Credits: 1-10**    **Max: 10**                      **Grading Scheme:** Letter

Project related to teaching, research, administration, or clinical practice.

**OTH 6907: Professional Development Project**

**Credits: 6**                      **Grading Scheme:** Letter

Concepts and strategies for assessment of practice outcomes and program evaluation. Independent design, implementation, and reporting of an independent project.

**OTH 6933: Special Topics in Occupational Therapy**

**Credits: 2-9    Max: 9            Grading Scheme: Letter**

Selected topics in theory and research in occupational therapy.

**OTH 6971: Research for Master's Thesis**

**Credits: 1-6                    Grading Scheme: S/U**

**PAD 5935: Advanced Topics in Public Administration**

**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* prior departmental approval.

**PAD 6108: Public Administration Theory**

**Credits: 3                    Grading Scheme: Letter**

Public administration, with emphasis on the units of analysis and contributions of each approach to general understanding of the field.

**PAD 6227: Public Budgeting and Finance**

**Credits: 3                    Grading Scheme: Letter**

Decision making; budget planning and formulation.

**PAD 6434: Leadership and Ethics in Public Agencies**

**Credits: 3**                      **Grading Scheme:** Letter

Examining the complexities and the ways in which new demands are changing the way leadership is exercised and others evaluated.

**PAD 6946: Internship in Government**

**Credits: 3**                      **Grading Scheme:** S/U

*Prerequisite:* departmental approval.

**PCB 5046C: Advanced Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* basic ecology and one course in statistics; physics, chemistry, and physiology desirable.

Ecological research skills, emphasizing design of field studies and data analysis. Offered fall term in odd-numbered years.

**PCB 5065: Advanced Genetics**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* AGR 3303 or PCB 3063 and BCH 4024 or BCH 5045. For graduate students in any life science discipline.

Examines genetic principles including gene and gene function; recombination and linkage; molecular markers, multipoint linkage analysis, and positional cloning; and quantitative, population, developmental, and non-Medalian genetics. Offered in fall term.

**PCB 5136L: Techniques in Microbial and Cell Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* B grade or higher in MCB 3020L, CHM 3120/3120L.

A laboratory in experimental bacteriology and cell biology. Emphasis on experimental approaches and techniques used in study of cells and microorganisms. Experiments in microscopy, cell fractionation, metabolism, physiology, genetics, and regulation.

### **PCB 5235: Immunology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* C grade or higher in MCB 3020L.

Immune system of vertebrate animals. The cellular and molecular events involved in immune responsiveness and resistance to infectious diseases.

### **PCB 5235L: Experiments in Immunology**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3020L.      *Corequisite:* PCB 5235.

Basic seriological procedures in immunology.

### **PCB 5307C: Limnology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 4044C, CHM 2046.

Biological, chemical, and physical dynamics of inland waters.

### **PCB 5338: Principles of Ecosystem Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BSC 2010 or BSC 2011, and PCB 3034C or PCB 4044C.

Examines principles that govern the structure and function of terrestrial ecosystems. Ecosystem Ecology is the study of flows of energy and materials between organisms and their environment.

### **PCB 5356: Tropical Ecology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* elementary biology or consent of instructor.

Global overview of tropical environments, natural history, biological communities, and their structure and function. Addresses basic and applied ecological issues in the tropics.

### **PCB 5415C: Behavioral Ecology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* ZOO 3513C, 4472C, PCB 4044C, 4674, or consent of instructor.

Theoretical and empirical bases for behavioral adaptations.

### **PCB 5530: Plant Molecular Biology and Genomics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* undergraduate molecular biology or biochemistry.

Integrated overview of the fundamental mechanisms enabling plant growth, development, and function, and approaches to study these at molecular level. Topics include replication, repair, transcription, translation, cell cycle, transformation, gene tagging, structural genomics, proteomics, and metabolomics. Offered in fall term.

### **PCB 5615: Molecular Evolution and Systematics**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* PCB 3063, graduate standing, or consent of instructor.

Patterns and processes of change at the molecular level in populations, species, and higher taxonomic groups, and their systematic implications.

### **PCB 6049: Seminar in Ecology**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

Rotating seminar: various topics in ecology.

### **PCB 6377C: Physiological Ecology of Vertebrates**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* course in physiology.

Physiological mechanisms that influence distribution and ecological relations, water conservation, and energy exchange in vertebrates.

### **PCB 6447C: Community Ecology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 4044C or equivalent, and consent of instructor.

The evolutionary ecology of communities; conceptual and quantitative approaches to community structure; statistics independent projects.

### **PCB 6528: Plant Cell and Developmental Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 5530 and PCB 5065 or equivalent.

Cellular and developmental biology of plants. Lecture format with frequent discussion of recent papers. Topics include signal transduction, organelles, protein trafficking, and developmental mechanisms. Offered in spring term.

### **PCB 6555: Introduction to Quantitative Genetics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.

Intended for students of all disciplines who are interested in genetic principles and biometric evaluation of characters that exhibit continuous variation in natural populations or breeding programs.

### **PCB 6675C: Evolutionary Biogeography**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Permission of instructor.

Interpretation of biological data sets in a biogeographical context. Topics and methods in historical and ecological biogeography will be discussed.

### **PCB 6695: Seminar in Evolutionary Biology**

**Credits: 1    Max: 5                      Grading Scheme: Letter**

*Prerequisite:* PCB 4674.

Current thinking. New topic each time offered. Recently published book or symposium proceedings on newly emerging research theme. Supplementary material drawn from evolutionary biology journals. Directed readings.

### **PCB 6816: Thermal Physiology**

**Credits: 1                      Grading Scheme: Letter**

Exploring the processes by which homeotherms produce heat and regulate its exchange with the environment, and the consequences of thermal biology for animal production.

### **PCB 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **PCB 6937: Special Topics in Plant Molecular and Cellular Biology**

**Credits: 1-4    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* graduate course work in genetics, biochemistry, or molecular biology areas.

Contemporary research.

**PCB 6971: Research for Master's Thesis**

**Credits: 1-6                      Grading Scheme: S/U**

**PCB 7922: Journal Colloquy in Plant Molecular and Cellular Biology**

**Credits: 1    Max: 8                      Grading Scheme: Letter**

*Prerequisite:* Required for PCMB majors.

Critical discussion and presentation of recent journal articles in the area of plant molecular and cellular biology.

**PCB 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PCB 7980: Research for Doctoral Dissertation**

**Credits: 1-15                      Grading Scheme: S/U**

**PCO 6057: Psychology of Counseling I**

**Credits: 3                      Grading Scheme: Letter**



*Prerequisite:* graduate status in the counseling psychology program.

Theory, research, and skills in therapeutic approaches to counseling psychology.

### **PCO 6058: Psychology of Counseling II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status in counseling psychology program.

Theory, research, and skills in short-term approaches to counseling psychology.

### **PCO 6059: Psychology of Counseling III**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PCO 6058.

Theory, research, and skills in psychodynamic approaches to counseling psychology.

### **PCO 6278: Diversity and Multiculturalism in Counseling Psychology**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of development of multicultural counseling theory, research, and practice. Historical background, multicultural counseling competencies, cultural identity development and worldview, spiritual issues, understanding oppression (e.g., racism, sexism, heterosexism, able-ism), case conceptualization, MCC organizational development, ethical guidelines for working with diverse populations, and MCC skills development.

### **PCO 6316C: Psychological Assessment I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Consideration of basic assessment theory and of fundamental theories of intelligence and intellectual assessment, including practicum-type administration of intelligence tests.

**PCO 6317C: Psychological Assessment II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Fundamental theories of personality and individual assessment of personality, including practicum-type administration of personality tests.

**PCO 6931: History and Contemporary Issues in Counseling Psychology**

**Credits: 3                      Grading Scheme: Letter**

Introduction to foundations of counseling psychology and its research. Contemporary literature of discipline.

**PCO 6939: Seminar: Current Topics in Counseling Psychology**

**Credits: 3    Max: 15                      Grading Scheme: Letter**

*Prerequisite:* MHS 6401 or consent of instructor.

Emphasis on theoretical background and implications for applied work.

**PCO 7217: Professional Ethics and Skills in Counseling Psychology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate student status in counseling psychology or consent of instructor.

Professional issues, ethics, relationships, and skills pertaining to practice of counseling psychology.

**PCO 7247: Group Counseling/Psychology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate student status and consent of instructor; coreq: enrollment in counseling practicum.

Process of group counseling and psychotherapy as well as the counselor's role in the facilitation of group process.

### **PCO 7537: Vocational Psychology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* graduate student status and consent of instructor.

Examines major theories and research. Emphasizes vocational assessment.

### **PCO 7944: Practicum in Counseling Psychology**

**Credits: 1    Max: 12                      Grading Scheme:** Letter

*Prerequisite:* PCO 7217.

For second-year doctoral students in counseling psychology, 12 hours per week of on-site clinical work plus individual and group supervision.

### **PCO 7945: Advanced Practicum in Counseling Psychology**

**Credits: 1    Max: 4                      Grading Scheme:** Letter

*Prerequisite:* PCO 7217, 7947.

For advanced students in counseling psychology. On-site clinical work at approved mental health agencies: 12 to 15 hours per week of work including individual and group supervision.

### **PCO 7949: Internship in Counseling Psychology**

**Credits: 1    Max: 12                      Grading Scheme:** Letter

*Prerequisite:* written application to the Counseling Psychology Internship Coordinator.

Full-time or equivalent work in a university or community agency where counseling functions are carried out under supervision. Open only to students in the counseling psychology program.

**PEQ 5127: Advanced Instructors of Adapted Aquatics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor/adviser.

The art and science of effectively teaching aquatics to special populations. Aquatics teaching methods for individuals with physical, mental/emotional, sensory, medical, and health disabilities.

**PET 5936: Special Topics/Seminars**

**Credits: 1-3                      Grading Scheme: Letter**

**PET 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**PET 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**PET 6947: Graduate Internship in Exercise and Sport Sciences**

**Credits: 3-9    Max: 9 [only 5 can count toward degree]                      Grading Scheme: S/U**

*Prerequisite:* completion of 2 terms of course work applicable to specialization; permission of adviser, written application, and site approval.

On-site full-time practical experience in field of study.

**PET 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**PHA 5171: Pharmaceutical Biotechnology**

**Credits: 3**

**Grading Scheme: Letter**

Principles of recombinant DNA technology needed to interact and communicate as a pharmaceutical scientist in biotechnology. Recombinant peptide and protein drugs including protein purification, stability, quality control, and dosage form design. Offered fall term.

**PHA 5270: Health Care and Patient Safety**

**Credits: 3**

**Grading Scheme: Letter**

Provides an overview of applicable federal, state, local, and health and safety laws relevant to the practice of health care risk management and patient safety.

**PHA 5271: Health Care Risk Management**

**Credits: 3**

**Grading Scheme: Letter**

Introduction to the concept of risk management in health care settings, describing its development, role of the health care risk manager, and connection between risk management, quality improvement and corporate compliance.

**PHA 5272: Risk Management, Liability and Compliance**

**Credits: 3**

**Grading Scheme: Letter**

Applicable standards of health care risk management, including the principles of malpractice and insurance, the conduct of malpractice litigation, and the settlement of malpractice claims.

### **PHA 5475: Synthesis of Prodrugs**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* introductory organic chemistry, medicinal chemistry, pharmaceuticals.

An outline of synthetic and physical chemical approaches to solving drug delivery, bioavailability, activity, potency, toxicity, and acceptability problems.

### **PHA 5531: Neurotoxicology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* biochemistry, physiology, and consent of instructor.

Survey of major classes of agents known to cause toxic effects in central and peripheral nervous systems. Compounds' mechanism of action. Experimental techniques for evaluating neurotoxicity.

### **PHA 6115: Equilibria, Complexations, and Interactions of Drugs**

**Credits: 3**                      **Grading Scheme:** Letter

Models for drug interactions in solution. Physical chemistry characteristics of drugs and their complexes in pharmaceutical systems.

### **PHA 6116: In Vivo and In Vitro Stability of Drugs**

**Credits: 3**                      **Grading Scheme:** Letter

Effects of various disease states, age, genetic differences, stress, nutrition, and drug interactions on drug metabolism. Offered fall term in even-numbered years.

### **PHA 6118: Molecular Diversity**

**Credits: 2                      Grading Scheme: Letter**

Combinatorial and high throughput methods to generate leads for drug discovery and accelerated drug development.

**PHA 6125: Pharmacokinetics and Biopharmaceutics**

**Credits: 3                      Grading Scheme: Letter**

Compartmental analysis with computers. Offered spring term in even-numbered years.

**PHA 6131: Pharmacometrics and Systems Pharmacology**

**Credits: 3                      Grading Scheme: Letter**

An advanced pharmacokinetic/pharmacodynamic (PK/PD) course with a two-fold objective: 1) to provide a didactic framework of the Pharmacometrics and Systems Pharmacology approaches used in drug development and regulatory decision making and 2) to apply the acquired knowledge in hands-on software applications to answer clinically relevant questions.

**PHA 6170C: Pharmaceutical Product Formulation**

**Credits: 3                      Grading Scheme: Letter**

Rationale and design of pharmaceutical dosage forms. Offered fall term in odd-numbered years.

**PHA 6183: Pharmaceutical Gene Delivery**

**Credits: 3                      Grading Scheme: Letter**

Designed for graduate students researching gene delivery. Lectures on vector design and construction including

review of related molecular biology and cell biology. Lectures on gene delivery systems (both viral and nonviral vectors) and their applications. Recent progress of gene therapy for human diseases including student presentations. Offered in odd-numbered years.

### **PHA 6185: Pharmaceutical Drug Development**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor. Open to graduate students and advanced Pharm.D. students.

Drug development from discovery to post-market surveillance. Good manufacturing process (GMP), good clinical practice (GCP), and good laboratory practice (GLP); intellectual property, regulatory agencies, generic approvals, and case studies.

### **PHA 6206: Introduction to Pharmaceutical Microeconomics**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing students to the fundamentals of microeconomic theory from the perspective of pharmaceutical markets. This course will cover the main elements of microeconomic theory, focusing on the behavior of individuals and firms and the interaction among these agents in both competitive and non-competitive pharmaceutical markets. The class will focus on concepts such as consumer choice, opportunity costs, supply and demand, elasticity, competition, monopoly and oligopoly and the application of these concepts to the markets for pharmaceutical products and services.

### **PHA 6227: Institutional Pharmacy Leadership I**

**Credits: 3**                      **Grading Scheme:** Letter

Addresses leadership topics relevant to institutional pharmacy with an emphasis on case study analysis. Topics include leading people, leading the pharmacy enterprise, leading change and innovation, providing leadership in safety and quality, and information technology and systems.

### **PHA 6228: Institutional Pharmacy Leadership II**

**Credits: 3**                      **Grading Scheme:** Letter



Addresses leadership topics relevant to institutional pharmacy with emphasis on case-study analysis. Topics include leadership in effective financial management, building presence with executive leadership, leading for results, and gaining leadership skills through self-development.

**PHA 6235: Advanced Pharmaceutical Law**

**Credits: 2**                      **Grading Scheme:** Letter

Study of the federal Food, Drug, and Cosmetics Act and various state and local laws applicable to drug manufacturers, wholesalers, distributors, and drug-related products, including analyses of recent court decisions.

**PHA 6236: Health Sciences Liability Law**

**Credits: 2**                      **Grading Scheme:** Letter

Liability of health sciences practitioners, including hospitals, physicians, pharmacists, nurses, medical technologists, and dentists.

**PHA 6250: Patient Responsibility in Health Care**

**Credits: 3**                      **Grading Scheme:** Letter

This course examines the ways in which patients can accept responsibility for promoting good outcomes of the therapeutic modalities that the health care professionals and institutions provide. The focus is on how patients can foster a productive relationship with health care providers and institutions, and how they can participate actively in efforts to prevent failures of quality in the provision of health care.

**PHA 6264: Pharmacoeconomics and Health Technology Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6200 or STA 6126 or equivalent, HSC 6506 or 5103 or equivalent, or consent of instructor.

Introduction to major analytical techniques used in economic evaluation of medical technologies.

**PHA 6265: Introduction to Pharmaceutical Outcomes and Policy I**

**Credits: 3**                      **Grading Scheme:** Letter

Introduces students to the breadth of research issues in Pharmaceutical Outcomes and Policy, including legal, educational, regulatory and financial aspects of medication use; patient and provider behavior in medication use; the structure of pharmaceutical supply chain; and patient safety and risk management.

**PHA 6266: Introduction to Pharmaceutical Outcomes and Policy II**

**Credits: 2**                      **Grading Scheme:** Letter

Introduction to drug distribution systems, pharmacoepidemiology, economic evaluation of drugs, and databases regarding medication use.

**PHA 6268: Pharmacoepidemiology and Patient Safety**

**Credits: 3**                      **Grading Scheme:** Letter

Exposure to research methodologies in pharmacoepidemiology relevant to drug safety, drug effectiveness, and outcome assessment. Emphasizing observational study designs, including patient follow-up studies, case-control and cohort designs.

**PHA 6269: Pharmaceutical Products and Public Policy**

**Credits: 3**                      **Grading Scheme:** Letter

Relationships among pharmaceutical manufacturers, institutions, managed care, professions, and the public. The government's role in assuring high quality pharmaceutical products and services. Quality controls managed by the public and by industry. Congressional oversight of medication development, production, and use.

### **PHA 6273: Structure, Process, and Outcomes of Regulation**

**Credits: 3**

**Grading Scheme:** Letter

The role of the legislative, executive and judicial branches of state and federal government in the establishment of standards for pharmacy practice and drug distribution. Special emphasis on the administrative rule making process. The purpose of government agencies, the approach to standards setting by each type of agency, and the effects of regulation on public health.

### **PHA 6274: Federal Regulations of Drugs and Pharmacy**

**Credits: 3**

**Grading Scheme:** Letter

The Federal Food, Drug and Cosmetic Act, regulations promulgated by the Food and Drug Administration, and judicial interpretations of controversies in this area. Federal regulation of drug research, new drug approval, drug marketing and drug distribution. The balance sought by the FDA and other federal agencies in the protection of the public from unsafe and/or ineffective drugs, without unnecessarily restricting access to therapies.

### **PHA 6275: Federal Regulations of Controlled Substances**

**Credits: 3**

**Grading Scheme:** Letter

The Federal Controlled Substances Act, regulations promulgated by the Drug Enforcement Administration, and judicial interpretations of controversies in this area. The "closed-system" of controlled substance distribution created under federal law. Federal restrictions on the manufacture, distribution and use of drugs that are subject to abuse. Treatment programs for the disease of addiction.

### **PHA 6276: Regulating Pharmaceutical Access and Costs**

**Credits: 3**

**Grading Scheme:** Letter

Regulation to expand access and control costs of health care. The obligation to provide care. State and federal regulation of private health insurance and managed care. Implications of EMTALA, ERISA, HIPAA, and COBRA.

Introduction to Medicare and Medicaid. Technology assessment, drug pricing and price controls. Intellectual property protections and market exclusivity periods.

#### **PHA 6277: Ethics in Drug Development Production and Use**

**Credits: 3                      Grading Scheme: Letter**

Governments, health professionals, patients and research institutions look to the field of ethics for guidance on how decisions should be made in the treatment of patients and in research. A process for ethical decision making. Basic theories and principles of biomedical ethics, with emphasis on utilitarianism. Application of principles to subjects such as informed consent, abortion/contraception, physician-assisted dying, experimentation with human subjects, and confidentiality.

#### **PHA 6278: State Regulation of Drugs and Pharmacy**

**Credits: 3                      Grading Scheme: Letter**

State, federal, and nongovernmental regulation of health care professions and practice sites. Regulatory responses to professional misconduct. Role of professional self-regulation. Consumerism and state regulation.

#### **PHA 6279: Pharmaceutical Outcomes and Policy Seminar**

**Credits: 1    Max: 3                      Grading Scheme: S/U**

Development, reasons for, and possible approaches to resolving a contemporary issue in health outcomes or policy. Students analyze particular aspects of the issue and present results for class discussion.

#### **PHA 6280: Medicare and Medicaid**

**Credits: 3                      Grading Scheme: Letter**

Costs and financing of Medicare and Medicaid. Eligibility, program administration, benefits, and relationships between state and federal agencies.

### **PHA 6281: Practices and Procedures of Administrative Agencies**

**Credits: 3                      Grading Scheme: Letter**

Organization, responsibilities, administrative practices, procedures, and politics of FDA and CMS.

### **PHA 6282: Pharmaceutical Policy Process**

**Credits: 3                      Grading Scheme: Letter**

Focuses on the national pharmaceutical policy-making process by examining how legislative proposals are developed and influenced, the enactment of laws, and the administrative rule making which clarifies and fills in details not found in what legislative bodies produce. Several players in this process are examined, including the roles of the Executive Branch, administrative agencies such as The Centers for Medicaid and Medicare Services and The Food and Drug Administration, the Congress, Federal courts, interest groups like the Pharmaceutical Research and Manufacturer's Association, and groups representing pharmacists, physicians, and patients.

### **PHA 6283: Commercial Applications of Pharmacoeconomics**

**Credits: 3                      Grading Scheme: Letter**

Fundamental methods of pharmacoeconomic analysis. Focuses on the theory, methods, and application of technology assessment in health care. Applications will be drawn from a variety of health care settings, including pharmaceuticals.

### **PHA 6286: Pharmaceutical Microeconomics**

**Credits: 3                      Grading Scheme: Letter**

Introduction to basic microeconomic principles as they are applied to pharmaceuticals. Elucidation of the economic tools and the fundamental concepts of choice, opportunity costs, supply and demand, elasticity, utility maximizing behavior, competition, monopolies and oligopolies in the healthcare market.

### **PHA 6287: Pharmaceutical Health Economics**

**Credits: 3                      Grading Scheme: Letter**

Examines economic principles and issues of health care and pharmaceuticals in the United States. Topics examined include health care structure and financing, market failures, human capital, and producer and consumer behavior.

### **PHA 6288: Critical Review of Research Methods**

**Credits: 3                      Grading Scheme: Letter**

Research design and methodology utilized in clinical research with a focus on understanding each component of the research process, including how to formulate a research question, develop hypotheses, analyze instruments, collect relevant data, data analysis, and critically interpret the results, while preserving the ethical guidelines for human subject research.

### **PHA 6289: Regulating Clinical Research**

**Credits: 3                      Grading Scheme: Letter**

Introduces history and current regulatory environment of human subjects research as a background to regulatory frameworks and contemporary issues structuring the development of clinical medical research, including federal regulations of Departments of Health and Human Services and those of the Food and Drug Administration, as well as non-federal sources of regulation.

### **PHA 6290: Pharmaceutical Fraud and Abuse**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* None.

Understanding of federal fraud, waste and abuse laws and regulations related to health care. Fraud, waste, and abuse laws and regulations are the focus of many different health care laws and regulations with the number growing each year. This course will introduce students to these laws and regulations and allow them to distinguish among the

different regulations. The course will also focus on areas where health care entities can prevent violations of fraud, waste, and abuse.

### **PHA 6291: Pharmaceutical Health Care Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Emphasizes designing a prescription benefit program meeting the needs of a reformed health care system; negotiating the health care system as the advocate for patients who are from special populations; and presenting to lawmakers a compelling argument for reform.

### **PHA 6354: Natural Medicinal Products**

**Credits: 3**                      **Grading Scheme:** Letter

Chemistry of compounds derived from plants and animals.

### **PHA 6356: Structure Determination of Complex Natural Products**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 5235 or consent of instructor.

Rigorous structure determination of natural products, using modern spectroscopic methods. Become able to elucidate the structure of any organic small molecule.

### **PHA 6357: Herbal & Dietary Supplements**

**Credits: 3**                      **Grading Scheme:** Letter

Herbal & Dietary supplements are extensively used by consumers. This course provides an overview of commonly used supplements to assist healthcare practitioners in providing patients with adequate counseling to avoid drug interactions and false claims.

**PHA 6416: Pharmaceutical Analysis I**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and applications of relevant analytical techniques for analysis of drugs in biological samples. Offered spring term in odd-numbered years.

**PHA 6417: Pharmaceutical Analysis II**

**Credits: 3**                      **Grading Scheme:** Letter

Absorption, fluorescence, phosphorescence, and spectroanalysis of drugs and related compounds.

**PHA 6425: Drug Biotrans and Molecular Mechanisms of Toxicity**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* introductory organic chemistry, biochemistry.

Enzymology and mechanisms of drug biotransformation pathways. Examples of drugs and other xenobiotics that exhibit toxicity related to biotransformation.

**PHA 6427: Pharmacogenetics of Drug Metabolism**

**Credits: 2**                      **Grading Scheme:** Letter

Examination of factors that affect drug disposition and response including genetics, as well as, additional factors such as environment, diet, age, and concurrent drug therapy and health status. Students will acquire an understanding of pharmacogenetics/pharmacogenomics in the context of variability in drug disposition and the application of pharmacogenetics to drug development and drug treatment.

**PHA 6432: Fundamentals of Pharmaceutical Chemistry**

**Credits: 1**                      **Grading Scheme:** Letter



This is a foundation course whose aims are providing an introduction to the principles of Pharmaceutical chemistry, including an understanding of drug structure-activity relationships, prediction of the physico-chemical properties of a drug, basic knowledge of the major pathways of drug metabolism, and factors that can contribute to drug-drug interactions.

#### **PHA 6440: Seminar in Drug Discovery**

**Credits: 1    Max: 8            Grading Scheme:** Letter, S/U

Weekly presentations of research topics related to drug design and discovery.

#### **PHA 6444: Pharmaceutical Chemistry I**

**Credits: 3                    Grading Scheme:** Letter

Students are shown how to predict the solubilities, structure-activity relationships, basic synthesis routes for selected structures, metabolism and pharmacological activity/potency of various drug classes. In particular, anticoagulants, ACE inhibitors, glucocorticoid steroids, nitrate esters, adrenergics, cholinergics, diuretics, anesthetics, antihyperlipidemics, muscle relaxants, anxiolytics, antidepressants, sedative hypnotics and vitamins are covered.

#### **PHA 6447: Drug Design**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* organic chemistry, biochemistry, pharmacology, or consent of instructor.

Relevant disciplines and their effect on new drug development, from discovery of a new active lead compound to final refinement as a commercial product.

#### **PHA 6448: High Throughput Drug Discovery**

**Credits: 2                    Grading Scheme:** Letter

*Prerequisite:* organic chemistry, biochemistry, or consent of instructor.

Introduction to combinatorial chemistry, multi-compound based technologies, and their use in screening bioassays to discover lead compounds.

#### **PHA 6449: Pharmacogenomics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* biochemistry, PHA 6425, or consent of instructor.

Contemporary experimental approaches in pharmacogenomics research design.

#### **PHA 6471: Synthetic Medicinal Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

Review of acid and base properties of pharmacologically active molecules. Review of mechanisms of synthetic reactions, and their applications.

#### **PHA 6508: Systems Physiology and Pathophysiology I**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* Upper level undergraduate Anatomy and Physiology

Systems Physiology and Pathophysiology-I is the first of a two-course sequence that aims to provide graduate students with an integrated knowledge base in the physiological functions of the human body and pathological changes pertinent to the development and progression of various diseases. As an integral component of the Ph. D. curriculum, the two courses will provide students with a solid understanding of human pathophysiology in preparation for their dissertation research.

#### **PHA 6509: Systems Physiology and Pathophysiology II**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* Upper level undergraduate Anatomy and Physiology

Systems Physiology and Pathophysiology-II is the second of a two-course sequence that aims to provide graduate students with an integrated knowledge base in the physiological functions of the human body and pathological

changes pertinent to the development and progression of various diseases. As an integral component of the Ph. D. curriculum, the two courses will provide students with a solid understanding of human pathophysiology in preparation for their dissertation research.

#### **PHA 6512L: Experiential Research Training in Pharmacodynamics**

**Credits: 1-4    Max: 4            Grading Scheme: Letter**

*Prerequisite:* PHA 6521C.

Research rotations. Practical overview of hypothesis development and testing, research design and application of statistical analysis.

#### **PHA 6521C: Research Techniques in Pharmacodynamics**

**Credits: 1                    Grading Scheme: Letter**

#### **PHA 6522L: ICBR Molecular Techniques Laboratory**

**Credits: 2                    Grading Scheme: S/U**

#### **PHA 6534: Toxicology of Chemical Weapons**

**Credits: 3                    Grading Scheme: Letter**

Providing healthcare providers, first responders, and others that may be exposed to chemical weapons with an understanding of their toxicology and treatment approaches.

#### **PHA 6535: Principles of Nucleotide Activity**

**Credits: 2                    Grading Scheme: Letter**

This course will be introducing the students to the chemical structure of DNA and RNA; the synthetic processes for DNA and RNA synthesis; biochemical reactions and pathways for nucleotide synthesis; DNA replication, transcription and translation; covalent and reversible interactions of nucleic acids with small molecules and proteins and an overview of techniques for the analysis of nucleic acids.

#### **PHA 6540: Neurochemical Foundation of Pharmacodynamics**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to neurochemical mechanisms involved in drug action. Overview of neurotransmitter biochemistry along with receptor pharmacology. Emphasis on both methodological and theoretical aspects of neurotransmitter metabolism and function.

#### **PHA 6543: Pharmaceutical Chemistry II**

**Credits: 3**                      **Grading Scheme:** Letter

Showing students how to predict the solubilities, structure-activity relationships, basic synthesis routes for selected structures, metabolism and pharmacological activity/potency of various drug classes. In particular antidiabetics, anticonvulsants, H1 and H2 antagonists, analgetics, nonsteroidal antiinflammatory drugs, hormones, antibiotics, antiviral agents, and antineoplastic agents are covered.

#### **PHA 6556: Introduction to Clinical Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the basic methods and procedures commonly employed in Clinical Toxicology as well as the concept of Clinical Toxicology as an interdisciplinary science within the field of healthcare.

#### **PHA 6557: Clinical Toxicology 1**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* VME 6602

Providing students with an understanding of the toxic effects and clinical applications of various therapeutic drug classes including cardiovascular, CNS, analgetic, anesthetic, antineoplastic, and antibiotic drugs.

### **PHA 6630: Medication Therapy Management: A Hematologic Focus**

**Credits: 3                      Grading Scheme: letter**

*Prerequisite:* The student must have successfully completed Foundations of MTM I ( PHA 6631 ) and Foundations of MTM II ( PHA 6632 ).

Introducing the student to principles of medication therapy management in patients with hematologic disorders.

### **PHA 6631: Foundations of Medication Therapy Management I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* All students have a prior pharmacy degree.

Core elements of medication therapy management (MTM), physical assessment skills, communication techniques, and methods of literature evaluation needed for successful provision of MTM services.

### **PHA 6632: Foundations of Medication Therapy Management II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* All students have a prior pharmacy degree.

Business elements of medication therapy management (MTM), MTM practice models, documentation systems, business plan development, and basic financial principles needed for the successful provision of MTM.

### **PHA 6633: Medication Therapy Management: A Cardiovascular Focus**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHA 6631 and PHA 6632

Principles of medication therapy management in patients with cardiovascular disorders.

**PHA 6634: Medication Therapy Management: An Endocrine Focus**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHA 6631 and PHA 6632

Principles of medication therapy management in patients with endocrine disorders.

**PHA 6635: Medication Therapy Management: A Renal Focus**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHA 6631 and PHA 6632

Principles of medication therapy management in patients with renal disorders.

**PHA 6636: Medication Therapy Management: A Gastrointestinal Focus**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Foundations of MTM I and Foundations of MTM II

Principles of medication therapy management in patients with gastrointestinal disorders.

**PHA 6637: Medication Therapy Management: A Psychiatric Focus**

**Credits: 3**                      **Grading Scheme:** letter

*Prerequisite:* The student must have successfully completed Foundations of MTM I ( PHA 6631 ) and Foundations of MTM II ( PHA 6632 )

Introducing the student to principles of medication therapy management in patients with psychiatric disorders.

**PHA 6638: Medication Therapy Management: A Neurologic Focus**

**Credits: 3                      Grading Scheme: letter**

*Prerequisite:* The student must have successfully completed Foundations of MTM I ( PHA 6631 ) and Foundations of MTM II (PHA 6632 )

Introducing the student to principles of medication therapy management in patients with neurologic disorders.

### **PHA 6639: Medication Therapy Management: A Respiratory Focus**

**Credits: 3                      Grading Scheme: letter**

*Prerequisite:* The student must have successfully completed Foundations of MTM I ( PHA 6631 ) and Foundations of MTM II ( PHA 6632 ).

Introducing the student to principles of medication therapy management in patients with respiratory disorders.

### **PHA 6717: Measurement in Pharmacy Administration Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6217 or equivalent.

Examination of some of the techniques adapted from the social sciences for research in the field of pharmacy administration.

### **PHA 6793: Evidentiary Basis of Pharmaceutical Use**

**Credits: 3                      Grading Scheme: Letter**

The overall goal of the course is to familiarize students with methods and tools to evaluate the medical literature. Students will be exposed to an array of study designs and analytic methods. In clinical cases, students evaluate strengths and weaknesses of the published literature and use evidence to support their recommendations about the appropriate use of pharmaceuticals.

### **PHA 6796: Study Design in Pharmaceutical Outcomes & Policy Research**

**Credits: 3                      Grading Scheme: Letter**

Methods for evaluation and improvement of drug therapy outcomes including critical appraisal of drug and clinical service literature with special focus on patient and medication safety.

#### **PHA 6798: The Use and Abuse of Statistics in Drug Regulation**

**Credits: 3**                      **Grading Scheme:** Letter

Explores statistical methods used to make inferences about data obtained in clinical trials. This course demonstrates how statistics are used to rule out the possibility that the conclusions of a research project are the result of chance. Potential problems in the use of statistics are reviewed. The course examines published research articles reporting results that are not supported by the statistical tools used in the described study. The student is taught how to engage in critical analysis of the statistics in a proposed scientific study.

#### **PHA 6799: Patient Safety Program Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the methodologies through which patient safety data are collected and evaluated. The use of existing databases on patient safety will be examined. The course includes design of a patient safety study, the evaluation of data, and the use of results from program evaluation to implement improvements to ongoing programs.

#### **PHA 6805: Applied Data Interpretation and Reporting of Findings in Pharmacy**

**Credits: 3**                      **Grading Scheme:** Letter

Develops research skills including generation of questions; hypotheses testing; and testing, interpretation, and reporting of findings.

#### **PHA 6806: Pharmacoeconomic Modeling**

**Credits: 3**                      **Grading Scheme:** letter

*Prerequisite:* PHA 6283



Providing an introduction to methods and techniques for conducting pharmacoeconomic studies, including classifying disease, identifying pharmaceutical products from prescription claims, risk adjustment, practical decision analysis, Markov modeling, and indirect treatment comparisons.

**PHA 6840: Medicinal Chemistry of Drugs of Abuse**

**Credits: 3**                      **Grading Scheme:** Letter

Pharmacological effects of commonly encountered licit and illicit pharmaceutical compounds.

**PHA 6850: Principles of Forensic Science**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the basic disciplines of forensic science. The course is composed of twelve modules.

**PHA 6851: Forensic Analysis of DNA**

**Credits: 3**                      **Grading Scheme:** Letter

Techniques for isolation of DNA from cells. Spectroscopic techniques. Hydrodynamic and electrophoretic separation methods. Sequence determination. Statistical analysis and forensic significance.

**PHA 6852: Mammalian Molecular Biology**

**Credits: 3**                      **Grading Scheme:** Letter

Focus on the principles of modern molecular biology and biochemistry and expand on the concepts you may have already encountered in other classes in this program. The content will also include the applications of experimental techniques and procedures routinely used in this field.

### **PHA 6853: Biological Evidence and Serology**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of crime scene investigation as it pertains to biological evidence. Crime scene safety. Collecting and preserving evidence. Identifying, analyzing, and interpreting biological stains.

### **PHA 6854: Forensic Immunology**

**Credits: 3**                      **Grading Scheme:** Letter

Antibody formation, antigen structure. Complement mediated reactions. Hypersensitivity. Immuno-electrophoretic techniques in forensic science.

### **PHA 6855: Forensic Genetics**

**Credits: 3**                      **Grading Scheme:** Letter

Principles of inheritance. Genetic polymorphisms and forensic implications, population genetics and paternity testing.

### **PHA 6856: Blood Spatter and Distribution**

**Credits: 3**                      **Grading Scheme:** Letter

Blood spatter creation and interpretation. Recording, collection, and processing of bloodstains and blood spatter evidence.

### **PHA 6860: Prevention of Pharmaceutical Crimes**

**Credits: 3**

**Grading Scheme:** Letter

Introduces the student to the current legal environment associated with criminal conduct related to the use of pharmaceutical products and strategies for reducing the risk that pharmaceutical products will be used to intentionally harm a person as the instrumentality of a criminal act, including actions by a health care provider that can be considered criminal and outside the practice of health care.

**PHA 6891: Introduction to Pharmacoepidemiology**

**Credits: 3**

**Grading Scheme:** Letter

Explores basic epidemiology principles with a particular focus on how they are applied to pharmaceuticals. Provides a basic understanding of causation, measure disease occurrence and causal effect, biases in study design, data analysis and use of epidemiology in clinical settings.

**PHA 6892: Practices and Procedures of the IRB**

**Credits: 3**

**Grading Scheme:** Letter

Describes the nuts and bolts of how Institutional Review Boards operate. Topics discussed include IRB membership, IRB authority, criteria for IRB approval of research or exemption from review, and suspension or termination of IRB approved research. The process of risk/benefit decision making is reviewed. The constituencies served by the IRB are examined. Current issues in IRB practice are discussed. Practical information about the week-to-week management of an IRB is explained.

**PHA 6893: Research Ethics**

**Credits: 3**

**Grading Scheme:** Letter

Introduce the student to the ethical issues that must be addressed in clinical research with human subjects. It will include an introduction to the primary theories and methods of ethical reflection and analysis, the conceptual distinctions and continuities between ethical and legal / policy questions, and illustrate the background to current issues with selected cases from the history of human subjects research.

**PHA 6894: Introduction to Graduate Studies**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

time management, intellectual property, research notebooks, laboratory leadership, grantsmanship, preparing presentations, publishing and professionalism.

**PHA 6896: Preclinical Drug Evaluation**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* general Biology (Diversity of Life), Microbiology, General Chemistry, Organic Chemistry Biochemistry, and Physiology, Pharmacology.

Introduction to the study of preclinical methods used in the screening of important categories of clinically useful drugs, including direction on writing effective animal protocols for research.

**PHA 6899: Advanced OB/GYN and Pediatric Pharmacoepidemiology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Biostatistics, Epidemiology Methods, and permission of the instructor

Introducing the student to current drug safety issues in OB/GYN and pediatric drug treatment practice. The discussion will focus on methodological consideration specific to observational data research in these special populations, including but not limited to assessing drug exposure, small exposure populations, outcome validation of rare events, biases, confounding, data extraction from electronic health records, and primary source verification as relevant to pediatrics and OB/GYN.

**PHA 6905C: Research Procedures in Medicinal Chemistry**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

**PHA 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**PHA 6934: Seminar in Medicinal Chemistry**

**Credits: 1    Max: 3            Grading Scheme:** Letter, S/U

Weekly presentation and discussion of research reports based on college programs or literature.

**PHA 6935: Selected Topics in Pharmacy**

**Credits: 1-4    Max: 12            Grading Scheme:** Letter

Open to all departments in the College of Pharmacy.

**PHA 6936: Advanced Topics in Pharmaceutical Sciences**

**Credits: 1    Max: 4            Grading Scheme:** Letter

Written and oral presentation of research designs, protocols, papers, and critical appraisals with discussion and critical review of such topics.

**PHA 6937: Topics in Pharmaceutical Administration**

**Credits: 2            Grading Scheme:** Letter

Analysis of special topics and recent developments in pharmaceutical administration, including innovations in the distribution of drugs and health-care services.

**PHA 6938: Research Seminar**

**Credits: 1    Max: 3            Grading Scheme: Letter**

Seminar required of graduate students in the College of Pharmacy.

**PHA 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**PHA 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**PHA 7939: Journal Colloquy in Pharmacodynamics**

**Credits: 1    Max: 8            Grading Scheme: Letter**

Critical presentation and discussion of recent original articles.

**PHA 7979: Advanced Research**

**Credits: 1-12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PHA 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

### **PHC 6000: Epidemiology Methods I**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PHC 6001, PHC 6050 or PHC 6052, or departmental approval.

Overview of epidemiology methods used in research studies that address disease patterns in community- and clinic-based populations.

### **PHC 6001: Principles of Epidemiology in Public Health**

**Credits: 3**

**Grading Scheme: Letter**

Epidemiology methods frequently used to study disease patterns in community and clinic-based populations. Includes distribution and determinants of health-related states or events in specific populations and application to control of health problems.

### **PHC 6002: Epidemiology of Infectious Diseases**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PHC 6001, and PHC 6052 or PHC 6050: Statistical Methods for Health Sciences Research I or departmental approval.

Epidemiology, prevention, and control of infectious diseases affecting local, national, and global community health; epidemiologic methods used in disease surveillance and measures used in slowing or preventing spread of disease.

### **PHC 6003: Epidemiology of Chronic Diseases and Disability**

**Credits: 3**

**Grading Scheme: Letter**

*Prerequisite:* PHC 6001, and PHC 6052 or PHC 6050 or departmental approval.

Overview of epidemiology of chronic diseases and disabilities prevalent in various populations. Introduces contemporary methods for surveillance including risk factors, etiology, and changes over time.

### **PHC 6006: An Introduction to One Health Problem Solving**

**Credits: 2**                      **Grading Scheme:** Letter

Infectious disease surveillance, diagnostic tools, outbreak investigations, vaccine trials, public health interventions, biodefense, emerging infectious diseases, and analytic approaches to infectious disease prevention and control.

### **PHC 6008: Cardiovascular Epidemiology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6800, consent of instructor.

Survey of major cardiovascular diseases including a review of design and methods for studying natural history, prevention, and treatment process.

### **PHC 6009: Biology and Epidemiology of HIV/AIDS**

**Credits: 3**                      **Grading Scheme:** Letter

Examining the biological process by which HIV causes infection and AIDS, including the physiologic and cellular processes involved in HIV infection and treatment. Developing skills in finding and interpreting current epidemiologic data on HIV/AIDS, including risk factors, comorbid health issues, special populations, and health outcomes. Overview of HIV prevention strategies and their effectiveness. Special emphasis on epidemiology of HIV/AIDS in the rural south.

### **PHC 6010: Data Management and Statistical Computing for Epidemiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* knowledge of statistics and personal computers.

Database design, data management, efficient data collection, and computer-based methods for statistical design and analysis.



### **PHC 6011: Epidemiology Methods II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6000 and PHC 6052, or departmental approval.

Analytic methods in epidemiology with a foundation in applied epidemiological analysis and experience in peer-review productivity based on secondary data analysis.

### **PHC 6014: Epidemiology, Prevention, and Control of Chronic Diseases II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 and PHC 6003 or equivalent.

Survey of major chronic diseases not covered in PHC 6003. Emphasizes recent epidemiology research and findings.

### **PHC 6016: Social Epidemiology in Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6000, PHC 6001, PHC 6410, or consent of instructor.

Social determinants of population health, including acute and chronic disease outcomes, and health behavior. Introduces methodological approaches to the field of social epidemiology with specific attention to measurement issues.

### **PHC 6020: Clinical Trial Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6208/STA 6209, STA 6326/STA 6327, or equivalent

Basic statistical concepts and methods used in clinical trials and the statistical principles and methods including phase I to IV clinical trials.

### **PHC 6034: Epidemic Investigation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* GMS 6800, GMS 6801, consent of instructor.

Principles of infectious disease investigation and features of all types of outbreaks. Problem-solving exercises of classic and current epidemics.

### **PHC 6036: Environmental Infectious Diseases: A Molecular Approach**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Providing students with an overview of environmental microbiology and review the latest tools in microbial ecology. The course will emphasize innovative methods in studying microbial diversity. The course is designed for students preparing for careers in public health.

### **PHC 6050: Statistical Methods for Health Sciences Research I**

**Credits: 3**                      **Grading Scheme:** Letter

Appropriate use of data summarization and presentation of basic statistical methods, including ANOVA, nonparametric methods, inference on discrete data, inference on survival data, and regression methods for continuous, binary, and survival data. SPSS statistical software. Required core course for students in public health management and policy and social and behavioral science concentrations.

### **PHC 6050C: Biostatistical Methods I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* basic knowledge of data analysis, linear algebra, and calculus III, and consent of instructor.

Biostatistical data analysis using linear models; theory and practice of regression and analysis of variance in the health sciences.

### **PHC 6051: Biostatistical Methods II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor and Biostatistical Methods I.

Biostatistical data analysis using generalized linear models, generalized linear mixed models, semiparametric and nonparametric regression, and neural networks; theory and practice in the health sciences.

### **PHC 6052: Introduction to Biostatistical Methods**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the concepts and methods of biostatistical data analysis. Topics include descriptive statistics, probability, standard probability distributions, sampling distributions, point and confidence interval estimation, hypothesis testing, power and sample size estimation, one- and two-sample parametric and non-parametric methods for analyzing continuous or discrete data, and simple linear regression. SAS statistical software for data management, statistical analysis and power calculations. Required core course for students in biostatistics, environmental health, and epidemiology concentrations.

### **PHC 6053: Regression Methods for the Health and Life Sciences**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6052 or equivalent. For graduate students in fields other than statistics.

Introduction to a wide range of regression methods. Primary topics are multiple linear regression, logistic regression, and Poisson regression.

### **PHC 6055: Biostatistical Computing Using R**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6053 or equivalent. Students must also have access to a laptop for in-class use.

Provide an environment for learning how to input, store, modify, display and analyze data using R. Developing basis R programming skills including working with vectors, lists, arrays and matrices, writing functions and using R to simulate data.

### **PHC 6063: Biostatistical Consulting**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Biostatistical Methods I and II or consent of the instructor.    *Corequisite:* All faculty teaching this course have completed at least 18 graduate semester hours in the teaching discipline and hold at least a master's degree.

Providing training for M.S. and Ph.D students in Biostatistics on the statistical aspects of research problems.

### **PHC 6068: Biostatistical Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6092 , PHC 6050 , and PHC 6051 , or permission of the instructor.

Algorithms for statistical computing and their applications in biostatistics. Computational techniques for data analysis, random number generation, Monte Carlo integration, stochastic optimization. High-dimensional data analysis, large scale hypothesis testing, stochastic optimization, Markov chain Monte Carlo (MCMC), missing data analysis, selected biological applications.

### **PHC 6070: Epidemiology of Aging**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001: Principles of Epidemiology in Public Health

Focusing on the principles and methods of epidemiology as applied to study of aging. Examination of trends in aging and health of aging populations, explanations and consequences of mortality decline, determinants of health and survival and how different types of health care systems are used in prevention, intervention, treatment and supportive care.

### **PHC 6080: SAS for Public Health - Data**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6052 or equivalent.

Input, storage and modification of data using SAS.

### **PHC 6081: SAS for Public Health - Analysis**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6052 or equivalent.

Frequently-used SAS procedures to conduct common statistical analyses.

### **PHC 6102: Introduction to Public Health Administrative Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of the public health system, including public health concepts and practices, health care delivery and financing. Focus on understanding the organization and administration of health services, structure and functions of the U.S. public health system, and health insurance programs.

### **PHC 6103: Systems Thinking for Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

Conceptual and empirical tools for understanding and managing complex organizations and interacting with other large systems that impact public health. Simulated work experiences show intended and unintended consequences of interventions in complex systems.

### **PHC 6104: Evidence-Based Management of Public Health Programs**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6102 or equivalent.

Practical guidance on how to choose, administer, and evaluate evidence-based programs and policies in public health settings.

### **PHC 6105: Health Promotion Policy and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Structure and function of local, state, and federal programs including official agencies, voluntary agencies, and health-related private-sector activities related to current emphases on health promotion and chronic disease control.

### **PHC 6107: Introduction to Veterinary Public Health**

**Credits: 1**                      **Grading Scheme: S/U**

*Prerequisite:* admission to DVM/MPH program, or consent of instructor.

Seminar introducing DVM/MPH students to veterinary public health.

### **PHC 6120: Community Assessment and Partnerships**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* Graduate status or consent of instructor.

Develops knowledge, skills, and methods for conducting community health assessments to identify factors that affect the health of a population.

### **PHC 6146: Public Health Program Planning and Evaluation**

**Credits: 3**                      **Grading Scheme: Letter**

Second of two courses providing skills to develop and implement public health programs. Focuses on six steps in the rational planning process. Emphasizes evidence-based public health principles, organizational influences, and other contemporary themes of program planning.

### **PHC 6153: Public Policy and Aging**

**Credits: 3**                      **Grading Scheme: Letter**

Examines policies relevant to older residents, such as national and state initiatives, presidential and gubernatorial leadership, implementation processes and consequences in policy process. Focuses on developing effective skills in public policy process and understanding major initiatives and policies of Social Security, Medicare, Medicaid, and the Older Americans Act.

### **PHC 6183: Disaster Preparedness and Emergency Response**

**Credits: 3                      Grading Scheme: Letter**

Online introduction to disaster preparedness and responding to disasters. Training on the Incident Command System (ICS), the National Incident Management System (NIMS), and the Federal Emergency Management Agency (FEMA) minimum responder credential requirements.

**PHC 6193: Qualitative Data Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Advanced masters students and PhD students with access to a qualitative data set.

Students will work intensively with their own qualitative data with feedback from instructors and classmates. Covers different ways of working with narrative data. Focuses on grant writing and publishing with qualitative research.

**PHC 6194: Spatial Epidemiology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* All of the following courses: PHC 6000 , PHC 6011 , PHC 6052 , PHC 6053 (or equivalent).

Spatial Epidemiologic research methods, with major focus on Geographic Information Systems (GIS) and Exploratory Spatial Data Analysis (ESDA) applied to public health issues.

**PHC 6195: Health information for Diverse Populations: Theory & Methods**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate status or consent of instructor.

Social and behavioral science is a core area in public health. This is an introductory course that examines basic concepts and social scientific research in persuasive communication to gain an understanding how individuals process and respond to public health information.

**PHC 6220: Overview of Long-Term Care**

**Credits: 3                      Grading Scheme: Letter**

The range of health and supportive services for older individuals in the continuum of long-term care, especially Alzheimer's disease. Emphasizes developing community programs and services for maintaining the elderly in their own homes.

### **PHC 6251: Assessment and Surveillance in Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

Knowledge, skills, and methods for conducting community assessments and surveillance to inform design of social and behavioral interventions.

### **PHC 6301: Aquatic Systems and Environmental Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6313

Physical and chemical nature of water, effects of contaminant and other stressors in different aquatic ecosystems. Taxonomic and ecological summary of aquatic biota, from algae and invertebrates to vertebrates and pathogens.

### **PHC 6309: Environmental Justice Issues in Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* departmental approval.

Key components as they relate to public health. Environmental justice refers to the tenet that certain populations bear a disproportionate burden of environmental hazards.

### **PHC 6312: Water Quality and Human Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6313

Relationship between water quality and human health and how water quality of determines human health in developed and developing world.



### **PHC 6313: Environmental Health Concepts in Public Health**

**Credits: 2 to 3**

**Grading Scheme:** Letter

Survey of major topics in environmental health. Sources, routes, media, and health outcomes associated with toxic agents in the environment. Effects of agents on disease, water and air quality, food safety, and land resources. Current legal framework, policies, and practices.

### **PHC 6316: Health, Risk, and Crisis Communication**

**Credits: 3**

**Grading Scheme:** Letter

Describing best practices under ordinary, risk, and crisis situations.

### **PHC 6317: Risk Communication for Public Health Practice**

**Credits: 2**

**Grading Scheme:** S/U

Techniques for effective and productive risk communication in public health, environmental health, risk assessment and environmental regulatory activities.

### **PHC 6346: Occupational and Environmental Health Among Agriculture Workers**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* None.

Providing the student with an overview of occupational and environmental health with a special emphasis on zoonotic infection risks to animal workers. Approaches for occupational disease processes, surveillance, industrial hygiene risk factor analyses, prevention and control will be presented. The course is designed to prepare for careers in occupational health.

### **PHC 6370: Public Health Biology**

**Credits: 3**

**Grading Scheme:** Letter

Biological basis of public health issues. Covers background material in biology, chemistry, biochemistry, molecular biology, genetics, and immunology to allow students to understand biological mechanisms of disease prevention and progression at a molecular level. Emphasis on infectious diseases, genetic illnesses, cancer, environmental illnesses, and vaccines.

**PHC 6403: Adolescence, Risk Taking and Health**

**Credits: 3**

**Grading Scheme:** Letter

Introduction to primary determinants and outcomes associated with adolescent risk behaviors. Emphasis on substance use, sexual behaviors, injury, violence and the interactive nature of risk taking behaviors.

**PHC 6404: Gender, Sexuality, and Health**

**Credits: 3**

**Grading Scheme:** Letter

Survey of the dynamics of sexual health issues through public health and gender health studies. Review of intervention strategies to improve sexual health.

**PHC 6405: Theoretical Foundations of Public Health**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* PHC 6410

Providing an in-depth review of social and behavioral science theories used in public health, includes systems and multi-level perspectives on health behavior. Prepares public health students to satisfy MPH competencies in social and behavioral sciences.

**PHC 6410: Psychological, Behavioral, and Social Issues in Public Health**

**Credits: 3**

**Grading Scheme:** Letter

Health behavior from an ecological perspective; includes primary, secondary and tertiary prevention across a variety of settings; incorporates behavioral science theory and methods.

**PHC 6413: Critical Incidents and Violence in Communities**

**Credits: 3**                      **Grading Scheme:** Letter

Public health viewpoint of prevention and community response to critical incidents such as human-made and natural disasters, domestic violence, school and workplace violence, bio-terrorism, and farm accidents.

**PHC 6418: Foundations in Aging and Public Health Policy and Epidemiology**

**Credits: 3**                      **Grading Scheme:** Letter

General overview of varied aspects of public health and aging, including biopsychosocial, environmental, and policy issues impacting the social welfare of older adults.

**PHC 6419: Biomedical and Psychological Aspects of Very Late Life**

**Credits: 3**                      **Grading Scheme:** Letter

Biological and psychological aging in the very old. Emphasizes normal development in later life, development in the oldest, and definitions and assessment of "successful aging." Also, "terminal decline" and the psychological changes associated with death.

**PHC 6421: Public Health Law and Ethics**

**Credits: 3**                      **Grading Scheme:** Letter

Case study approach to legal foundations of American public health system and legal and ethical issues that arise from balancing individual liberties with the government's interest in protecting all citizens' well-being.

#### **PHC 6441: Health Disparities in the United States**

**Credits: 3**                      **Grading Scheme:** Letter

Determinants that influence health outcomes of the most disadvantaged populations in the U.S., with special attention to racial, ethnic, and gender status.

#### **PHC 6445: Global Public Health and Development II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6764

Second in series of two global public health and development courses created specifically for the new Master's in Development Practice (MDP) program. Practical approaches for identification, design, planning, monitoring, and evaluation of global public health interventions in their broader development context.

#### **PHC 6447: Ecology of HIV/Aids in the Rural South**

**Credits: 3**                      **Grading Scheme:** Letter

Casual factors, responses, and outcomes associated with HIV/AIDS in the rural south. Using ecological framework to explore and understand multilevel factors associated with (1) risk and protective behaviors; (2) testing and disclosure of HIV status; (3) availability and sources of social support; (4) need for and use of medical, psychological, and social services; and (5) the development and use of culturally appropriate interventions.

#### **PHC 6512: Environmental Management of Vector-Borne Diseases**

**Credits: 3**                      **Grading Scheme:** Letter

Planning, organization, implementation, and monitoring the activities for control of environmental factors or their interaction with man to prevent or minimize vector propagation and man-vector-pathogen contact.

### **PHC 6515: Introduction to Entomology Zoonotic Diseases and Food Safety**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* General microbiology, principles of infectious diseases, or epidemiology of infectious diseases.

Methods for conducting studies of mosquitoes and ticks, controlling zoonotic diseases, and modern food safety techniques in meat, dairy, and produce production.

### **PHC 6517: Public Health Concepts in Infectious Diseases**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 and PHC 6002.

Topics and methods used in modern infectious disease epidemiology.

### **PHC 6519: Zoonotic Diseases in Humans and Animals**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction of graduate and professional students to major zoonotic diseases in both human and animal presentations. Epidemiology, means of prevention and control, available diagnostics, available treatments, and associated human and animal regulations for each disease. Delivered online in 15 modules.

### **PHC 6520: Foodborne Diseases**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 Principles of Epidemiology

Discussing major pathogens associated with foodborne diseases, their epidemiology, and approaches to outbreak investigation and control of foodborn illness. Teaching/learning methods include lectures, case studies, readings, and an individual project.

### **PHC 6530: Public Health Issues of Mothers and Children**

**Credits: 3**                      **Grading Scheme:** Letter

Maternal and child health problems, specific local, state, and federal programs and policies, health and health care access disparities. Emphasis on importance of evidenced-based public health practice.

**PHC 6543: Community Practice of Behavioral Health Risk Prevention**

**Credits: 3**                      **Grading Scheme:** Letter

Applying skills to community-based prevention including behavioral health programming such as needs assessment, strategies for interagency collaboration, curriculum development, piloting, and evaluating programs, dissemination, and sustainability.

**PHC 6544: Health Behavior Interventions in Practice**

**Credits: 3**                      **Grading Scheme:** Letter

Reviews models and develops interventions for existing health problems at community and individual levels. Focuses on overcoming barriers to service use and to treatment.

**PHC 6561: Public Health Laboratory Techniques**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* Biosafety and bloodborne pathogen training program: <http://ufbiosafety.classroom24-7.com/>

Laboratory techniques used in emerging infectious respiratory disease research and epidemiologic surveillance.

**PHC 6585: Health Promotion and Disease Prevention**

**Credits: 3**                      **Grading Scheme:** Letter

History, current theories, and application of methodologies of health promotion and disease prevention.

**PHC 6586: Interventions for Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

Second of three courses designed to provide skills to develop and implement public health programs. Empirical literature describing the efficacy of public health interventions including well-known large-scale trials. Both qualitative and quantitative intervention approaches.

**PHC 6601: Seminar in Contemporary Public Health Issues**

**Credits: 1**                      **Grading Scheme:** Letter

Introduction to key interdisciplinary, cross-cutting topics essential to the contemporary practice of public health. Written and oral reports.

**PHC 6607: Critical Issues in Public Health**

**Credits: 1**                      **Grading Scheme:** Letter

Providing students the opportunity to learn multiple ways to view current controversial topics in public health. Covering current public health topics encompassing biomedical issues, social and behavioral factors related to health, and the environment.

**PHC 6700: Social and Behavioral Research Methods**

**Credits: 3**                      **Grading Scheme:** Letter

Research methods and their specific applications to public health issues.

## **PHC 6702: Exposure Measurement and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* at least one undergraduate course in biostatistics or statistics.      *Corequisite:* access to a computer with Excel, SPSS, or SAS.

Develop skills to design exposure studies applicable to public health investigations, veterinary health investigations, and health risk assessments.

## **PHC 6706: Health-Medical Outcomes Research and Measurement: A Policy Applications Perspective**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* departmental approval.

Conceptualizing and developing health status measures and using them to assess outcomes and effectiveness of medical care. A broad perspective from a public health viewpoint.

## **PHC 6711: Measurement in Epidemiology and Outcomes Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 and PHC 6050 or equivalent.

Major designs and principles of measurement for epidemiology and health services outcomes research, with emphasis on use of primary data collection.

## **PHC 6716: Survey Research Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001, PHC 6050; and STA 6208 or equivalent, or permission of instructor.

Introduction to population surveys typical in descriptive (surveillance) and analytic epidemiology research.

## **PHC 6722: Environmental and Global Health Research Methods Rotation**

**Credits: 1-4    Max: 4**                      **Grading Scheme:** Letter



Providing opportunities for PhD students to gain first-hand experience observing the implementation of research methods needed to employ during the course of their dissertation research. Upon completion, students will be required to write a detailed report of the experience.

#### **PHC 6762: International Public Health**

**Credits: 3                      Grading Scheme:** Letter

Overview of international public health, with special attention to economically disadvantaged populations and those affected by pandemics and by emerging and re-emerging diseases.

#### **PHC 6764: Global Public Health and Development I**

**Credits: 3                      Grading Scheme:** Letter

First in series of two global public health and development courses. Public health and anthropologic principles, methods, and study designs.

#### **PHC 6900: Environmental and Global Health Journal Club**

**Credits: 1                      Grading Scheme:** Letter

Discussing and developing high quality written and oral critiques of recent literature from top peer-reviewed journals on three diseases with global impact that have key environmental drivers, dengue, TB, and Chagas disease. Developing critical thinking and writing skills in evaluating the scientific literature.

#### **PHC 6905: Independent Study**

**Credits: 1-6    Max: 6                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

**PHC 6912: Special Project: Independent Research**

**Credits: 1-9    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Student must undertake significant responsibility for all or part of a research project of particular interest.

**PHC 6913: Biostatistics Project**

**Credits: 1-9    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* Biostatistics students only.

Develop a research project and assume responsibility for statistical analysis of a public health application. Required final paper and oral presentation.

**PHC 6917: Supervised Research Project**

**Credits: 1-6    Max: 6                    Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**PHC 6930: Integrated Public Health Seminar**

**Credits: 3                                  Grading Scheme: Letter**

Integrating, synthesizing, and applying material learned to unique public health problems that require multiple specialties for solution.

**PHC 6931: Seminars in Public Health**

**Credits: 1                                  Grading Scheme: S/U**

Interdisciplinary examination of key public health issues affecting people, animals, and the environment from a global perspective. Preparation for international public health projects.

**PHC 6937: Special Topics in Public Health**

**Credits: 1-6    Max: 6            Grading Scheme: Letter**

**PHC 6938: Oral and Craniofacial Epidemiology**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHC 6001 and PHC 6050 or equivalent. PHC 6000 and STA 6166 are recommended, but not required.

Introduction to epidemiology of oral and craniofacial diseases. Principles and methods of epidemiologic research in this field.

**PHC 6945: Public Health Practicum**

**Credits: 1-6    Max: 6            Grading Scheme: S/U**

*Prerequisite:* approval of practicum site and consent of instructor.

**PHC 6946: Public Health Internship**

**Credits: 1-9    Max: 9            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

Fieldwork at approved site. Focus on practical application of skills in student's concentration area.

**PHC 6947: Occupational Health Field Research Experience**

**Credits: 3-5    Max: 5            Grading Scheme: Letter**

*Prerequisite:*

PHC 6001 Principles of Epidemiology in Public Health

PHC 6313 Environmental Health Concepts in Public Health

The field research experience is providing an opportunity for MHS students to work in a public health, occupational health, or agricultural health setting. Each placement is different, but all placements depend upon completion of most concentration coursework, the ability to work with minimal supervision, and permission of the student's faculty advisor.

**PHC 7000: Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 and PHC 6000 , one semester of biostatistics, and PhD student status in epidemiology or permission of the instructor

This course is taken in the second year of the epidemiology PhD program curriculum. Seminar series is designed to introduce students to a range of advanced epidemiologic concepts and research methods to help PhD students advance their dissertation ideas and help students obtain skills needed for a PhD in epidemiology.

**PHC 7007: Cancer Epidemiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6001 and PHC 6000 (or equivalent research methods coursework). PhD student status required; other graduate students need permission from the instructor to enroll. Students with no prior instruction in epidemiology but with methodological coursework from another related discipline may be admitted with permission from the instructor.

Providing students with skills to evaluate the burden associated with cancers and develop public health interventions to reduce the burden of cancer worldwide. From the population perspective, the course will familiarize students with exposures associated with cancer risk. Practical applications of genome analysis and phenotypic profiling are included/

**PHC 7013: Bias in Observational Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6000 PHC 6011 STA 6166 and a graduate level regression course or equivalent.

Identifying sources of bias in observational data analysis. Statistical methods for bias adjustment in theory and in practice, with emphasis on confounding, missing data, and measurement error.

### **PHC 7038: Psychiatric Epidemiology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6000 and PHC 6011

Concepts, history, measures, methods and analytical techniques to study the risks, prevalence and incidence, course, comorbidities, and consequences of major mental disorders, in general and specific populations internationally.

### **PHC 7056: Analysis of Longitudinal Data**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6326, STA 6327 (or equivalent), STA 6207, STA 6208 (or equivalent), and STA 6246 (or equivalent).

Likelihood-based and semiparametric methods for longitudinal data. Methods to deal with missing data in both settings.

### **PHC 7065: Critical Skills in Epidemiological Data Management**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* PHC 6052 and PHC 6000 or the equivalent and PhD student status

This course will be focusing on getting back to the basics with data including; data entry; assessments for data accuracy and consistency; preparation of project flow logs, code books, and final databases for statistical analysis; preparation of project data reports; data summarization; and responsible management of human subject data.

### **PHC 7066: Large Sample Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6326 and STA 6327 (or equivalent).

Detailed introduction to large sample theory and its application in univariate and multivariate parametric and nonparametric estimation.

### **PHC 7090: Advanced Biostatistical Methods I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHC 6050, PHC 6051, STA 6326, and STA 6327, or permission of the instructor

Theory and application for estimation and hypothesis testing for independent data using linear models. Principles of Frequentist and Bayesian estimation and inference. Application using statistical software. Writing data analysis reports.

#### **PHC 7091: Advanced Biostatistical Methods II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHC 7090 Advanced Biostatistical Methods I or equivalent

Theory and application for independent and dependent data using generalized linear models and generalized linear mixed models. Bayesian and Frequentist inference. Application using statistical software. Writing data analysis reports.

#### **PHC 7427: Ethics in Population Science**

**Credits: 2                      Grading Scheme: S/U**

*Prerequisite:* Advanced degree or PhD candidacy or permission of the instructor.

Covering federally mandated topics in the Responsible Conduct of Research: Data Acquisition, Management, Sharing, Ownership; Conflict of Interest/Commitment; Human Subjects; Animal Welfare; Research Misconduct; Publication Practices and Responsible Authorship; Mentor/ Trainee Responsibilities; Peer Review; and Collaborative Science. This ethics course is for those enrolled in research intensive graduate programs.

#### **PHC 7587: Theory Development and Testing in Behavioral & Community Public Health**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Doctoral student in BSCH or consent of instructor.

The purpose of this class will be allowing students the opportunity to review and orally present on a psychosocial construct that is relevant to their own public health research goals and familiarize students with the process of theory development.

#### **PHC 7595: Introduction to Molecular Epidemiology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Knowledge of basic concepts in epidemiology and study designs: PHC 6001

Covering the theoretical concepts in molecular epidemiology and use of biomarkers in epidemiologic studies. Class topics include: basics of molecular epidemiology, potential uses and limitations of biomarkers, sample collection and storage, issues in epidemiologic study design and analysis, and discussion of specific research examples involving molecular markers.

### **PHC 7727: Grant Writing for Population Health Research**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* Epidemiology Methods II

This course provides practical instruction in the grant process, with a specific focus on National Institutes of Health (NIH) procedures. It provides the student with experience in writing parts of the grant application and in reviewing other's grant applications. It also contains a Mock Grant Review session to assist students in understanding the process and content of grant review.

### **PHC 7752: Seminar in Instrument Development for Public Health**

**Credits: 2                      Grading Scheme: letter**

Seminar discussions regarding developing and validating instruments for data collection and measurement.

### **PHC 7901: Epidemiology Literature Review and Critique (Journal Club)**

**Credits: 1    Max: 3                      Grading Scheme: S/U**

*Prerequisite:* PhD candidacy status or permission from the instructor

Preparing students to perform peer-review and to think critically. In weekly class discussion sessions, students will review peer-reviewed, published research studies that demonstrate innovative or faculty epidemiologic content or methods. Feedback will be given by student peers and faculty.

### **PHC 7902: Epidemiology Supervised Research Writing Circle**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* PhD student status or permission of the instructor      *Corequisite:* Conducting mentored doctoral research

Practice reviewing and critiquing research studies.

#### **PHC 7907: Social and Behavioral Science Journal Club**

**Credits: 1                      Grading Scheme: Letter**

Discussing recent literature from top peer-reviewed journals on specific health behaviors or health outcomes. Students will be presenting 4 journal articles. The purpose is to think about health behaviors or health outcomes from a multidisciplinary perspective.

#### **PHC 7910: International Field Epidemiology**

**Credits: 3                      Grading Scheme: S/U**

*Prerequisite:* PHC 6011 Epidemiology Methods II

This is an independent study for a student who wishes to accomplish a primary data collection effort internationally.

#### **PHC 7916: National Field Epidemiology**

**Credits: 1-3    Max: 3                      Grading Scheme: S/U**

*Prerequisite:* PHC 6011 Epidemiology Methods II

This applied epidemiology field experience is designed as an opportunity for doctoral students to integrate their growing expertise in epidemiology in a field research experience among a population in the United States.

#### **PHC 7925: Biostatistics Journal Club**

**Credits: 1-3    Max: 8                      Grading Scheme: S/U**



Meeting weekly to present, review, and discuss current articles in biostatistics or statistics journals or discipline-specific (e.g. medicine, public health, epidemiology) articles with substantive biostatistical content.

#### **PHC 7934: Seminar I: Epidemiology Past, Present, and Future**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* PhD standing

The principal goals of this doctoral seminar include becoming familiar with major programs of research in epidemiology, discussing findings and implications of classic/prominent epidemiologic studies, reviewing the strengths and weakness of major epidemiologic study designs, and applying knowledge of epidemiologic study design to students' formulation of their own research studies.

#### **PHC 7935: Critical Thinking in Environmental and Global Health**

**Credits: 1                      Grading Scheme: letter**

*Prerequisite:* PHC 6313 Environmental Health Concepts in Public Health  
and  
PHC 6702 Exposure Measurement and Assessment

Providing students with the critical thinking and integrative skills necessary to understand contemporary environmental health problems, critically understand the existing literature, develop research and assessment questions, and identify appropriate methodological tools to address the questions. The course is offered as a weekly seminar that revolves around a focal reading, followed by additional background reading and discussion.

#### **PHC 7979: Advanced Research**

**Credits: 1-12                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

#### **PHC 7980: Research for Doctoral Dissertation**

**Credits: 1    Max: 15                      Grading Scheme: S/U**

**PHH 5405: Modern Philosophy I**

**Credits: 3                      Grading Scheme:** Letter

Close reading of central text of the rationalists in the early modern period, especially Descartes, Spinoza, and Leibniz.

**PHH 5406: Modern Philosophy II**

**Credits: 3                      Grading Scheme:** Letter

Close reading of central texts of the empiricists in the modern period, especially Locke, Berkeley, and Hume.

**PHH 5605: Studies in Continental Philosophy**

**Credits: 3                      Grading Scheme:** Letter

Close reading of central texts of the major figures in the European continental tradition, such as Husserl, Heidegger, and Sartre.

**PHH 6105: Seminar in Ancient Philosophy**

**Credits: 3    Max: 18                      Grading Scheme:** Letter

*Prerequisite:* PHP 5005 or PHP 5015, depending on topic.

Advanced study of particular topics or themes in the philosophy of Greek and Roman antiquity.

**PHH 6425: Seminar in Modern Philosophy**

**Credits: 3    Max: 18            Grading Scheme:** Letter, S/U

*Prerequisite:* PHH 5406 or consent of instructor.

Advanced study of particular topics or themes in philosophy of the seventeenth and eighteenth centuries. S/U option only if admitted to candidacy.

### **PHI 5135: Graduate Logic**

**Credits: 3                      Grading Scheme:** Letter

Propositional calculus, quantificational logic through completeness, and an introduction to modal logic.

### **PHI 5225: Philosophy of Language**

**Credits: 3                      Grading Scheme:** Letter

Advanced survey of central issues in contemporary philosophy of language, such as the theory of meaning, compositionality, reference, truth, and logical form.

### **PHI 5325: Philosophy of Mind**

**Credits: 3                      Grading Scheme:** Letter

Advanced survey of central issues in contemporary philosophy of mind, such as approaches to the mind-body problem, theories of mental content and consciousness, mental causation, and methodology in psychology.

### **PHI 5365: Epistemology**

**Credits: 3                      Grading Scheme:** Letter

Advanced survey of central issues in contemporary epistemology such as major theories of knowledge, justification, and truth.

**PHI 5405: Philosophy of Science**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced survey of central issues in the philosophy of science, such as the nature of the scientific method, and the differences between the natural and social sciences.

**PHI 5425: Philosophy of Social Science**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced survey of the central issues in the philosophy of social science, such as reduction, covering laws, rational reconstruction, interpretation, and causation.

**PHI 5505: Metaphysics**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced survey of issues in contemporary metaphysics, such as existence, identity, universals and abstract objects, the nature of particulars, modalities, and causation.

**PHI 5665: Ethical Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced survey of central issues in ethical theory, such as consequentialism and deontology, theories of justice, and moral skepticism.

### **PHI 5905: Individual Work**

**Credits: 1-6    Max: 6                    Grading Scheme:** Letter

*Prerequisite:* Consent of instructor, graduate coordinator, and chair.

Problem, author, or topic not treated in available courses.

### **PHI 5934: Topics in Philosophy**

**Credits: 3    Max: 18                    Grading Scheme:** Letter

*Prerequisite:* Admission to the graduate program in philosophy or approval of instructor.

Rotating topics may focus upon any area of philosophy not covered by other 5000-level courses.

### **PHI 5935: Proseminar**

**Credits: 3                    Grading Scheme:** S/U

Mandatory for entering students. Methods of inquiry and research.

### **PHI 6105: Seminar in Logic**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

*Prerequisite:* PHI 5135.

Advanced seminar in logic, covering topics in model theory and recursion theory, beyond level of PHI 5135, including a careful treatment of Godel's incompleteness theorems and a modest study of undecidability. S/U option available if student admitted to Ph.D. candidacy.

### **PHI 6226: Seminar in Philosophy of Language**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

Advanced study of particular topics or themes in the philosophy of language, such as compositionality, pragmatics, speech act theory, semantics of attitude reports or deflationary theories of truth. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6306: Seminar in Epistemology**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

*Prerequisite:* PHI 5365 or PHP 5785.

Advanced study of particular topics in epistemology, such as epistemic justification, skepticism, or foundationalism. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6326: Seminar in Philosophy of Mind**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

Advanced study of particular topic or theme in philosophy of mind, such as theories of mental representation, the mind-body explanatory gap, nativism, or the problem of mental causation. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6406: Seminar in Philosophy of Science**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

*Prerequisite:* PHI 5136 and PHI 5405.

Advanced study of particular topics or themes in the philosophy of science, such as the scientific explanation, laws, and theories of space and time. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6506: Seminar in Metaphysics**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

Advanced study of particular topics or themes in contemporary metaphysics, such as identity, Platonism and

nominalism, the nature of particulars, necessity and possibility, events and facts, and the nature of causation. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6667: Seminar in Ethics**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

Advanced study of particular topics or themes in ethical theory, such as noncognitivism, moral realism, virtue ethics, and consequentialism. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6787: Seminar in Continental Philosophy**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

*Prerequisite:* PHH 5505, PHH 5406, or PHH 5405.

Advanced study of particular topics or figures of the 20th-century continental tradition. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6905: Individual Work**

**Credits: 1-9    Max: 9                    Grading Scheme:** Letter

*Prerequisite:* Consent of instructor, graduate coordinator, and chair.

Advanced study of author or topic not treated in available courses.

**PHI 6910: Supervised Research**

**Credits: 1-5    Max: 5                    Grading Scheme:** S/U

**PHI 6934: Special Topics**

**Credits: 1-4    Max: 18                    Grading Scheme: Letter, S/U**

Special research topics falling outside of the scope of other research seminars. S/U option available if student admitted to Ph.D. candidacy.

**PHI 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

**PHI 6971: Research for Master's Thesis**

**Credits: 1-9                    Grading Scheme: S/U**

**PHI 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

*Prerequisite:* consent of the graduate committee.

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PHI 7980: Research for Doctoral Dissertation**

**Credits: 1-12                    Grading Scheme: S/U**

**PHP 5005: Ancient Philosophy I**



**Credits: 3                      Grading Scheme: Letter**

Examination of central themes in Plato's thought through close reading of several major dialogues.

**PHP 5015: Ancient Philosophy II**

**Credits: 3                      Grading Scheme: Letter**

Historical and critical study of major aspects of Aristotle's logic, epistemology, physics, metaphysics, and philosophy of mind, through a close reading of central texts.

**PHP 5785: Foundations of Analytic Philosophy**

**Credits: 3                      Grading Scheme: Letter**

Foundational readings in analytic philosophy from Frege to Quine.

**PHP 6415: Seminar in Kant**

**Credits: 3    Max: 18                      Grading Scheme: Letter, S/U**

*Prerequisite:* PHH 5406 or consent of instructor.

Intensive examination of the first *Critique* and selections from other major works. S/U option available if student admitted to Ph.D. candidacy.

**PHP 6795: Seminar in Analytic Philosophy**

**Credits: 3    Max: 18                      Grading Scheme: Letter, S/U**

Advanced study of the work of a particular philosopher or philosophical problem from the analytic perspective. S/U option available if student admitted to Ph.D. candidacy.

**PHP 6930: Seminar in a School or Thinker**

**Credits: 3    Max: 18                    Grading Scheme:** Letter, S/U

Advanced study of the work of one or more, usually pre-twentieth century, thinkers. S/U option available if student admitted to Ph.D. candidacy.

**PHT 5156: Exercise Physiology**

**Credits: 3                            Grading Scheme:** Letter

*Prerequisite:* M.H.S. student.

Metabolic, muscular, cardiovascular, and pulmonary responses to acute and chronic exercise with application to patient populations.

**PHT 6125C: Concepts in Clinical Biomechanics**

**Credits: 3                            Grading Scheme:** Letter

*Prerequisite:* PHT 6105C

Analyzes joint biomechanics and forces acting on those joints during human motion. Describes their relationship to injury and rehabilitation.

**PHT 6127C: Control of Gait and Posture**

**Credits: 3                            Grading Scheme:** Letter

Influence of central and peripheral mechanisms on control of gait posture in healthy and patient populations.

**PHT 6167C: Applied Neurophysiology for Physical Therapy**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHT 6166C.

Neurophysiological basis of movement, posture, sensation, and special sensory systems with functional application to physical therapy evaluation and treatment.

**PHT 6236C: Neurological Dysfunction as Applied to Physical Therapy**

**Credits: 4                      Grading Scheme: Letter**

Advanced peripheral and central nervous system neurology, evaluation, and therapeutic methods for neurological dysfunction.

**PHT 6316: Neurological Aspects of Orthopedic Rehabilitation**

**Credits: 3                      Grading Scheme: Letter**

Current concepts of neuroscience and motor control and their implications to orthopedic rehabilitation. Recent and relevant literature. Emphasizes incorporating both basic and clinical science evidence in designing therapeutic interventions.

**PHT 6615L: Research Instrumentation in Physical Therapy**

**Credits: 3                      Grading Scheme: S/U**

Current theory and practical application of techniques for the understanding and design of research projects related to physical therapy.

**PHT 6718: Neuroplasticity: A Foundation for Neurorehabilitation**

**Credits: 3                      Grading Scheme: Letter**

Evidence for plasticity after injury or disease. Factors that influence recovery. Medical approach to enhancing recovery. Potential approaches in physical rehabilitation to facilitate and optimize plasticity.

### **PHY 5277: Physics of Accident Reconstruction and Biomechanics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* undergraduate mechanics; calculus.

Introduction, with emphasis on forces experienced in accidents and associated damage to tissue and bone.

### **PHY 5905: Individual Work**

**Credits: 1-4**    **Max: 12 including PHY 6905**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Assigned reading and problems program, special topics, or development of special experimental or theoretical problems. Work selected according to student's needs and interests.

### **PHY 6246: Classical Mechanics**

**Credits: 3**                      **Grading Scheme:** Letter

Review of Lagrangian formulation and special relativity. Hamiltonian mechanics, canonical transforms and Hamilton-Jacobi theories, action angle variables, rigid rotators, normal modes, mechanics of continuous media. Fluid mechanics.

### **PHY 6346: Electromagnetic Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

Electrostatics, special function expansions, magnetostatics, linear media, time dependent Maxwell theory, wave propagation and dispersion, diffraction, scattering, radiation, relativistic covariance, applications.

### **PHY 6347: Electromagnetic Theory II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 6346.

Continuation of PHY 6346.

### **PHY 6536: Statistical Mechanics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 6645 and PHY 6246.

Equilibrium ensembles for classical and quantum systems, fluctuations, applications to normal fluids, phase transitions and critical phenomena, plasmas.

### **PHY 6555C: Cryogenics**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 3101 and consent of instructor.

Production and use of cryogenic fluids; temperature measurement and control; use of cryogenics in science and industry, superconducting magnet and power generator, and electronics. Hands-on experience.

### **PHY 6645: Quantum Mechanics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAP 5304, PHY 4605.

Hilbert space, Heisenberg and Schrodinger dynamics, invariance properties and symmetry operations, spin, perturbation, and variational methods.

### **PHY 6646: Quantum Mechanics II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 6645.

Time dependent perturbation theory, scattering theory, identical particles and second quantization, Dirac equation.

**PHY 6648: Quantum Field Theory I**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PHY 6646.

The Poincare group; the Dirac equation; quantization of free fields; the scattering matrix; applications.

**PHY 6905: Individual Work**

**Credits: 1-4    Max: 12 including PHY 5905                      Grading Scheme:** Letter

Treatment of an experimental or theoretical problem or topic assigned on the basis of student's needs and interests.

**PHY 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

**PHY 6920: Departmental Colloquium**

**Credits: 1    Max: 14                      Grading Scheme:** S/U

Summary presentation of contemporary topics by visiting and local researchers.

**PHY 6932: Seminar in Molecular and Computational Physics**

**Credits: 1    Max: 10                      Grading Scheme:** S/U

*Prerequisite:* senior or graduate standing.

Invited speakers on topics of current interest in computation and theory in dynamics, and molecular and solid state physics.

**PHY 6943: Internship in College Teaching**

**Credits: 2,4,6    Max: 6            Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Required for Master of Science in Teaching students, but available for students needing additional practice and direction in college-level teaching.

**PHY 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme:** S/U

**PHY 7097: Advanced Topics in Theoretical Physics**

**Credits: 3    Max: 10            Grading Scheme:** Letter

Special studies in mathematical methods and applications of current interest at the forefront of one or more specialties in theoretical physics.

**PHY 7669: Quantum Field Theory II**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* PHY 6648.

Path integral quantization; perturbation theory; renormalization; quantization of gauge fields; applications.

**PHY 7939: Special Topics**

**Credits: 2    Max: 12            Grading Scheme: Letter**

Assigned reading program, seminar, or lecture series in a rapidly advancing specialty of physics.

**PHY 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PHY 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**PHZ 5155C: Physical Modeling and Simulation**

**Credits: 3                    Grading Scheme: Letter**

Principles and applications of physical modeling and computer simulation. Fundamental interactions among particles such as atoms, molecules, condensed matter, and planets. Introduction to variety of simulation techniques in modern research.

**PHZ 5245: Introduction to Magnetic Resonance**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHY 2049 and 3101 or consent of instructor.

Elementary introduction to basic principles of magnetic resonance and its applications to nuclear magnetic resonance



(NMR), electron paramagnetic resonance (EPR), ion cyclotron resonance (ICR), and magnetic resonance imaging (MRI).

### **PHZ 5354: Introduction to Particle Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Descriptive survey of particle and nuclear phenomena and states: conserved quantities and quantum numbers, invariance principles.

### **PHZ 5405: Introduction to Solid-State Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 4605 or consent of instructor.

Descriptive survey of solid-state phenomena and basic methods. Crystal structure, lattice modes, electronic states, thermal, optical, and magnetic properties.

### **PHZ 6156: Computer Methods in Physics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* elementary FORTRAN.

Numerical techniques useful in the solution of physical problems. Appropriate utilization of computation; aspects of contemporary methods in computational physics, especially advanced version of FORTRAN.

### **PHZ 6166: Qualitative Methods of Theoretical Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHY 6246, PHY 6346, PHY 6536, PHY 6645, or consent of instructor.

Hands-on experience in formulating and analyzing theoretical problems using scaling, approximate mathematical methods, principles of symmetries, etc. Some workshops.

### **PHZ 6355: Elementary Particle Physics I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHY 6646.

Dirac and Klein-Gordon equations, Feynman diagrams, scattering amplitudes; the standard model of weak, electromagnetic, and strong interactions; phenomenology of high energy physics.

### **PHZ 6358: Standard Model of Elementary Particles I**

**Credits: 3                      Grading Scheme: Letter**

Nonabelian gauge theory, Glashow-Weinberg-Salam model of electromagnetic and weak interactions. Spontaneous symmetry breaking and Higgs mechanism, theory of weak processes focusing on quantum corrections and their physical consequences.

### **PHZ 6391: Seminar in Astrophysics**

**Credits: 1    Max: 12                      Grading Scheme: S/U**

### **PHZ 6392: Seminar in Particle Physics**

**Credits: 1    Max: 12                      Grading Scheme: S/U**

### **PHZ 6426: Solid State I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PHY 6536.

Quantum theory of crystalline solids: Bloch theorem, electronic structure, thermodynamic and transport properties of metals, lattice dynamics, electronic interactions in solids, semiconductors and insulators.

**PHZ 6493: Seminar in Condensed Matter Physics**

**Credits: 1    Max: 12            Grading Scheme: S/U**

**PHZ 6607: Special and General Relativity**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHY 6246.

Special relativity, tensor analysis, covariant electromagnetism and hydrodynamics; general relativity, Riemannian geometry, gravity as curvature, exact solutions; relativistic astrophysics, cosmology.

**PHZ 7357: Elementary Particle Physics II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHZ 6355.

Continuation of PHZ 6355. Extensions of the standard model. Calculations of QCD corrections.

**PHZ 7359: Standard Model of Elementary Particles II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHZ 6358.

Strong interactions, perturbation study of quantum chromodynamics (QCD) of quarks and gluons. Chiral description of long-range QCD, supersymmetric extensions of standard model, grand unification

**PHZ 7427: Solid State II**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PHZ 6426.

Physics of collective phenomena in condensed matter systems: electron-electron and electron-phonon interactions, magnetism, superconductivity, and quantum transport.

**PHZ 7428: Modern Condensed Matter Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHZ 6426.

Green's functions and many-body perturbation theory, with applications to topics in modern condensed matter physics. Superconductors, quantum magnetism, quantum transport, quantum hall effect. Other modern techniques and numerical methods.

**PHZ 7429: Phases of Condensed Matter**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHZ 6426 or consent of instructor.

Focus on structural properties, transitions and properties of topological defects in crystalline solids, liquid crystals, incommensurate crystals, quasicrystals, magnetically ordered systems, and random fractals.

**PHZ 7608: Special and General Relativity II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PHZ 6607.

Relativistic stars, black holes, gravitational radiation; advanced topics in general relativity and cosmology.

**PKG 5003: Advanced Distribution and Transport Packaging**

**Credits: 3**                      **Grading Scheme:** Letter

Containment, protection, and preservation related to transporting and distributing packaging products. Methods for efficient scheduling and directing transport and delivery of packages.

### **PKG 5006: Advanced Packaging Principles**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* chemistry, physics, or biology.

Modern lab instruments and procedures employed for packaging used to solve problems from packaging industry.

### **PKG 5105: Advanced Consumer Products Packaging**

**Credits: 3**                      **Grading Scheme:** Letter

Major packaging methods, materials, forms, and strategies used for consumer products. Packaging plans with associated mock-ups for proposed consumer product are prepared as specific team projects.

### **PKG 5206C: Advanced Package Decoration**

**Credits: 3**                      **Grading Scheme:** Letter

Major decoration methods used for packaging. Student teams create original graphic designs and execute designs on 200 containers.

### **PKG 5256C: Advanced Analytical Packaging Methods**

**Credits: 3**                      **Grading Scheme:** Letter

Materials, uses, functions, and production processes of packaging. Historical, societal, and technological drivers of packaging.

### **PKG 6100: Advanced Computer Tools for Packaging**

**Credits: 3**                      **Grading Scheme:** Letter

Label design, bar code technology, spreadsheets, visual basic programming, 3D package design, and distribution efficiency analysis.

**PKG 6905: Individual Work in Packaging**

**Credits: 1-6    Max: 6            Grading Scheme: Letter**

Special problems in packaging sciences.

**PKG 6932: Special Topics in Packaging Sciences**

**Credits: 1-6    Max: 6            Grading Scheme: Letter**

Lectures, laboratory, and/or special projects.

**PLP 5005C: General Plant Pathology**

**Credits: 4                    Grading Scheme: Letter**

*Prerequisite:* Course in biology or botany.

Microorganisms and environmental factors that cause disease in plants. Symptoms and losses caused by plant diseases. Principles of plant disease development, diagnosis, and control. Genetics and epidemiology of plant diseases. Offered fall semester.

**PLP 5102: Theory and Practice of Plant Disease Control**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* PLP 3002C/PLP 5005C or equivalent.

**PLP 5115C: Citrus Pathology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C.

Symptoms, disease cycles, and control measures for major citrus diseases; emphasis on diagnosis using biological, chemical, and biochemical techniques. Offered at CREC, Lake Alfred, fall semester in even-numbered years.

### **PLP 5155: Microbiological Control of Plant Diseases and Weeds**

**Credits: 3**                      **Grading Scheme:** Letter

*Prereq or coreq:* course in plant pathology. Principles and practice. Genetics of biological control. Commercial, environmental, and regulatory aspects of biological control. Offered fall semester in even-numbered years.

### **PLP 6223C: Viral Pathogens of Plants**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C, BCH 5045, and a course in plant pathology, which may be taken as a corequisite.

Principles of plant virology; symptomatology, transmission, insect vector relationships, properties of viruses, purification, electron microscopy, morphology, serology, and control of viral diseases.

### **PLP 6241C: Bacterial Plant Pathogens**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C, MCB 3020.

Relationships of bacterial plant pathogens and interactions with their hosts. Offered spring semester in even-numbered years.

### **PLP 6262C: Fungal Plant Pathogens**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C or PLP 6656C.

History, ecology, genetics, physiology, taxonomy, and management of plant pathogenic fungi.

### **PLP 6291: Plant Disease Diagnosis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C, PLP 6262C.

Methods used in diagnosing plant diseases caused by fungi, bacteria, viruses, and abiotic conditions. Offered fall semester.

### **PLP 6303: Host-Parasite Interactions II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 6502.

Genetic and molecular interactions of hosts and parasites with emphasis on plant disease resistance. Offered spring semester of even-numbered years.

### **PLP 6404: Epidemiology of Plant Disease**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C.

Principles of ecology of plant diseases with emphasis on the effects of the climatic environment on the development of disease in populations of plants and the implications with regard to the strategy of disease control. Offered spring semester in odd-numbered years.

### **PLP 6502: Host-Parasite Interactions I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLP 3002C/PLP 5005C and one course each in biochemistry and genetics.

Genetics and molecular biology of host-parasite interactions with emphasis on mechanisms of pathogenesis. Offered fall semester in odd-numbered years.



### **PLP 6621C: Pop Genetics Microbes**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* PLP 5005C , or SWS 5305C , or PCB 4674 or equivalent, or PCB 3063 or equivalent, or consent of instructor.

Students will learn to use DNA sequence or marker data to describe population genetic variation and infer evolutionary processes, with emphasis on plant pathogen populations. Topics to be covered include: sampling strategies, marker types, genealogical inference, defining population and geographic structure, and coalescent-based methods for inferring demographic processes.

### **PLP 6636: Frontiers in Plant Biotechnology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Graduate standing and general knowledge of Genetics, Organic Chemistry and Biochemistry

Focuses on presenting advanced genetic tools that recently have become available for use in the biotechnology field to make new products in plants, improve existing plant characteristics or generate plants with resistance or tolerance to certain pathogens.

### **PLP 6656C: Fungal Biology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite:* BSC 2010 and BSC 2011 or PLP 3002C/PLP 5005C.

Introducing groups of fungi and fungi-like organisms. Discussion of the structure, development, physiology, genetics, ecology and systematics of fungi.

### **PLP 6905: Problems in Plant Pathology**

**Credits: 1-4    Max: 6                      Grading Scheme: Letter**

Study of any field of plant pathology including diseases of all major crop groups.

### **PLP 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**PLP 6921: Colloquium in Principles of Plant Pathology**

**Credits: 1    Max: 4            Grading Scheme: Letter**

**PLP 6932: Seminar in Plant Pathology**

**Credits: 1    Max: 4            Grading Scheme: S/U**

Discussion of the literature, techniques, and research pertaining to plant pathology.

**PLP 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**PLP 6942: Professional Internship in Plant Disease Clinic**

**Credits: 3            Grading Scheme: S/U**

*Prerequisite:* PLP 6262C and PLP 6291.

Practical training, under supervision of faculty member, in diagnosing plant diseases and formulating recommendations for their management or control.

**PLP 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**PLP 7946: Plant Pathology Internship**

**Credits: 1-10    Max: 10                    Grading Scheme: S/U**

Off-campus internship.

**PLP 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PLP 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**PLS 5222C: Propagation of Horticultural Crops**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* for students who have not taken PLS 3221.

Theoretical and practical applications of macro- and micropropagation techniques for higher plants.

**PLS 5241C: Advanced Plant Micropropagation**

**Credits: 4**                    **Grading Scheme:** Letter

*Prerequisite:* PLS 3221 or consent of instructor.

Practical application of plant tissue for clonal propagation of horticultural crops.

**PLS 5405: Advanced Composting Technology**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* for graduate students who have not taken PLS 4404C; or consent of instructor.

Humification of organic matter under controlled conditions.

**PLS 5632C: Integrated Weed Management**

**Credits: 3**                    **Grading Scheme:** Letter

Overview of weed science principles and practices, emphasizing strategies for southeastern cropping systems. Situations unique to the State of Florida. Offered fall term.

**PLS 5652: Advanced Weed Science**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* PLS 4601.

Classification, mode of action, principles of selectivity, and plant responses to herbicides. Weed, crop, environmental, and pest management associations in developing herbicide programs. Focus on practical principles. Offered fall term in odd-numbered years.

**PLS 6623: Weed Ecology**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* PCB 3043C, PLS 4601, or equivalent.

Characteristics of weedy species. Ecological principles emphasizing interactions of weeds with their environment and neighboring plants, in crop and various noncrop habitats. Offered spring term in even-numbered years.

### **PLS 6626: Invasive Plant Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 4043C, equivalent general ecology course, or permission of instructor

Mechanisms and hypotheses to explain non-native plant invasions. Impacts of invasions on communities and ecosystems, including natural and agricultural areas, management approaches, design and analysis of experiments.

### **PLS 6655: Plant/Herbicide Interaction**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PLS 4601 and BOT 3503.

Herbicide activity on plants: edaphic and environmental influences, absorption and translocation, response of specific physiological and biochemical processes as related to herbicide mode of action. Offered spring term in odd-numbered years.

### **PMA 5205: Citrus Pest Management**

**Credits: 3**                      **Grading Scheme:** Letter

Arthropod and nematode pests of citrus. Ecological principles of host and pest community relationships. Pest identification, biology, and interactions with citrus. Pest monitoring, diagnosis, and management.

### **PMA 6228: Field Techniques in Integrated Pest Management**

**Credits: 2**                      **Grading Scheme:** Letter

Practical aspects of pest management, emphasizing sampling, diagnostics, decision making processes, and informational resources available to IPM practitioner.

**POS 5935: Advanced Topics in Political Science**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* departmental approval.

**POS 6045: Seminar in American Politics**

**Credits: 3                    Grading Scheme:** Letter

Introduction to major conceptual approaches to the American political system and to the history of the study of American politics.

**POS 6048: American Political Development**

**Credits: 3                    Grading Scheme:** Letter

Development from founding to the present.

**POS 6127: State Government and Politics**

**Credits: 3                    Grading Scheme:** Letter

The bibliography, methodology, and research topics of American state and local governments.

**POS 6146: Urban Politics**

**Credits: 3                    Grading Scheme:** Letter

Explores processes, actors, and institutions in local U.S. politics. Briefly examines significant issue areas including fiscal crisis, racial conflict, and education.

**POS 6157: Community Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Development of social, economic, and political profiles in understanding trends, projections, and public policy alternatives.

**POS 6196: Patrons, Clients, Corruption, and Accountability**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CPO 2001

Examining how communities, associations, organizations, political parties, or states are governed.

**POS 6207: Political Behavior**

**Credits: 3**                      **Grading Scheme:** Letter

Examines participation, political culture, and public opinion including classic and current research.

**POS 6208: Empirical Political Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* POS 6207.

Criticism/evaluation of research, hypothesis formulation, concept development, measurement, secondary data analysis, and microcomputer statistical analysis. Original empirical research paper on some aspect of political behavior.

**POS 6272: Political Participation**

**Credits: 3**                      **Grading Scheme:** Letter

Social, political, and institutional factors that affect patterns of electoral and non-electoral political participation in the U.S. and other societies.

**POS 6274: Political Campaigning**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of tasks and challenges, including strategy, uses of campaign polls, organization, management, communication, and mobilization.

**POS 6278: Advanced Campaign Strategy**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* POS 6274.

Strategy implications of media production on campaigns, party management, direct mail, polling, and fundraising.

**POS 6279: The Politics of Direct Democracy**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and practice of direct democracy in American states, including processes of initiative, referendum, and recall.

**POS 6292: Religion and Politics**

**Credits: 3**                      **Grading Scheme:** Letter

Interplay between religion and politics from the perspective of relevant social science approaches.



**POS 6427: Legislative Process**

**Credits: 3                      Grading Scheme: Letter**

Examines the role of legislative institutions in American government.

**POS 6453: Political Parties and Interest Groups**

**Credits: 3                      Grading Scheme: Letter**

Examines the structure and functions of political parties and interest groups in the United States.

**POS 6458: Politics of Campaign Finance**

**Credits: 3                      Grading Scheme: Letter**

History, theories, and practice of campaign finance in American politics.

**POS 6476: Bureaucratic Politics in the U.S.**

**Credits: 3                      Grading Scheme: Letter**

Examining how public bureaucracies in the U.S. relate to one another and their political environments. Topics include the growth of the administrative sector, regulatory federalism, representative bureaucracy, and political control of the bureaucracy.

**POS 6707: Qualitative Research Methods for Political Science**

**Credits: 3                      Grading Scheme: Letter**

Survey of methods focusing on concept formation, case selection, and data collection suitable for research designs based on small number of case studies.

**POS 6712: Empirical Theories of Politics**

**Credits: 4**                      **Grading Scheme:** Letter

Developing theory as part of empirical inquiry, particularly as related to dissertations. Attributes that make a theory compelling and useful. Major traditions of empirical theory in political and social sciences. Assistance in creating theory.

**POS 6716: Scope and Epistemologies of Political Science**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of development of political science as discipline and pluralistic introduction to epistemological perspectives that characterize field.

**POS 6736: The Conduct of Inquiry**

**Credits: 3**                      **Grading Scheme:** Letter

Empirical research methodology in political science.

**POS 6737: Political Data Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to quantitative methods and techniques.

**POS 6747: Topics in Political Research Methodology**

**Credits: 3                      Grading Scheme: Letter**

Review of recent applications of advanced research methods to different types of political science data.

**POS 6757: Survey Research**

**Credits: 3                      Grading Scheme: Letter**

Methods of survey research in context of field investigation: formulating research hypotheses, constructing measurement instruments, and collecting and analyzing data.

**POS 6909: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

**POS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**POS 6933: Special Topics**

**Credits: 1-3    Max: 6                      Grading Scheme: Letter**

**POS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**POS 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**POS 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**POS 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**POT 5935: Advanced Topics in Political Theory**

**Credits: 3    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* departmental approval.

**POT 6016: Ancient Political Thought**

**Credits: 3**                      **Grading Scheme:** Letter

Intensive exploration of Classical Greek and Roman thinkers and texts.

**POT 6056: Modern Political Thought**

**Credits: 3**                      **Grading Scheme:** Letter

Close reading of political theorists and themes from the Renaissance through the 19th century. Emphasizes thinkers regarded as central to the development of republicanism, absolutism, liberalism, democracy, conservatism, and feminism.

**POT 6067: Contemporary Political Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Close reading of one or more twentieth-century contemporary political philosophers whose works have made major impacts on field (e.g. Arendt, Foucault, Habermas).

**POT 6306: Liberalism and Its Critics**

**Credits: 3**                      **Grading Scheme:** Letter

Close reading of selected texts by leading defenders of liberalism and influential theoretical standpoints questioning liberal orthodoxy. Communitarianism, multiculturalism, Marxism, democratic theory, feminism, and critical race theory.

**POT 6314: Democratic Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Brief look at some classical theorists and critics of democracy (Plato, Rousseau, Tocqueville, Marx). Focus on contemporary debates in democratic theory. Participation, deliberation, representation, and multiculturalism.

**POT 6416: The Marxist Tradition and its Critics**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the seminal works of Karl Marx and a selection of influential contemporary texts challenging and transforming the Marxist tradition.

**POT 6505: Politics and Theory**

**Credits: 3**                      **Grading Scheme:** Letter

Investigation of the nature of political theory and normative issues in politics.

**POT 6516: Political Judgment**

**Credits: 3**                      **Grading Scheme:** Letter

Investigation of the nature of political judgment from historical, conceptual, and empirical perspectives in western thought.

**POW 6276: Twentieth-Century Brazilian Novel**

**Credits: 3**                      **Grading Scheme:** Letter

Readings in narrative from 1920s avant-garde and 1930s neoregionalism to 1950s and 1960s instrumentalism. Various manifestations of late-century prose fiction.

**POW 6385: Brazilian Lyric**

**Credits: 3                      Grading Scheme: Letter**

Theory and practice of poetry including Modernist legacy, experimental trends, political verse, song, youth movements, and contemporary phenomena.

**POW 6386: Brazilian Drama**

**Credits: 3                      Grading Scheme: Letter**

Theory of dramatic literature and theatre, from its origins in the 19th century through Modernism and contemporary practices.

**POW 6905: Individual Work**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

Available only by special arrangement with program coordinator or graduate adviser.

**POW 6930: Rotating Topics in Brazilian or Portuguese Literature**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Diverse themes of the Lusophone world, including Portuguese Modernism, Brazilian northeast, Afro-Brazilian world, culture of dictatorship, popular music, science fiction, postmodernism, or focus on major authors (Machado de Assis, Guimaraes Rosa, Clarice Lispector).

**PPE 6059: Seminar in Personality**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

Personality development and dynamics.

**PSB 5445: Drug Use and Abuse**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* 6 hours of psychology.

Objective, informational approach to the commonly used and abused drugs. Psychological, physiological, social, medical, legal, and historical aspects.

**PSB 5935: Seminar in Physiological Psychology**

**Credits: 1-3    Max: 10                      Grading Scheme:** Letter, S/U

*Prerequisite:* PSB 3004 or 3054 and STA 3023.

Selected topics in behavioral neuroscience.

**PSB 6082: Neuroethology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PSB 3004, 3054, or PSB 6087 and consent of instructor.

Focuses on cellular mechanisms underlying fundamental aspects of behavior, including the production and coordination of movement, sensory processing and sensorimotor integration. Electrophysiological studies of invertebrate and simple vertebrate behaviors.

**PSB 6087: Advanced Physiological Psychology**

**Credits: 3                      Grading Scheme:** Letter

Thorough review of basic concepts in physiological psychology, advanced concepts including methodology and recent progress in selected areas of neuroscience and psychobiology.



**PSB 6088L: Behavioral Neurobiology**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PSB 6087.

Behavioral studies involving physiological manipulations and measures, and criticism of the scientific inferences therein.

**PSB 6099: Survey of Physiological and Comparative Psychology**

**Credits: 2-3    Max: 3                      Grading Scheme:** Letter

*Prerequisite:* graduate status.

Empirical and theoretical foundations of physiological and comparative psychology.

**PSB 7248: Neurobehavioral Relations**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PSB 6087.

Theories and data on the central nervous system basis for higher order function. Emphasis will be on arousal, purposeful behavior, and learning.

**PSB 7249: Seminar in Neural Mechanisms and Behavior**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* PSB 6087.

Recent and specialized topics in brain-behavior relations.

**PSY 6608: History of Psychology**

**Credits: 2-3    Max: 3                      Grading Scheme:** Letter

**PSY 6905: Individual Work**

**Credits: 1-3    Max: 10            Grading Scheme: Letter**

Reading or research areas in psychology.

**PSY 6910: Supervised Research**

**Credits: 1-3    Max: 5            Grading Scheme: S/U**

**PSY 6930: Topics in Psychology**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

**PSY 6939: Seminar: The Teaching of Psychology**

**Credits: 1-3    Max: 10            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Examination of general techniques of teaching with emphasis on interpersonal nature of teaching, course planning, textbooks, testing and evaluation, and lecturing within the framework of general introductory psychology course. Videotaped lectures.

**PSY 6940: Supervised Teaching**

**Credits: 1-3    Max: 5            Grading Scheme: S/U**

**PSY 6971: Research for Master's Thesis**

**Credits: 1-6**

**Grading Scheme: S/U**

**PSY 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**PSY 7980: Research for Doctoral Dissertation**

**Credits: 1-12**

**Grading Scheme: S/U**

**PUP 5935: Advanced Topics in Public Policy**

**Credits: 3    Max: 6**

**Grading Scheme: Letter**

*Prerequisite:* departmental approval.

**PUP 6006: Policy Evaluation**

**Credits: 3**

**Grading Scheme: Letter**

Examines methodologies appropriate for analyzing public policies.

**PUP 6007: Policy Process**

**Credits: 3**                      **Grading Scheme:** Letter

General examination of public policy formulation and implementation. Special emphasis upon political and economic determinants and relationship to social theory.

**PUP 6009: Public Policy Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Analytic approach to understanding economic and political tools used to formulate solutions to public problems such as environmental quality, business regulation, public education, health care, and welfare.

**PUP 6315: Race, Gender, and Politics**

**Credits: 3**                      **Grading Scheme:** Letter

Politics and cultural discrimination, political power, political behavior, and public policy.

**PUR 5507: Persuasion Theory and Research**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Introduction to the principal theories and empirical research programs exploring how communication, particularly from public relations efforts, impacts persuasion.

**PUR 6005: Theories of Public Relations**

**Credits: 3**                      **Grading Scheme:** Letter

Theories that dominate the field. Evolution of theories, their critiques, and current standing.

### **PUR 6006: Public Relations Foundations**

**Credits: 3**                      **Grading Scheme:** Letter

Roles and responsibilities of public relations professionals and the function of public relations in institutions and society.

### **PUR 6206: Public Relations Ethics and Professional Responsibility**

**Credits: 3**                      **Grading Scheme:** Letter

Aims to study public relations ethics and social responsibility practiced in organizations. It focuses on different ethical and social responsibility models and their effects on the organization and stakeholders. The course has two components: readings and critiques of classic and current research and case studies development.

### **PUR 6403: Crisis and Risk Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Theories, applications and issues of crisis/risk management, exploring the difference between crisis-prone and crisis-prepared organization.

### **PUR 6409: International Issues and Crisis Communication**

**Credits: 3**                      **Grading Scheme:** Letter

Focuses on practical applications of theory and research to identify and strategically manage issues that can materially affect the continuity of organizations globally. Emphasis is placed on preparing managers for effective communication during crises, including the formulation of a strategic crisis communication plan and evaluation programs.

**PUR 6416: Public Relations and Fund Raising**

**Credits: 3**                      **Grading Scheme:** Letter

Applying public relations theories and concepts to the practice-centered study of fundraising in nonprofit organizations. Principles and processes of building relationships with donors and of designing and implementing programs in annual giving.

**PUR 6446: Public Relations and Philanthropy**

**Credits: 3**                      **Grading Scheme:** Letter

Applying public relations theories and concepts to the practice-centered study of philanthropy, organizations, and the role of each in society. Effective strategies for managing relationships between philanthropic organizations and stakeholders.

**PUR 6506: Public Relations Research**

**Credits: 3**                      **Grading Scheme:** Letter

Applied research methods for strategic management of public relations. Emphasis on using formative research for planning and implementing programs/campaigns and evaluative research for measuring effectiveness.

**PUR 6607: Public Relations Management**

**Credits: 3**                      **Grading Scheme:** Letter

Application of strategic management to development of public relations plans and programs. Emphasis on theoretical framework for relationship management in public relations.

**PUR 6608: International Public Relations**

**Credits: 3**

**Grading Scheme:** Letter

Factors to assist conceptualization and execution of international public relations activities. Explores the relationship between environmental variables and international public relations practices. Review of empirical evidence about public relations practices in other countries and methodological issues pertaining to conducting research.

**PUR 6616: Corporate Reputation and Communication**

**Credits: 3**

**Grading Scheme:** Letter

Examines the fundamental roles that communication plays in corporate reputation affairs, including its production, conceptualization, dimensions, topics and attributes, monitoring, measurement, evaluation, management, effects, valorization, and valuation. The course prepares students involved in consulting, and those who are in strategic planning, market research, competitive intelligence, and general management.

**PUR 6934: Problems in Public Relations**

**Credits: 3**

**Grading Scheme:** Letter

Special topics, case studies, community relations, and theory-based analysis of public relations problems.

**QMB 5303: Managerial Statistics**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* Basic statistics, calculus. Designed for M.B.A. students.

Basic concepts and methods of probability and statistics, stressing applications in analyzing and solving business problems.

**QMB 5304: Introduction to Managerial Statistics**

**Credits: 2**

**Grading Scheme:** Letter

Basics of modeling and analyzing problems that involve business decision making under uncertainty. Techniques for organizing and formulating decision problems. Probability theory and some basic statistical concepts and procedures.

### **QMB 5305: Advanced Managerial Statistics**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Designed for M.B.A. students.

Builds on QMB 5304. Basic concepts in collection, analysis, and interpretation of data, emphasizing the capabilities of different statistical methods and business applications. Focuses on how business decisions can be informed by statistical analysis and how to apply computer software tools to business decisions.

### **QMB 6358: Statistical Analysis for Managerial Decisions I**

**Credits: 2**                      **Grading Scheme:** Letter

Data-application techniques for managerial problems; difficulties that can arise in applying the techniques and interpreting results. Experience using computerized procedures; may require substantial amount of case analysis.

### **QMB 6359: Statistical Analysis for Managerial Decisions II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* QMB 6358 or consent of instructor.

Data application techniques with emphasis placed on relationships that occur over time. Substantial amount of case analysis, as well as applications programming using industry standard software products.

### **QMB 6607: Decision Processes Under Uncertainty I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Introduction to statistical decision theory, including the vonNeuman-Morgenstern behavioral axioms, forms, techniques for assessing probabilities, and penalty functions, with managerial and economic applications.



**QMB 6616: Business Process Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Critical business analytical approaches, including linear programming, project scheduling, waiting-line theory, and time-series analysis.

**QMB 6693: Quality Management and Control Systems**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* QMB 5305 or equivalent or consent of instructor.

Philosophy of total quality management and technical aspects of quality design and measurement systems.

**QMB 6697: Optimization in Simulation Modeling I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Use of simulation techniques in managerial decision problems, including random number generation and search procedures for determining optimal policies.

**QMB 6755: Managerial Quantitative Analysis I**

**Credits: 2**                      **Grading Scheme:** Letter

Survey of deterministic models for managerial decision making. Emphasizes mathematical programming.

**QMB 6756: Managerial Quantitative Analysis II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* QMB 6755.

Using deterministic and stochastic models for decision making. Integer and nonlinear programming, goal programming, multiple-objective linear programming, and decision theory. Applied problem solving and case studies, using appropriate software.

**QMB 6905: Individual Work in Information Systems and Operations Management**

**Credits: 1-5    Max: 10            Grading Scheme:** Letter

*Prerequisite:* consent of department.

Reading and/or research.

**QMB 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme:** S/U

**QMB 6930: Special Topics in Information Systems and Operations Management**

**Credits: 1-4    Max: 16            Grading Scheme:** Letter

Variable content. In-depth study of topics not offered in other courses or topics of special current significance.

**QMB 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme:** S/U

**QMB 6941: Internship**

**Credits: 1-4    Max: 6            Grading Scheme: S/U**

Career-related experience that is not attainable in a classroom situation. Participation in such an internship will give employers an opportunity to identify earlier those students they may wish to employ upon graduation.

**QMB 6957: International Studies in Quantitative Methods**

**Credits: 1-4    Max: 12            Grading Scheme: S/U**

*Prerequisite:* admission to an approved study abroad program and permission of department.

**QMB 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**QMB 7931: Special Topics in Information Systems and Operations Management**

**Credits: 1-4    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Recent literature and state-of-the-art theory and methods in both the decision and the information sciences.

**QMB 7933: Seminar in Information Systems and Operations Management**

**Credits: 1-4    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Historical foundations and evolutionary development of concepts in decision and information sciences, emerging problems and future trends.

**QMB 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**QMB 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**RCS 5245: Psychosocial and Cultural Foundations of Rehabilitation Counseling**

**Credits: 3**

**Grading Scheme: Letter**

Intersection of psychological, social, and cultural factors in adaptation to physical and mental disabilities.

**RCS 6066: Rehabilitation Issues in Human Growth and Development**

**Credits: 3**

**Grading Scheme: Letter**

Life span and how genetic abnormalities, diseases/illnesses, and injuries impact physical, emotional, and mental progress in daily living and vocational development.

**RCS 6080: Medical and Psychosocial Aspects of Rehabilitation Counseling**

**Credits: 3**

**Grading Scheme: Letter**

Medical and psychosocial implications of disability as it relates to the rehabilitation process. Etiology, treatment, prognosis, and vocational implications of persons with disabilities. Adjustment to disability as well as functional limitations.

### **RCS 6242C: Vocational and Lifestyle Assessment in Rehabilitation Counseling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* RCS 6320 .

Use of career development theory, vocational, and other relevant information in facilitating vocational outcomes.

### **RCS 6255C: Individual Evaluation and Assessment in Rehabilitation Counseling**

**Credits: 3-4    Max: 4                      Grading Scheme: Letter**

Measurement concepts and using psychometric tests (all levels); work sampling and situational assessment; functional capacity assessment; behavioral observation techniques; report writing; diversity issues in testing, all in relationship to working with persons with disabilities.

### **RCS 6412: Rehabilitation Counseling Theory and Practice**

**Credits: 3                      Grading Scheme: Letter**

Individual and group counseling theories and applications to persons with disabilities.

### **RCS 6470: Human Sexuality and Disability**

**Credits: 3                      Grading Scheme: Letter**

Physiological and psychological aspects of human sexuality and the impact of disability and chronic illness on the sense of sexuality and sexual functioning.

### **RCS 6601: Forensic Rehabilitation Consultation I**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Must be accepted into Forensic Vocational Rehabilitation Graduate Certificate Program within the Department of Behavioral Science & Community Health at the University of Florida.

Providing the foundational legal knowledge necessary for Forensic Rehabilitation Consultation, including ethical decision making principles, common conflicts encountered and learning legal processes. Finally, economic principles of the forensic rehabilitation consultant and case development methods/ business practices will be discussed.

#### **RCS 6602: Forensic Rehabilitation Consultation II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* RCS 6601: Forensic Rehabilitation Consultation I  
Must be accepted into Forensic Vocational Rehabilitation Graduate Certificate Program within the Department of Behavioral Science & Community Health at the University of Florida.

Interpreting and applying the applicable sections of the Federal Rules of Evidence for expert testimony and evidence. Preparing students for expert testimony and understanding courtroom etiquette. Finally, students will be able to competently testify as to his/her expert opinions and methodology.

#### **RCS 6625: Community Counseling and Case Management**

**Credits: 3                      Grading Scheme: Letter**

Orientation to functions comprising counseling and case management roles in diverse settings.

#### **RCS 6641: Applied Case Management and Consultation in Rehabilitation Counseling**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Case-management strategies and rehabilitation consultation with individuals with acquired disabilities. Emphasizes medical and vocational information in case management and in the legal area.

#### **RCS 6740: Rehabilitation Research**

**Credits: 3                      Grading Scheme: Letter**

Research design and methodology, program evaluation, and research use.

**RCS 6780: Ethical, Legal, and Professional Issues in Rehabilitation**

**Credits: 3                      Grading Scheme: Letter**

Overview of professional issues in rehabilitation counseling with emphasis on ethical and legal issues, credentialing, and professional roles.

**RCS 6801: Rehabilitation Counseling Practicum**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* RCS 6412.

Supervised counseling in a rehabilitation agency or facility. Emphasizes counselor-client relationships in personal and adjustment counseling.

**RCS 6825: Internship in Rehabilitation Counseling**

**Credits: 6-12    Max: 12                      Grading Scheme: Letter**

Intensive supervised experience in a rehabilitation setting or facility. Working with a caseload, providing counseling, assessment, placement, and follow-up services to disabled clients.

**RCS 6905: Individual Work**

**Credits: 1-4    Max: 4                      Grading Scheme: Letter**

Work not available in other courses.

**RCS 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**RCS 6931: Special Topics**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

Topics in the research and practice of rehabilitation counseling.

**RCS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**RCS 6945: Advanced Rehabilitation Counseling Practicum**

**Credits: 2-3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* RCS 6412, 6800, RCS 6801.

Supervised counseling and casework, emphasizing the process and outcome of rehabilitation procedures.

**RCS 6971: Research for Master's Degree**

**Credits: 1-15            Grading Scheme: S/U**

**RED 5046: Foundations of Reading in Grades PreK-12**



**Credits: 3**                      **Grading Scheme:** Letter

Examination of diverse cultures and theories in multicultural literature.

**RED 5316: Reading in the Primary Grades**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced issues related to the emergence and development of literacy in young children.

**RED 5337: Reading in the Secondary School**

**Credits: 3**                      **Grading Scheme:** Letter

Patterns of reading instruction in the secondary school; methods of teaching reading for teachers of all subject areas; preparing, selecting, and using instructional materials; selected field or micro-teaching experiences.

**RED 5355: Reading Instruction in the Intermediate Grades**

**Credits: 3**                      **Grading Scheme:** Letter

Emphasizes materials and methods for teaching reading to students in the upper elementary grades, middle, and junior high schools.

**RED 5399: Practices in Beginning Reading Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* LIN 3710 Language Acquisition and RED 3XXX Emergent Literacy and Beginning Reading Instruction are required prerequisite courses.

Providing students with deeper knowledge in specific areas related to beginning reading instruction. Course content

focuses on instruction in advanced phonics/word study and structural analysis, vocabulary, and comprehension, integrating assessment and instruction for classroom application, and differentiating instruction for students, including ELLs, Gifted and ESE students.

#### **RED 6346: Seminar in Reading**

**Credits: 3    Max: 9            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Variable topics on reading and literacy.

#### **RED 6520: Classroom Literacy Assessment and Instruction**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* minimum of 1 introductory reading instruction course.

Using classroom assessment information to guide literacy instruction.

#### **RED 6546C: Diagnosis of Reading Difficulties**

**Credits: 3                    Grading Scheme:** Letter

Individual assessment techniques for locating difficulties in literacy acquisition.

#### **RED 6548C: Remediation of Reading Difficulties**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* RED 6546C.

Advanced procedures and practices for remediating reading difficulties in the classroom and clinic.

#### **RED 6647: Trends in Reading**

**Credits: 3**                      **Grading Scheme:** Letter

Understanding current trends and issues in literacy education.

**RED 6941: Practicum in Diagnosis and Remediation of Reading Difficulties**

**Credits: 3**                      **Grading Scheme:** Letter

Diagnosis and remediation of reading difficulties with at-risk K-12 learners.

**RED 7019: Foundations of Literacy**

**Credits: 3**                      **Grading Scheme:** Letter

Foundational understanding of theories and discussions related to (and research methods involved in) studying literacy and literacy education.

**RED 7817: Understanding Reading Difficulties**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* RED 6546C, RED 6548C.

Examines reading difficulties from various perspectives, including cognitive, sociocultural, and linguistic.

**REE 6045: Introduction to Real Estate**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Real estate finance, appraisal, and law.

## **REE 6058: Construction Considerations in Real Estate**

**Credits: 2**                      **Grading Scheme:** letter

A critical element of real estate finance, valuation, development, and investment decision making is the utilizing research data, technologies, tools, and software applications to provide support for assumptions and strategic decisions. However, it is difficult to provide adequate exposure to any of these tools and technologies in the context of a two hour graduate module. This course is providing in-depth exposure to widely used commercial real estate data sources, research tools, and software applications. These tools will be used and applied in a number of course throughout the program and in practice after graduation.

## **REE 6105: Real Estate Appraisal**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* REE 6045 or REE 6395.

Tools and techniques used in the fee appraisal business to estimate market value of real property. Emphasis on commercial appraisal using actual case studies.

## **REE 6206: Primary Mortgage Markets and Institutions**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Master of Science-Finance students or FIN 5437 and FIN 5439 (REE 6045 is highly recommended).

Introduces firms, institutions, practices, and legal issues involved in housing finance. Also potential variation in home mortgage product design and issues that dictate mortgage choice.

## **REE 6208: Secondary Mortgage Markets and Securitization**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* REE 6045 or REE 6206 or Master of Science-Finance students or FIN 5437 and FIN 5439.

High-level overview of secondary markets for mortgage debt and mortgage-backed securities in U.S. Considers instruments, decisions, problems, and current issues.

## **REE 6315: Real Estate Market and Transaction Analysis**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* Master of Science-Real Estate or MBA students.

Application of analytical process for analyzing market potential of both developed and undeveloped real estate. Broadened historic perspective on modern city and understanding of how to apply analytical framework to real estate market analysis. Process and documents associated with acquiring and disposing of commercial real estate areas discussed.

### **REE 6395: Investment Property Analysis**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* REE 6045 or Master of Science-Finance students or FIN 5437 and FIN 5439 (REE 6045 is highly recommended).

Introduction to major concepts, principles, analytical methods, and tools useful for investment and finance decisions regarding commercial real estate assets. Property acquisition analysis, leasing, effects of debt financing and taxes, risk and return considerations.

### **REE 6397: Real Estate Securities and Portfolios**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* REE 6045 or REE 6395 or Master of Science-Finance students or FIN 5437 and FIN 5439.

Securitized equity real estate investment topics, including real estate investment trusts. Emphasis on multiple property valuation and decision making.

### **REE 6705: Geographic Information Systems and Location Analysis**

**Credits: 2**                      **Grading Scheme: Letter**

*Prerequisite:* Graduate standing.

Examines many traditional ways of analyzing and evaluating location. Introduces relevant data sources, GIS software and numerical and statistical techniques for computer-based study of spatial relationships.

### **REE 6737: Real Estate Development**

**Credits: 2                      Grading Scheme: letter**

*Prerequisite:*

REE 6045 and REE 6395

Exploring of the fundamental concepts and techniques involved in the real estate development process by recognizing forces that transform existing real estate to its highest and best use. Providing a decision-making framework, understanding of the process and management decisions during the real estate development activities.

**REE 6905: Individual Work in Real Estate**

**Credits: 1-6    Max: 7                      Grading Scheme: Letter**

*Prerequisite:* permission of department and Director of Graduate Studies.

Reading and/or research in real estate.

**REE 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**REE 6930: Special Topics in Real Estate**

**Credits: 1-4    Max: 16                      Grading Scheme: Letter**

Selected topics in real estate research, theory, or of special current significance.

**REE 6935: Real Estate Case Studies**

**Credits: 1-2    Max: 5                      Grading Scheme: Letter**

*Prerequisite:* Master of Science-Real Estate or joint MSRE/JD students.

Project- and case-oriented approach, using "real world" projects and data. Introduction to data sources and computer programs widely used in the industry.

**REE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**REE 6948: Capstone Seminar and Applied Project**

**Credits: 2                    Grading Scheme: Letter**

*Prerequisite:* REE 6208.

Establishes direct link between concepts developed in prior courses and current industrial practices. Presentations by professionals on current issues and industry practices. Students develop an applied project case.

**REE 6957: International Studies in Real Estate**

**Credits: 1-4    Max: 12            Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and permission of department.

**REE 7979: Advanced Research**

**Credits: 1-12                Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**REE 7980: Research for Doctoral Dissertation**

**Credits: 1-15                Grading Scheme: S/U**

**REL 6347: American Buddhism**

**Credits: 3                      Grading Scheme: Letter**

Exploration of relationship between Buddhism and American culture.

**REL 6368: Islam in Asia**

**Credits: 3                      Grading Scheme: Letter**

Survey of the spread, development, and diversification of Muslim societies across Asia.

**REL 6397: Hindu Sacred Texts and Their Ritual Context**

**Credits: 3                      Grading Scheme: Letter**

Focuses on the notion of aural revelation, and exploration of social and ritual context of sacred text. Traditions of recitation, music, verbal, and performative commentaries associated with transmission of holy words.

**RLG 5143: Religion and Social Change**

**Credits: 3                      Grading Scheme: Letter**

Religion's role in social movements and other forms of cultural, economic, and political transformation.

**RLG 5195: Topics in Religion and Society**

**Credits: 3    Max: 6                      Grading Scheme: Letter**



Examines the interaction between religious bodies and the structures of the societies in which they function, with particular attention to the United States.

**RLG 5297: Topics in Biblical Studies**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Examines methods of interpreting particular texts or themes chosen from Hebrew scriptures or the Christian New Testament.

**RLG 5338: Topics in Asian Religions**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Examines religious traditions that are indigenous to India, China, or Japan.

**RLG 5365: Studies in Islam**

**Credits: 3    Max: 9            Grading Scheme:** Letter

Historical study of development of selected doctrines, institutions, and practices, using primary and interpretive material.

**RLG 5396: Religion and Animals**

**Credits: 3                    Grading Scheme:** Letter

Examines the place of animals in the cosmologies and ethical systems of the world's diverse religions.

**RLG 5495: Topics in Religious Thought**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Investigation of particular themes in a religious tradition or the comparative approach to intellectual dimensions of religious communities.

**RLG 5549: Studies in Christianity**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Historical study of the development of selected Christian practices, doctrines, and institutions, using primary sources and interpretative material.

**RLG 5696: Topics in Jewish Thought**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Themes, issues, and personalities in the Jewish tradition, from the biblical period through modern times.

**RLG 5906: Individual Work**

**Credits: 1-5    Max: 12                    Grading Scheme:** Letter

Study of chosen materials under the individual direction of a member of the Graduate Faculty. Plan of study and method of evaluation must be pre-approved by the supervisory committee.

**RLG 5937: Topics in Religious Studies**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Issues and methods in the study of religion. Generally more than one religious tradition is studied.

**RLG 6035: Method and Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing. Required of all religion graduate students.

Examines classical formulations of approaches to studying religion and to developing religious studies as an academic discipline.

**RLG 6036: Method and Theory II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* RLG 6035 and graduate standing. Required of all religion graduate students.

Study of religion in light of recent challenges in the humanities and social sciences. Special attention to the concept of religion and its origins in Christian culture of Western Europe; and to the engagement of religion in colonial culture.

**RLG 6095: Utopias and Dystopias**

**Credits: 3**                      **Grading Scheme:** Letter

Ideal societies and their roles in religious movements, ideologies, and communities.

**RLG 6107: Core Seminar in Religion and Nature**

**Credits: 3**                      **Grading Scheme:** Letter

Religious dimensions of relationships between what humans call "nature" and "culture."

**RLG 6125: Religion and Politics in the Americas**

**Credits: 3                      Grading Scheme: Letter**

Relationship between socio-political change and religion in the Americas from the pre-colonial period to the present.

**RLG 6126: Religion in the Americas**

**Credits: 3                      Grading Scheme: Letter**

Origins and interactions of religions in the Americas.

**RLG 6129: Hindu Traditions in America**

**Credits: 3                      Grading Scheme: Letter**

Exploration of cultural, religious, and social issues.

**RLG 6137: Religion in North America**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

Examines religious bodies in the United States, from historical, sociological, and theological perspectives.

**RLG 6138: New Religious Movements**

**Credits: 3                      Grading Scheme: Letter**

New, emerging, or alternative religious groups likely to receive the pejorative label of cult; types of leadership, organization, ritual, and ideology of such groups.

**RLG 6167: Radical Environmentalism**

**Credits: 3**                      **Grading Scheme:** Letter

Critically examines the emergence and social impact of radical environmental groups.

**RLG 6181: Ethics and the Natural Sciences**

**Credits: 3**                      **Grading Scheme:** Letter

Perspectives on the intersection of ethics and natural sciences, focusing on bioethics and health care, evolution, ecology, and ethology.

**RLG 6183: Religion and Environmental Ethics**

**Credits: 3**                      **Grading Scheme:** Letter

Explorations in classic and contemporary theories and applications of environmental ethics, with special attention to religion.

**RLG 6187: Nature in Asian Religions**

**Credits: 3**                      **Grading Scheme:** Letter

Explores themes such as interconnectedness and interdependence, nonexclusivity, and biocentrism in ethical systems of religious traditions of Asia.

**RLG 6196: Globalizing the Sacred**

**Credits: 3**                      **Grading Scheme:** Letter

Examines the ways that religion shapes the current multifaceted episode of globalization.

**RLG 6310: Religion and Nature in South Asia**

**Credits: 3**                      **Grading Scheme:** Letter

Examines how the different religious traditions of South Asia understand the natural world and how these traditions respond to contemporary environmental issues.

**RLG 6319: Interpreting Asian Religions**

**Credits: 3**                      **Grading Scheme:** Letter

Critical assessment of the world-religions model for interpreting Asian religions.

**RLG 6339: Women in the Hindu Tradition**

**Credits: 3**                      **Grading Scheme:** Letter

Classical Hindu typologies of womanhood compared to alternative modern and contemporary models.

**RLG 6346: Buddhist Traditions**

**Credits: 3**                      **Grading Scheme:** Letter

Comprehensive survey of main traditions.

**RLG 6385: Native Religions in the Americas**

**Credits: 3                      Grading Scheme: Letter**

Indigenous religious communities and traditions in North, Central, and South America.

**RLG 6387: Religions in Latin America**

**Credits: 3                      Grading Scheme: Letter**

Important historical developments and contemporary expressions of religions in Latin America.

**RLG 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**RLG 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**RLG 6957: Overseas Studies in Religion**

**Credits: 1-3    Max: 9                      Grading Scheme: S/U**

**RLG 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

Required of all candidates for the M.A. degree.

### **RLG 7979: Advanced Research**

**Credits: 1-15**                      **Grading Scheme: S/U**

*Prerequisite:* consent of graduate coordinator.

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been admitted to a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **RLG 7980: Research for Doctoral Dissertation**

**Credits: 1-15**                      **Grading Scheme: S/U**

### **RSD 6110: Rehabilitation Science Theory and Application I**

**Credits: 3**                      **Grading Scheme: Letter**

Philosophical and theoretical foundations. History of the development of rehabilitation services and funding. Evolution of health care systems in the U.S.

### **RSD 6112: Rehabilitation Science Theory and Application II**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* RSD 6110.

Current issues and trends, social and political influences, ethical issues, and professional roles and credentialing as they relate to rehabilitation science and service delivery.

### **RSD 6114: Rehabilitation in the United Kingdom**



**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* certified rehabilitation professional.

Comparative study through on-site visits in the United Kingdom.

#### **RSD 6400: Models and Principles of Motor Learning and Control: Application in Rehabilitation Science**

**Credits: 3**                    **Grading Scheme:** Letter

Major themes, theoretical frameworks, and principles drawn from motor learning and control research that influence evidence-based therapeutic practice and research.

#### **RSD 6700: Rasch Measurement: Introduction and Application**

**Credits: 3**                    **Grading Scheme:** Letter

*Prerequisite:* for doctoral students.

Applying Rasch measurement to social and health science data. Rasch pertains to Item Response Theory approaches used to analyze educational, survey, self-report, and clinical data; and is a precursor to computerized adaptive testing.

#### **RSD 6705: Research Methods in Rehabilitation**

**Credits: 4**                    **Grading Scheme:** Letter

*Prerequisite:* graduate-level statistics.

Research measurement and theory applied to rehabilitation. Research design.

#### **RSD 6706: Scientific Writing for the Rehabilitation Professional**

**Credits: 3**                    **Grading Scheme:** S/U

*Corequisite:* Scientific writing project.

A systematic approach to scientific writing using the student's scientific project (article, chapter, grant, other) as a focus for participation.

**RSD 6900: College Classroom: Teaching Process and Practice**

**Credits: 3                      Grading Scheme: Letter**

Information and skills required for successful teaching faculty in college classroom.

**RSD 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* RSD 6112, consent of adviser, and project approval.

Special project or research.

**RSD 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**RSD 6930: Special Topics in Rehabilitation Science**

**Credits: 1-4    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* RSD 6112, RSD 6705.

**RSD 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

### **RSD 7979: Advanced Research**

**Credits: 1-4    Max: 12            Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study of for student who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

### **RSD 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

### **RTV 5702: Telecommunication Regulation**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* undergraduate or graduate law course, or consent of instructor.

The legal structure of radio, television, cable, satellite, and new media forms; the Communication Act, and the Federal Communications Commission.

### **RTV 6105: Writing for Electronic Media**

**Credits: 3                    Grading Scheme: Letter**

Instruction and training in news gathering, writing, interviewing and reporting. Special emphasis is placed on improving writing skills, basic news production, and actual radio reporting assignments. Students receive practical experience in the combined WRUF-WUFT-FM newsrooms.

### **RTV 6309: Advanced TV Reporting**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* Grade of B- in JOU 6349 .

Advanced course in news writing, editing and processing for television news.

### **RTV 6508: Audience Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Methods of audience analysis. Survey research, sampling, and program content analysis. Analysis of secondary audience data.

### **RTV 6801: Telecommunication Management**

**Credits: 3**                      **Grading Scheme:** Letter

Management principles of the telecommunications industry, with practical and theoretical application for television, radio, film, online, and other electronic media sectors.

### **RTV 6807: Telecommunication Outlet Systems and Practices**

**Credits: 3**                      **Grading Scheme:** Letter

Structural and procedural elements of broadcast stations, cable systems, and other local radio-television facilities. Review of research and models in telecommunications administration, economic planning and control, merchandising and positioning, sales and advertising.

### **RTV 6973: Project in Lieu of Thesis**

**Credits: 1-9**                      **Grading Scheme:** S/U

*Prerequisite:* consent of instructor.

Development, testing, and evaluation of an original electronic media product, audience research, or management analysis.

### **SCE 5316: Inquiry-Based Science Teaching**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SCE 4310.

Inquiry into science content pedagogy and practice in elementary classrooms.

### **SCE 5355: Foundations of Science Teaching**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SCE 4310 or equivalent.

Transforming unifying science themes into teaching and learning activities appropriate for K-8 classrooms.

### **SCE 5695: Diversity and Equity in Science Teaching**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an overview of the challenges and issues that face diverse populations of learners as they struggle to gain acceptance, recognition, and access to an appropriate science education.

### **SCE 5765: Data-Driven Science Instruction**

**Credits: 3**                      **Grading Scheme:** Letter

Focusing on assessment of science instruction and learning. The course will include the study of research-based approaches to assessment, learning, and teaching. In addition, the course will facilitate the adoption of an inquiry stance for integrating assessment data into teaching decisions.

### **SCE 6045: Environmental Education Methods and Materials**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of current environmental education teaching approaches, activities, programs, and curricula in school and nonschool settings.

**SCE 6117: Science Education in the Elementary School**

**Credits: 3**                      **Grading Scheme:** Letter

Current problems, new materials and teaching techniques, research and recent developments in the sciences.

**SCE 6246: Science Instruction in Informal Settings**

**Credits: 3**                      **Grading Scheme:** Letter

Review of theory and practice research on instructional techniques and curricula for K-12 science instruction in informal settings such as museums, nature centers, zoos, and outdoor school yards.

**SCE 6338: Secondary Science Methods and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the theory and practice of teaching secondary school science, emphasizing planning, instruction, and assessment.

**SCE 6647: Global Studies Methods in Science Education**

**Credits: 3**                      **Grading Scheme:** Letter

Research and best practices for incorporating global studies into the K-college science curriculum.

**SCE 6947: Practicum in Secondary Science Teaching and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of department chair.

Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, using instructional moves, and diagnosing student progress. Field and laboratory settings.

**SDS 6401: Counseling Skills for Non-Counselors**

**Credits: 3**                      **Grading Scheme:** Letter

Counseling skills in dyadic communication and in small groups.

**SDS 6411: Counseling with Children**

**Credits: 3**                      **Grading Scheme:** Letter

*Prereq or coreq:* MHS 6401.

**SDS 6413: Counseling Adolescents**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 6401.

**SDS 6436: Family-School Intervention**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MHS 5005, MHS 6401.      *Corequisite:* SDS 6411, SDS 6413.

Examines common patterns of family-school interaction and the major types of family-school interventions used to support children's learning and development including school-wide interventions to engage families, parent and teacher case consultation, and family referral for community services.

**SDS 6520: Family, Student Development and Role of Teacher as Adviser**

**Credits: 3                      Grading Scheme: Letter**

Learning to be advisers to small groups of middle school students concerning personal and academic development.

**SDS 6620: Organization and Administration of School Counseling Programs**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SDS 6411.

**SDS 6831: Supervision for a Split Internship**

**Credits: 3    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* adviser's consent, completion of practicum sequence, and written application to internship coordinator at least 6 weeks before registering.    *Corequisite:* MHS 7804, MHS 7807, SDS 7820, or 7802.

Required first enrollment for students participating in internship over 2 semesters.

**SDS 6905: Individual Work**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor and graduate coordinator; approval of proposed project.

**SDS 6936: Seminar in Counselor Education**

**Credits: 3                      Grading Scheme: Letter**



*Prerequisite:* consent of instructor. Open to doctoral students in department.

**SDS 6938: Special Topics**

**Credits: 1-4    Max: 12            Grading Scheme:** Letter

*Prerequisite:* consent of department chair.

**SDS 7800: Practicum in School Counseling**

**Credits: 3                    Grading Scheme:** S/U

*Prerequisite:* MHS 7800, SDS 6411; adviser's consent; and written application to practicum coordinator at least 6 weeks before registration.    *Corequisite:* MHS 5005, MHS 6401, 6411, 6413, MHS 6421, MHS 6720.

**SDS 7820: Group Supervision in School Counseling**

**Credits: 1    Max: 5            Grading Scheme:** S/U

*Prerequisite:* written application to practicum/internship coordinator at least 6 weeks before registration.  
*Corequisite:* MHS 7800, SDS 7800 or SDS 7830, or MHS 6831.

**SDS 7830: Internship in Counseling and Development-600 Hours**

**Credits: 5    Max: 15            Grading Scheme:** S/U

*Prerequisite:* adviser's consent, completion of all practica required for M.Ed. or Ed.S. degree, and written application to internship coordinator at least 6 weeks before registration.    *Corequisite:* SDS 7802, MHS 7804, MHS 7807, or SDS 7820.

**SOP 6099: Survey of Social Psychology**

**Credits: 2-3    Max: 3            Grading Scheme:** Letter

*Prerequisite:* graduate status.

Empirical and theoretical foundations of social psychology.

**SOP 6219C: Advanced Research Techniques in Social-Personality Psychology**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

**SOP 6409: Seminar: Current Topics in Social-Personality Psychology**

**Credits: 3    Max: 12            Grading Scheme:** Letter

**SOP 6419: Seminar: Attitudes and Social Cognition**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate status.

Seminar addressing topics such as attitude change, attribution, social perception, social cognition, etc.

**SOP 6509: Seminar: Interpersonal Relations and Group Processes**

**Credits: 3    Max: 12            Grading Scheme:** Letter

*Prerequisite:* graduate status.

Seminar addressing topics such as impression management, leadership, small group behavior, conflict and accord, and race relations.

**SOP 6929: Colloquium on Research in Social-Personality Psychology**

**Credits: 1-3    Max: 8            Grading Scheme:** Letter

*Prerequisite:* Graduate status & PSY Major.

On-going colloquium series intended for graduate students in social-personality psychology. Provides the opportunity for the presentation and discussion of research initiatives. Credit is variable and depends on the amount of supervised research and project preparation planned by the student and approved by the instructor.

### **SPA 5051: Clinical Observation in Audiology**

**Credits: 1                      Grading Scheme: Letter**

*Prerequisite:* for beginning graduate students in audiology.

Opportunity to observe various phases of audiologic practice and to accumulate a minimum of 15 hours of observation experience.

### **SPA 5102: Auditory Anatomy and Physiology**

**Credits: 2                      Grading Scheme: Letter**

In-depth coverage of anatomy and physiology of auditory system to support understanding of auditory function in persons with healthy auditory mechanisms and those with specific disorders.

### **SPA 5128: Speech Perception**

**Credits: 2                      Grading Scheme: Letter**

Understanding speech perception in hearing-impaired and/or aged listeners. Auditory and cognitive hypotheses to explain speech-recognition deficits; and clinical and theoretical intervention strategies to alleviate perceptual deficits in these populations.

### **SPA 5204: Phonological Disorders**

**Credits: 3                      Grading Scheme: Letter**

Advanced principles of diagnosis and remediation.

**SPA 5211: Voice Disorders**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced theory and techniques of diagnosis and remediation.

**SPA 5225: Principles of Speech Pathology: Stuttering**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced theories and techniques of diagnosis and therapy.

**SPA 5245: Communicative Disorders Related to Cleft Palate**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPA 5204, SPA 5211, 5403.

Lectures and laboratory study of the "team approach" and interdisciplinary aspects of communicative disorders in the cleft palate individual.

**SPA 5254: Neurocognitive Language Disorders**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* introductory neuroanatomy.

Neurocognitive deficits of language in dementia, traumatic brain injury, and right hemisphere damage.

**SPA 5304: Principles of Audiological Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced procedures in speech audiometry, masking, and audiogram interpretation.

**SPA 5315: Peripheral and Central Auditory Disorders**

**Credits: 2**                      **Grading Scheme:** Letter

Understanding (1) anatomy and physiology of peripheral and central auditory mechanism, (2) etiology and pathology of peripheral and central hearing loss, and (3) audiological and otologic diagnosis/treatment of hearing loss.

**SPA 5401: Speech Pathology Language Disorder**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced theory and techniques of diagnosis and remediation of language disorders in infants and preschoolers.

**SPA 5405: Language Disorders II**

**Credits: 3**                      **Grading Scheme:** Letter

Detailed examination of language intervention programs and nonvocal communication systems.

**SPA 5553: Instrumentation and Diagnosis in Speech-Language Pathology**

**Credits: 2**                      **Grading Scheme:** Letter

Hands-on experience using instrumentation in diagnosis.

**SPA 5563: Psychosocial Aspects of Hearing Loss**

**Credits: 2**                      **Grading Scheme: Letter**

Psychological implications of hearing impairment. Specifically psychoeducational/psychosocial and counseling strategies and rehabilitation procedures for patient and family management.

**SPA 5646: Speech and Language of the Deaf and Hard of Hearing**

**Credits: 2**                      **Grading Scheme: Letter**

Advanced principles and procedures in the assessment and development of speech and language in individuals with hearing loss.

**SPA 6008: Medical Aspects of Speech-Language Pathology**

**Credits: 1**                      **Grading Scheme: S/U**

*Prerequisite:* SPA 7946.

Overview of the speech pathologist's role in the medical environment.

**SPA 6010: Basic Auditory Sciences**

**Credits: 3**                      **Grading Scheme: Letter**

The nature of sound, the structure and function of the auditory system, frequency selectivity, auditory filtering, and the psychoacoustics of pure tones and complex sounds.

**SPA 6117: Science of Singing**

**Credits: 3**                      **Grading Scheme: Letter**

Intended for voice or CSD majors with interest in singing voice, its production, and its maintenance as instrument of health and beauty. Introduction to anatomy and physiology of speech mechanism and acoustics of voice production.

**SPA 6133L: Hearing Aid Analysis Laboratory**

**Credits: 1                      Grading Scheme: Letter**

*Corequisite:* SPA 6345.

Advanced analysis and description of the electroacoustical properties of hearing aids.

**SPA 6207: Applied Phonological Disorders: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* majors only.

Seminar and practicum.

**SPA 6211: Applied Voice Disorders: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* majors only.

Seminar and practicum.

**SPA 6217: Vocal Health and Habilitation**

**Credits: 3                      Grading Scheme: Letter**

Production of normal voice. Identifying and managing vocal problems specific to the singer or performer.

**SPA 6229: Applied Fluency Disorders: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* majors only.

Seminar and practicum.

**SPA 6233: Speech Motor Control Disorders**

**Credits: 3                      Grading Scheme: Letter**

Developmental and acquired neurogenic speech disorders and their associated neuropathology, etiology, characteristics, assessment practices, and treatment strategies.

**SPA 6270: Auditory Processing Disorders**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SPA 5304, SPA 5102.

Anatomy and physiology of the central auditory nervous system, and disorders of auditory processing that occur in humans. Focuses on evaluation and treatment of auditory processing disorders.

**SPA 6305: Pediatric Audiology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SPA 6313.

**SPA 6311: Medical Audiology**

**Credits: 2                      Grading Scheme: Letter**

Differential diagnosis of hearing impairment.



**SPA 6312: Advanced Audiology and Neuro-Otology**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* SPA 6311.

Medical description, case presentation, and management of hearing loss.

**SPA 6317: Vestibular Disorders**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status.

Mechanics and physiology of human balance, contribution of inner ear to balance, disorders of balance, and approaches to diagnostic assessment and rehabilitation.

**SPA 6323: Audiologic Rehabilitation for Adults**

**Credits: 2**                      **Grading Scheme:** Letter

Explores theoretical and clinical literature. Describes assessment and management strategies.

**SPA 6324: Audiologic Rehabilitation for Children**

**Credits: 2**                      **Grading Scheme:** Letter

Explores theoretical and clinical literature. Assessment and therapy techniques for children.

**SPA 6340: Amplification I**

**Credits: 2**                      **Grading Scheme:** Letter

Theoretical and applied understanding of current technology in amplification systems for the hearing impaired. Seminar format (2/3) and clinical laboratory activities (1/3).

### **SPA 6341: Amplification II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* SPA 6340.

Digital and programmable technology in hearing aids.

### **SPA 6342: Amplification III**

**Credits: 2**                      **Grading Scheme:** Letter

Theoretical and applied understanding of current and future technology in amplification systems. Recent advances in programmable and digital hearing aids. Hearing aid selection procedures for special populations. Assistive learning devices. Classroom amplification systems.

### **SPA 6390: Proseminar: Speech-Language Pathology and Audiology**

**Credits: 3**                      **Grading Scheme:** Letter

Current professional issues including federal and state regulations, audiologic jurisprudence, audiological management, and interfacing with other professionals.

### **SPA 6410: Adult Language Disorders**

**Credits: 3**                      **Grading Scheme:** Letter

The nature of acquired aphasia and related disorders. Applying neurolinguistic and neuropsychological models to methods of assessment and treatment.

**SPA 6416: Applied Neurogenic Disorders: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* majors only.

Seminar and practicum.

**SPA 6430: Applied Developmental Disorders: Diagnosis and Treatment in Speech and Language**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* majors only.

Seminar and practicum.

**SPA 6436: Issues in Autism Spectrum Disorders**

**Credits: 3                      Grading Scheme:** Letter

Review of related issues including diagnosis, intervention, and current research.

**SPA 6506: Clinical Clerkship in Audiology**

**Credits: 1    Max: 3                      Grading Scheme:** Letter

Beginning-level audiologic practicum.

**SPA 6507: Applied Augmentative and Alternative Communication**

**Credits: 3                      Grading Scheme:** Letter

Introduction to clinical experience through planning, conducting, and writing up diagnostic and therapy sessions with individuals who have little or no functional speech and or writing.

**SPA 6521: Practicum in Speech-Language Diagnostics: UFSHC**

**Credits: 1-6    Max: 6                    Grading Scheme: Letter**

*Prerequisite:* SPA 5553.

**SPA 6524: Practicum in Speech-Language Therapy: UFSHC**

**Credits: 1-6    Max: 6                    Grading Scheme: Letter**

**SPA 6531: Clinical Practice in Hearing Assessment**

**Credits: 1-6    Max: 6                    Grading Scheme: Letter**

**SPA 6533: Clinical Practice in Aural Rehabilitation**

**Credits: 1-6    Max: 6                    Grading Scheme: Letter**

**SPA 6559: Alternative and Augmentative Communication**

**Credits: 2                                  Grading Scheme: Letter**

*Prerequisite:* SPA 5403, SPA 5405.

Survey of issues and research into the use of unaided and aided augmentative and alternative communication methods by persons with deficits in speech and writing.

**SPA 6564: Communication and Aging**

**Credits: 3**                      **Grading Scheme:** Letter

Characteristics of, and management approaches for, communication disorders found with some frequency in the elderly. Focuses on enhancing communication.

**SPA 6565: Seminar in Dysphagia**

**Credits: 3**                      **Grading Scheme:** Letter

Anatomy, physiology, and neurology of normal swallow. Review of further diagnostic procedures and treatment protocols.

**SPA 6568: Clinical Evaluation in Medical Speech-Language Pathology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPA 6008.

Framework for evaluating communication and swallowing skills of patients at all levels of care across many types of disorders.

**SPA 6570: Seminar: Professional Aspects of Speech-Language Pathology**

**Credits: 3**                      **Grading Scheme:** Letter

Administration of speech-language pathology services in varied settings (hospitals, schools, community clinics, private practice, universities) studied from educational, legal, business, and ethical perspectives.

**SPA 6581: Special Clinical**

**Credits: 1-9    Max: 12**                      **Grading Scheme:** Letter

Advanced study in specific areas of clinical process.

**SPA 6805: Introduction to Graduate Research**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* required of all graduate students specializing in speech-language pathology or audiology.

**SPA 6830: Communication Disorders in Medically Complex Pediatric Populations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SPA 6008.

Clinical research.

**SPA 6905: Individual Study**

**Credits: 1-3    Max: 9                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Supervised study of specialized topic or research project.

**SPA 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* SPA 6805, and consent of instructor.

**SPA 6930: Proseminar in Speech-Language Pathology and Audiology**

**Credits: 1    Max: 6                      Grading Scheme: S/U**

Faculty and graduate student research in speech-language pathology, audiology, and related disciplines.

**SPA 6935: Applied Reading Disabilities: Diagnosis and Treatment**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* majors only.

Seminar and practicum in diagnosis and treatment of developmental reading disabilities.

**SPA 6936: Special Topics**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Theory and research in communication.

**SPA 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

**SPA 6942: Externship in Speech-Language Pathology**

**Credits: 7-12    Max: 12                      Grading Scheme:** Letter

Full-time supervised clinical experience in speech-language pathology. Students provide diagnostic and therapeutic services in clinical setting.

**SPA 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**SPA 7132C: Clinical Instrumentation for Evaluating Upper Aerodigestive Tract Functions**

**Credits: 3    Max: 3**

**Grading Scheme: Letter**

Introduction to instrumentation used in clinical evaluation and treatment and clinical research. Experiential component.

**SPA 7306: Audiologic Assessment in a Medical Setting**

**Credits: 5**

**Grading Scheme: Letter**

*Prerequisite:* open only to students in the distance learning Au.D. program.

Audiologic and medically related aspects of hearing disorders.

**SPA 7318: Clinical Auditory Electrophysiology**

**Credits: 5**

**Grading Scheme: Letter**

*Prerequisite:* open only to students in the distance learning Au.D. program.

Understanding clinical auditory physiological measures, including auditory-evoked and event-related potentials, otoacoustic emissions, and common clinical protocols applied to auditory disorders.

**SPA 7319: Balance Disorders: Evaluation and Treatment**

**Credits: 5**

**Grading Scheme: Letter**

*Prerequisite:* open only to students in the distance learning Au.D. program.

Understanding how humans maintain balance, the contribution of the inner ear to balance, disorders of balance, and approaches to rehabilitation of these disorders.



### **SPA 7325: Audiologic Rehabilitation**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* open to students in the distance learning Au.D. program.

State-of-the-art information on current philosophies and practice patterns for audiologic habilitation and rehabilitation.

### **SPA 7343: Cochlear Implants and Assistive Devices**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* open only to students in the distance learning Au.D. program.

Fitting practices and future directions.

### **SPA 7348: Principles of Amplification**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* open only to students in the distance learning Au.D. program.

Recent information regarding amplification systems.

### **SPA 7353: Environmental Hearing Conservation**

**Credits: 5**                      **Grading Scheme:** Letter

*Prerequisite:* open only to students in the distance learning Au.D. program.

Recent information regarding the causes of hearing loss, prevention strategies, and basic mechanisms underlying noise-induced hearing loss.

### **SPA 7354: Seminar in Audiology: Hearing Conservation and Noise Control**

**Credits: 3**                      **Grading Scheme:** Letter

**SPA 7391: Business and Professional Issues in Audiology**

**Credits: 5                      Grading Scheme: Letter**

*Prerequisite:* open only to students in the distance learning Au.D. program.

Overview of the healthcare system, the place of audiology in the system, current issues facing the profession, ethics of audiologic practice, providing reimbursement for services, and personnel management.

**SPA 7415: Neurolinguistics of Adult Language Disorders**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* SPA 6410, LIN 6932, or consent of the instructor.

Psycho- and neurolinguistic research on acquired language disorders. Theoretical models of language representation and implications for treatment.

**SPA 7500: Public School Practicum**

**Credits: 1-3    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* majority of preprofessional courses.

Experience in partial fulfillment of department's clinical requirements.

**SPA 7523: Practicum in Speech Pathology in a Medical/Dental Setting**

**Credits: 1-6    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* SPA 6521, SPA 6524, and consent of department.

**SPA 7540: Diagnosis and Treatment of Language and Language-Based Literacy Disorders**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate-level reading course.

Clinical aspects of intervention for children and adults who have language disabilities, focusing on identification, diagnosis, and treatment of emergent literacy and language disorders.

**SPA 7566: Counseling Individuals with Hearing Losses**

**Credits: 5                      Grading Scheme: Letter**

*Prerequisite:* open only to students in the distance learning Au.D. program.

Recent information about counseling.

**SPA 7833: Audiology Research Project**

**Credits: 3-6    Max: 6                      Grading Scheme: S/U**

**SPA 7937: Seminar in Advanced Studies of Language and Literacy Development and Disabilities**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Contemporary theories, research, and clinical applications in the areas of language and literacy for typical and atypical learners.

**SPA 7945: Graduate Practicum in Audiology**

**Credits: 3-6    Max: 15                      Grading Scheme: Letter**

Intermediate clinical practicum for Au.D. students.

**SPA 7946: Clinical I: Practicum in Medical Speech and Language Pathology**

**Credits: 1-10    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* minimum 50 clock hours of graduate clinical practicum.

**SPA 7947: Clinical II: Practicum in Advanced Medical Speech-Language Pathology**

**Credits: 1-10    Max: 10                    Grading Scheme:** Letter

*Prerequisite:* minimum 5 hours of SPA 7946 or equivalent.

**SPA 7958: Clinical Externship**

**Credits: 3-12    Max: 36                    Grading Scheme:** Letter

*Prerequisite:* 12 hours of SPA 7945.

**SPA 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**SPA 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme:** S/U

**SPC 6239: Studies in Rhetorical Theory**

**Credits: 3    Max: 9                    Grading Scheme:** Letter

Examination of ancient, medieval, renaissance, and modern writers who have influenced rhetorical thought, criticism, speaking, and writing.

### **SPM 5016: Sport Sociology**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced principles and applications of social issues, within the sport industry. An in-depth look at how amateur and professional sport business enterprises reflect societal values and issues in the arena of sport.

### **SPM 5206: Sport Ethics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* 7 or 8 HH/SPM or consent of instructor.

Self-evaluating, examining, and developing philosophy on ethical issues related to sport. Research and discuss major moral and ethical issues related to sport. Opportunities for ethical decision making, using critical analysis.

### **SPM 5309: Sport Marketing**

**Credits: 3**                      **Grading Scheme:** Letter

Marketing information systems, pricing strategies, media relations, promotional methods, and endorsements as they relate to marketing theories. Practical applications and principles.

### **SPM 5506: Sport Finance**

**Credits: 3**                      **Grading Scheme:** Letter

Financial theories and practical applications of sport income and expenditures. Principles and procedures of marketing sports in today's society.

**SPM 5936: Current Topics in Sport Management**

**Credits: 1-3    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* consent of department chair.

Offered, on request of students, to meet special interests inadequately covered in other courses.

**SPM 6006: Contemporary Sport Industry**

**Credits: 3                            Grading Scheme: Letter**

*Prerequisite:* graduate status.

Advanced principles and applications.

**SPM 6036: Research Seminar in Sport Management**

**Credits: 3                            Grading Scheme: Letter**

Theoretical and practical research information in sport and exercise program management.

**SPM 6106: Management and Planning of Sport and Physical Activity Facilities**

**Credits: 3                            Grading Scheme: Letter**

Administrative tasks involved in managing, planning, renovating, and maintaining facilities. Effect on program selection and scheduling in sport and fitness.

**SPM 6158: Management and Leadership in Sport**

**Credits: 3                            Grading Scheme: Letter**

*Prerequisite:* 7 or 8 HH/SPM or consent of instructor.

Principles of leadership and management for sport settings.

**SPM 6308: Study of Sport Consumer Behaviors**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate status.

Advanced theoretical and practical information in sport consumer studies.

**SPM 6726: Issues in Sport Law**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* 7 or 8 HH/SPM or consent of instructor.

Legal effects of regulating and managing amateur and professional sports and wellness programs: injury liability, risk management, constitutional rights of athletes, and contract negotiation.

**SPM 6905: Directed Independent Study**

**Credits: 1-6                      Grading Scheme: Letter**

Individual research projects under faculty guidance.

**SPM 6910: Supervised Research**

**Credits: 1-6    Max: 6                      Grading Scheme: S/U**

**SPM 6947: Graduate Internship in Sport Management**

**Credits: 3    Max: 9                      Grading Scheme: S/U**

*Prerequisite:* completion of at least 2 semesters of course work applicable to specialization; permission of advisor, written application, and site approval.

On-site full-time practical experience in sport management.

### **SPM 6948: Advanced Practicum in Sport Management**

**Credits: 1-3**                      **Grading Scheme:** Letter

On-site practical experience in sport management.

### **SPM 6971: Research for Master's Thesis**

**Credits: 1-15**                      **Grading Scheme:** S/U

Research for master's thesis in sport management.

### **SPN 6166: Teaching Spanish for the Professions**

**Credits: 3**                      **Grading Scheme:** Letter

Practical training and orientation for graduate students. Business Spanish. Issues of Spanish for health care and other professions. Languages across the curriculum. Professional development: technology in the classroom, scholarly networking, and job search.

### **SPN 6315: Advanced Composition and Syntax**

**Credits: 3**                      **Grading Scheme:** Letter

Extensive practice producing various types of academic writing in Spanish. Discursive and grammatical features that distinguish different styles.



### **SPN 6425: Writing for the Profession**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Current enrollment in graduate program; advanced command of Spanish.

Develop or perfect skills in the writing of academic Spanish. Class hours are divided between theory/practice of the genres and review/practice of advanced rhetorical strategies in Spanish.

### **SPN 6705: Foundations of Hispanic Linguistics**

**Credits: 3                      Grading Scheme: Letter**

Introducing theoretical linguistics, exploring research methods employed in the field, and showcasing the research areas represented in the department. The course is divided in three main units: introduction to theoretical linguistics; introduction to research methods; current research. Taught in Spanish.

### **SPN 6715: Formal Instruction and Acquisition of Spanish**

**Credits: 3                      Grading Scheme: Letter**

Effects of formal instruction on acquisition of Spanish as a foreign language. Combination of general theoretical issues with analysis of different aspects of teaching and learning Spanish grammar.

### **SPN 6735: Special Study in Spanish Linguistics**

**Credits: 3    Max: 12                      Grading Scheme: Letter**

Varying topics of Spanish linguistics relevant to second language acquisition, sociolinguistics, and historical linguistics.

### **SPN 6785: Advanced Spanish Phonetics**

**Credits: 3**                      **Grading Scheme:** Letter

Precise description of Spanish pronunciation. Dialect features and contrastive English phonetics.

**SPN 6827: Sociolinguistics of the Spanish-Speaking World**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPN 6785.

Overview of issues in the contemporary Spanish-speaking world: language variation, language contact, discourse analysis, language attitudes, policy and planning, and social factors in language acquisition and use.

**SPN 6835: Spanish and Spanish-American Dialectology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPN 6785.

Principles and methods applied to study of regional varieties of Spanish in Spain and Spanish America.

**SPN 6845: History of the Spanish Language**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPN 6785

Phonological, morphological, syntactic, and lexical evolution of Spanish language from Latin.

**SPN 6848: Medieval Spanish Linguistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPN 6845.

In-depth examination of medieval Spanish to familiarize students with all aspects of language, primarily through detailed analysis of nonliterary texts of period.

**SPN 6855: Structure of Spanish**

**Credits: 3                      Grading Scheme: Letter**

Morphological, syntactic, and semantic aspects of the Spanish language.

**SPN 6856: Spanish in Contact: Issues in Bilingualism**

**Credits: 3                      Grading Scheme: Letter**

Structural and sociocultural analysis of the Spanish language in contact with other major languages: Quechua, Aymara, Guarani, Basque, Catalan, English, Portuguese, and African languages.

**SPN 6900: Directed Readings in Spanish**

**Credits: 3    Max: 6                      Grading Scheme: S/U**

Individualized readings in preparation for Master of Arts comprehensive examinations.

**SPN 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Required for all graduate teaching assistants in Spanish.* Practical training in teaching elementary Spanish courses.

**SPN 6945: Practicum in Advanced College Teaching**

**Credits: 2    Max: 6                      Grading Scheme: S/U**

Practical training and orientation for advanced doctoral students in teaching upper-division courses. Gain upper-level teaching experience by working closely with a mentor in all areas of the teaching process.

### **SPS 6052: Issues and Problems in School Psychology**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* SPS 6941.

History and foundations of school psychology; legal and ethical. Overview of the role and functions of the school psychologist.

### **SPS 6191: Psychoeducational Assessment I**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* SPS 6941.

Techniques for assessing intelligence, adaptive behavior, and achievement of children and school-aged adolescents. Emphasizes standardized instruments.

### **SPS 6192: Psychoeducational Assessment II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPS 6191.      *Corequisite:* SPS 6941.

Techniques for assessing the social and emotional functioning of the school-aged child; supervised experience in assessment and report writing.

### **SPS 6193: Academic Assessment & Intervention**

**Credits: 3**                      **Grading Scheme:** Letter

Assessment approaches and intervention strategies for students experiencing academic difficulties.

**SPS 6195: Developmental Psychopathology**

**Credits: 3**                      **Grading Scheme:** Letter

Overview of developmental psychopathology and its relationship to diagnosis and intervention for children and adolescents.

**SPS 6197: Psychoeducational Assessment III**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPS 6191.      *Corequisite:* SPS 6941.

Synthesis of sources and techniques of psychoeducational assessment for school-related application and problems.

**SPS 6410: Direct Interventions I: Applied Behavior Analysis for School Psychologists**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* SPS 6941.

Theory and research of applied behavior analysis for school psychologists to provide systematic assessment and treatment.

**SPS 6707: Interventions in School Psychology II: Cognitive Behavioral Interventions**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPS 6410.

Theory and practice of cognitive behavior.

**SPS 6708: Interventions in School Psychology III: System Level Interventions for Children and Youths**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SPS 6707.

Theory, empirical research, and clinical issues related to primary prevention and crisis intervention.

**SPS 6815: Law and Ethics in Psychology**

**Credits: 3                      Grading Scheme:** Letter

Knowledge of laws and ethics that impacts psychological practice with emphasis on children and schools.

**SPS 6905: Individual Study**

**Credits: 1-3    Max: 12                      Grading Scheme:** Letter

**SPS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

*Prerequisite:* consent of department chair.

**SPS 6937: Special Topics in School Psychology**

**Credits: 1-3    Max: 12                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

**SPS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

**SPS 6941: Practicum in School Psychology**

**Credits: 1-4    Max: 8            Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**SPS 6942: School Psychology Practicum II**

**Credits: 3    Max: 6            Grading Scheme: S/U**

*Prerequisite:* SPS 6941.

Practicum focused on linking assessment and intervention.

**SPS 6945: Advanced Practicum in School Psychology**

**Credits: 3                    Grading Scheme: S/U**

*Prerequisite:* SPS 6941 and SPS 6942.

Advanced practicum focused on complex case management, specialization area practice, diversity, and peer supervision.

**SPS 7205: School Psychology Consultation**

**Credits: 3                    Grading Scheme: Letter**

*Corequisite:* SPS 6941.

Concepts, processes, and issues related to the practice of school-based consultation as an intervention technique of school psychologists.

**SPS 7931: Seminar in School Psychology**

**Credits: 1-3    Max: 3            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Issues pertinent to the professional practice of school psychology.

**SPS 7949: Internship in School Psychology**

**Credits: 6 [3 Summer A or B]    Max: 18                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**SPS 7979: Advanced Research**

**Credits: 1-3    Max: 12                      Grading Scheme: S/U**

**SPS 7980: Research for Doctoral Dissertation**

**Credits: 1-15    Max: 15                      Grading Scheme: S/U**

*Prerequisite:* Admission to candidacy.

Research for doctoral students after admission to candidacy.

**SPW 6209: Colonial Spanish-American Literature**

**Credits: 3                      Grading Scheme: Letter**

Readings, research, and discussion. Literary, historical, and legal 16th-, 17th-, and 18th-century texts in Spanish: Colonial Latin America and dealing with contact among European, neo-European, and Native American cultures.

**SPW 6216: Spanish Prose Fiction of the Golden Age**

**Credits: 3                      Grading Scheme: Letter**

The literary landscape of rampant generic diversity, before novelistic forms solidified. While shepherds in rarified meadows disputed fine points of neo-Platonic love, thieves, prostitutes, and picares inquired their way into



carriages, salons, and homes of aristocracy. Fiction provided an outlet for political satire, religious allegory, utopian dreaming, and sheer escapism. Readings and lectures in Spanish.

**SPW 6236: Spanish-American Narrative from the origins to Criollismo**

**Credits: 3**                      **Grading Scheme:** Letter

Narratives of nineteenth-century dealing with issue of nation building and cultural independence after emancipation from Spain (authors include Sarmiento, Gomez de Avellaneda, Mera, Galvan, Issacs, Altamirano).

**SPW 6269: Spanish Novel of the Nineteenth Century**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of Spanish narrative beginning with romantic cuadros de costumbres and folletin. Emergence of realist and naturalist narrative from 1870s to 1890s. Emphasizes Valera, Galdos, Clarin, and Pardo Bazan.

**SPW 6278: Postwar Spanish Fiction**

**Credits: 3**                      **Grading Scheme:** Letter

Contextualized approach to representative works and significant authors of fiction published in Spain after 1939. Critical and historical readings and textual analysis.

**SPW 6285: Contemporary Spanish-American Narrative I**

**Credits: 3**                      **Grading Scheme:** Letter

Textual production of the 1940s and 1950s including broader cultural characteristics of modernization, development of new narrative modes, and theories of understanding Latin America and literature of this period.

### **SPW 6286: Contemporary Spanish-American Narrative II**

**Credits: 3**                      **Grading Scheme:** Letter

Fiction in the 1960s and after, including the New narrative, the Boom, and the Post-Boom. Broader cultural characteristics. Theories of understanding the area and the literature of the period.

### **SPW 6306: Spanish-American Theater**

**Credits: 3**                      **Grading Scheme:** Letter

Analyzing selected plays and films. Introduction to the history, theory, and practice of theatrical arts in the region. Comparison to theater elsewhere. Focuses on the 20th century.

### **SPW 6315: Spanish Drama of the Golden Age**

**Credits: 3**                      **Grading Scheme:** Letter

*Comedia* in theory and practice. *Sacramental*, *entremes*, *comedia*, religious, and historical drama of 16th- and 17th-century Spain.

### **SPW 6337: Golden Age Poetry**

**Credits: 3**                      **Grading Scheme:** Letter

Analysis of multiple uses of artifice in Renaissance and Baroque Spanish poetry by both major and minor poets.

### **SPW 6345: Twentieth-Century Spanish Poetry**

**Credits: 3**                      **Grading Scheme:** Letter

Introductory survey of major poets. Topics include gender, periodization, aesthetics, historicity, and the relationship of poetry to politics. Close reading of texts in the context of contemporary literary theory.

**SPW 6356: Spanish-American Poetry from Romanticism to Vanguardismo**

**Credits: 3**                      **Grading Scheme:** Letter

Major movements from the mid-19th century to the 1930s, especially from Modernismo to the present. Seminal works of poets such as Martí, Casal, Cario, Lugones, Mistral, Storni, Huidobro, and Vallejo.

**SPW 6357: Contemporary Spanish-American Poetry**

**Credits: 3**                      **Grading Scheme:** Letter

Sentral aspects of Spanish-American poetry from Vanguardism to the present. Organized around a specific theme, genre, country, region, theoretical problem, or subperiod.

**SPW 6366: Spanish-American Essay**

**Credits: 3**                      **Grading Scheme:** Letter

Close reading and critical analysis of texts by major twentieth-century essayists. Themes include affirmation of identity, gender roles, and the definition of ethnic, racial, social, and class categories.

**SPW 6535: Spanish Romanticism**

**Credits: 3**                      **Grading Scheme:** Letter

Analyzes literary works of Spanish Neoclassical and Romantic periods in light of their social, historical and ideological contexts.

**SPW 6545: Spanish Romanticism**

**Credits: 3                      Grading Scheme: Letter**

Analyzes literary works of Spanish Neoclassical and Romantic periods in light of their social, historical and ideological contexts.

**SPW 6606: Cervantes**

**Credits: 3                      Grading Scheme: Letter**

Situates Don Quijote I, II in the cultural nexus of early modern Spain. Surveys contemporary currents in Cervantine criticism.

**SPW 6729: The Generation of 1898**

**Credits: 3                      Grading Scheme: Letter**

Fin de siècle crisis. The rise of literary modernity and nationalism. Creation of modern intelligentsia in the early 20th century in the works of Unamuno, Costa, Maeztu, Antonio Machado, Baroja, and Valle-Inclán.

**SPW 6806: Introduction to Graduate Study and Research**

**Credits: 3                      Grading Scheme: Letter**

Tools, problems, and methods of literary research.

**SPW 6902: Special Study in Spanish or Spanish-American Literature**

**Credits: 3    Max: 15            Grading Scheme: Letter**

Selected topic or problem (varied each semester).

**SPW 6905: Individual Work**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

Available only by special arrangement with graduate adviser.

**SPW 6910: Supervised Research**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**SPW 6934: Seminar in Spanish American Literature and Culture**

**Credits: 3    Max: 9            Grading Scheme: Letter**

Analyzing themes and directions in contemporary Spanish American literature and culture. Feminist literary and cultural criticism. Reading and discussion of key theoretical texts produced in the U.S., Europe, and Latin America. Graduate students from other disciplines are welcome.

**SPW 6938: Seminar in Spanish Literature and Culture**

**Credits: 3    Max: 9            Grading Scheme: Letter**

*Prereq or coreq: SPW 6806.* Variable topics. Close consideration of a single literary or critical or cultural problem arising in the context of Spanish letters or culture.

**SPW 6971: Research for Master's Thesis**

**Credits: 1-15**

**Grading Scheme: S/U**

**SPW 7979: Advanced Research**

**Credits: 1-12**

**Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**SPW 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

**SRK 6905: Individual Study in Sanskrit**

**Credits: 1-4    Max: 9**

**Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Graduate reading in Sanskrit language and literature.

**SSE 5320: Middle School Social Studies Methods**

**Credits: 3**

**Grading Scheme: Letter**

Examines and applies instructional procedures and materials, focusing on social studies in Grades 6-8.

**SSE 5945C: Practicum in Secondary Social Studies Teaching and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

Directed experiences emphasizing instructional strategies, instructional materials, and student assessment. Field and laboratory settings with microteaching assignments.

**SSE 6046: Perspectives in Social Studies Education**

**Credits: 3**                      **Grading Scheme:** Letter

Seminar analyzing works written by important social studies educators.

**SSE 6117: Social Studies Education—Elementary School**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate curriculum course.

Contributions of social education to the total elementary school program, emphasizing social interaction and programs and procedures in the social studies area.

**SSE 6133: Secondary School Social Studies Methods and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

Preparing, selecting, and using instructional methods, materials, and assessments in the social studies content area.

**SSE 6478: Global Studies Methods in Social Studies**

**Credits: 3**                      **Grading Scheme:** Letter

Comprehensive overview of standards-based global issues appropriate for study in Grade 6 to 12 social studies classes.

### **STA 5106: Computer Programs in Statistical Analysis**

**Credits: 1**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.

Using library computer programs to analyze balanced experimental data and for regression analysis.

### **STA 5223: Applied Sample Survey Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023, 4322, STA 6126, or STA 6166.

Designing and analyzing sample surveys. Sources of error. Questionnaire design. Simple random, stratified, systematic, and cluster sampling. Practical application of concepts.

### **STA 5325: Fundamentals of Probability**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* grade of C or better in MAC 2313 and STA 3032 or equivalent.

Topics in probability and statistics, particularly discrete and continuous random variables, sampling distributions, estimation, and hypothesis testing. Applications to engineering and natural science.

### **STA 5328: Fundamentals of Statistical Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 4321 or equivalent.

Direct continuation of STA 4321/STA 5325. Basic material for distribution theory, sampling distributions, properties of estimators, hypothesis testing, linear regression analysis, and analysis of variance. A good knowledge of calculus is helpful.



### **STA 5503: Categorical Data Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 3024, 3032, 4210, 4322, STA 6127, or STA 6167. Intended for graduate students not majoring in statistics.

Description and inference using proportions and odds ratios, multi-way contingency tables, logistic regression and other generalized linear models, and loglinear models applications.

### **STA 5507: Applied Nonparametric Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023, 3032, 4210, 4322, STA 6126, STA 6166. Intended for graduate students not majoring in statistics.

Introduction to nonparametric statistics. Includes one- and two-sample testing and estimation methods, one- and two-way layout models, and correlation and regression models.

### **STA 5701: Applied Multivariate Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 3024, STA 6127, STA 6167, or 4211. Intended for graduate students not majoring in statistics.

Review of matrix theory, univariate normal, t, chi-squared and F distributions, and multivariate normal distributions. Inference about multivariate means, Hotelling's  $T^2$  multivariate analysis of variance, multivariate regression, and multivariate repeated measures. Inference about covariance structure, principal components, factor analysis, and canonical correlation. Multivariate classification techniques, discriminant and cluster analysis. Additional topics at the discretion of the instructor, time permitting.

### **STA 5715: Applied Survival Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6127 or STA 6167.

Survival analysis data methods, including Kaplan-Meier and Nelson estimators of survival, accelerated failure, proportional hazards models, and frailty and recurrent-event models.

**STA 5823: Stochastic Process Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 4321 or STA 5325.

Mathematical foundations of elementary stochastic processes, including Poisson processes and Markov chains, branching, and renewal processes.

**STA 5856: Applied Time Series Methods**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* STA 4322 or STA 5328.

Stationarity, autocorrelation, ARMA models, non-stationary processes, ARIMA models, regression with ARMA errors, model-based forecasting, forecasting algorithms.

**STA 6092: Applied Statistical Practice**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6208, 6208.

Communication, management, and the organizational, computational, and statistical thinking skills needed for consulting in statistics. Integrating graphic and numeric computing tools, research design concepts, data summary, and statistical inference methods.

**STA 6126: Statistical Methods in Social Research I**

**Credits: 3**                      **Grading Scheme:** Letter

Descriptive statistics, estimation, significance tests, two-sample comparisons, methods for nominal and ordinal data, regression and correlation, introduction to multiple regression.

**STA 6127: Statistical Methods in Social Research II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6126.

Further topics in multiple regression, model building, analysis of variance, analysis of covariance, multivariate analysis of categorical data.

### **STA 6166: Statistical Methods in Research I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 2023 or equivalent.

Statistical methods based on t, F, and  $\chi^2$  tests. Analysis of variance for basic experimental designs. Factorial experiments. Regression analysis and analysis of covariance.

### **STA 6167: Statistical Methods in Research II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6166.

Analysis of covariance and general linear model. Factorial, nested, split-plot, and incomplete block designs. Analysis of count data.

### **STA 6177: Applied Survival Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6327

Focusing on survival analysis, Kaplan-Meier estimates, proportional hazards model, related tests, phase I, II, and III clinical trials, designs and protocols.

### **STA 6178: Genetic Data Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6327.

Biological and molecular basis. Likelihood ratio test, multinomial distribution and Bailey's theorem. Linkage analysis of qualitative traits. Twin and sibling studies. Computing the kinship coefficient by the matrix method. Mapping

quantitative trait loci by EM algorithm. Heritability. Breeding value prediction using flanking markers with variance component analysis. Linkage disequilibrium analysis for gene mapping. Forensic genetics using Bayes' formula. Genetic counseling. Gene pattern matching and constructing evolutionary trees by cluster analysis.

### **STA 6207: Regression Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 4322

Focusing on simple linear regression; multiple regression; model selection residual analysis; influence diagnostics' multicollinearity; anova and regression; generalized linear models; nonlinear regression.

### **STA 6208: Basic Design and Analysis of Experiments**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6207

Focusing on the principles of experimental design, completely randomized design (analysis, contrasts, diagnostics), random effects models, factorial experiments (fixed, random, and mixed effect), block designs, Latin squares, split plots, and full and fractional factorial experiments.

### **STA 6209: Design and Analysis of Experiments**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6208.

Tests of assumptions; block designs; control of two-way heterogeneity; cross over designs; factorial experiments; fractional factorials; analysis of "messy" data.

### **STA 6226: Sampling Theory and Application**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6327 or consent of instructor.

Theory and application of commonly used sampling techniques; simple random sample, cluster, ratio, regression, stratified, multistage, and systematic samples. Special topics include wildlife surveys, non-sampling error adjustment, categorical data analysis, and practical survey examples.

### **STA 6246: Theory of Linear Models**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6208, STA 6327, STA 6329.

### **STA 6326: Introduction to Theoretical Statistics I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAC 2313.

Theory of probability. Probability spaces, continuous and discrete distributions, functions of random variables, multivariate distributions, expectation, conditional expectation, central limit theorem, useful convergence results, sampling distributions, distributions of order statistics, empirical distribution function.

### **STA 6327: Introduction to Theoretical Statistics II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6326.

Estimation and hypothesis testing. Sufficiency, information, estimation, maximum likelihood, confidence intervals, uniformly most powerful tests, likelihood ratio tests, sequential testing, univariate normal inference, decision theory, analysis of categorical data.

### **STA 6329: Matrix Algebra and Statistical Computing**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAC 3313.

Basic theory of determinants, inverses and generalized inverses, eigenvalues and eigenvectors; applications of partitioned matrices; diagonalization and decomposition theorems; applications in least squares.

### **STA 6505: Analysis of Categorical Data**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6327 and STA 6208 or consent of instructor.

Varieties of categorical data, cross-classification tables, tests for independence. Measures of association. Loglinear models for multi-dimensional tables. Logit models and analogies with regression. Specialized methods for ordinal data.

### **STA 6526: Nonparametric Statistics**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6327 or consent of instructor.

Inference based on rank statistics. One, two, and k-sample problems. Correlation and regression problems. Analysis of contingency tables. Conditionally distribution-free rank tests. Pitman asymptotic relative efficiency.

### **STA 6707: Analysis of Multivariate Data**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6208 and facility in a computer language.

Techniques for analyzing multivariate data. Emphasis on MANOVA and tests on the structure of the dispersion matrix. Topics will include discriminant, factor, profile, and cluster analyses.

### **STA 6826: Stochastic Processes**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6327.

Discrete time and state Markov process. Ergodic theory.

### **STA 6857: Time Series Analysis**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 4322 and a basic computer language.

Linear time series model building, spectral density estimation, analysis of nonstationary data, SAS package on Box and Jenkins model building and forecasting. Case studies in recent literature will be discussed.

**STA 6866: Monte Carlo Statistical Methods**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6327 and STA 6208, or consent of instructor.

Introduction to Monte Carlo statistics.

**STA 6905: Individual Work**

**Credits: 1-4    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* departmental approval.

Special topics designed to meet the needs and interests of individual students.

**STA 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**STA 6934: Special Topics in Statistics**

**Credits: 1-3    Max: 12                      Grading Scheme: Letter**

*Prerequisite:* permission of graduate adviser.

**STA 6938: Seminar**

**Credits: 1    Max: 15                      Grading Scheme: S/U**

*Prerequisite:* departmental approval.

Special topics of an advanced nature suitable for seminar treatment but not given in regular courses.

**STA 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**STA 6942: Internship**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

*Prerequisite:* STA 6208 or equivalent and consent of graduate coordinator.

Supervised statistical consulting involving planning and/or analyzing research data. Whenever possible, student meets with researcher. Supervision by faculty member or delegated authority and post-internship report.

**STA 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**STA 7179: Survival Analysis**

**Credits: 3            Grading Scheme: Letter**

*Prerequisite:* STA 6177.

Theoretical introduction to statistical inferential procedures useful for analyzing randomly right censored failure time data.

**STA 7249: Generalized Linear Models**

**Credits: 3            Grading Scheme: Letter**



*Prerequisite:* STA 6208, 6208, STA 6327, STA 6246.

Fitting of generalized linear models, diagnostics, asymptotic theory, overdispersion, estimating equations, mixed models, generalized additive models, smoothing.

### **STA 7334: Limit Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6467.

Review of different models of convergence. Cramer-Wold device. Multivariate CLT. Asymptotic theory of empirical distribution and sample quantiles. Bahadur's representation. Asymptotic theory of sample moments. Delta method and its multiparameter generalization. Variance stabilizing transformation. U-statistics: asymptotic theory and its statistical applications. Hoeffding's decomposition. Asymptotic theory of maximum likelihood estimation. Wald's consistency theorem for MLE. Asymptotic normality and efficiency. Asymptotic theory of GLRTs. Statistical applications: asymptotic theory of categorical data, linear models, and generalized linear models.

### **STA 7346: Statistical Inference**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6327.

Decision rules and risk functions. Sufficiency, Minimax, and Bayes rules for estimating location and scale parameters.

### **STA 7347: Advanced Inference**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 7346.

Bayesian statistical inference. Inference using large samples. Relative efficiencies of tests and estimates with special reference to Pitman and Bahadur efficiencies.

### **STA 7348: Bayesian Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 7346

Theory underlying the Bayesian paradigm. Issues related to selection of priors; Bayesian inference, both exact and asymptotic; Bayesian model selection; high-dimensional problems; and Bayesian robustness.

### **STA 7466: Probability Theory I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MAA 5228, MAA 6236, or equivalent.

Measure and probability spaces. Random variables. Distribution functions. Abstract Lebesgue and Stieltjes integration. Monotone. Dominated, Cauchy, and mean convergence. Fubini and Radon-Nikodym theorems. Zero-one laws.

### **STA 7467: Probability Theory II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 7466.

Summability of independent random variables. Laws of large numbers. Convergence in distribution. Characteristic functions. Uniqueness and continuity theorems. The Lindeberg-Feller central limit theorem. Degenerate convergence criterion.

### **STA 7527: Theory of Nonparametric Statistics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6526 or consent of instructor.

Exploring theoretical foundations of nonparametric statistics: theory of u-statistics, normed based methods, linear rank and signed rank statistics; pitman efficiency; point estimation, interval estimation and tests of hypotheses; theory of robustness and its application to one sample, two sample and linear model settings; extensions to multivariate problem settings; contemporary topics in nonparametric inference.

### **STA 7828: Topics in Stochastic Processes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 6466 and STA 6467.

Branching processes, Brownian motion, continuous state space Markov chains, diffusion processes, Markov chain

Monte Carlo, martingales, point processes, renewal processes, stationary processes, stochastic calculus, stochastic differential equations.

#### **STA 7934: Special Topics in Statistics**

**Credits: 1-9    Max: 15            Grading Scheme: Letter**

*Prerequisite:* Permission of Graduate Coordinator.

Possible Topics: Smoothing Methods, Analysis of Longitudinal Data, Data Mining and Statistical Learning, Mixed Models, Theory and Methods, Resampling Methods, Functional Data Analysis.

#### **STA 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

#### **STA 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

#### **SUR 5365: Digital Mapping**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Methods of digital representation of maps, coordinate development, digitizing, stereocompilation, scanning, remote sensing, hardware and software systems, file conversion, integration into GIS systems, and attribute development.

#### **SUR 5385: Remote Sensing Applications**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Review of remote sensing systems, image classification methods, mapping applications, integration of remotely sensed data into GIS systems, application of data for variety of land information systems.

### **SUR 5386: Image Processing for Remote Sensing**

**Credits: 3                      Grading Scheme: Letter**

Analyzing remote sensing imagery with natural resource applications: image formation and radiometric/atmospheric correction models; hyperspectral image formation; dimensionality reduction and classification; machine learning classification algorithms; and analysis of Light Detection and Ranging (LiDAR) data.

### **SUR 5391C: Geomatics: Spatial Foundations of GIS**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Application of Geomatics technologies (GPS, Total Station, Level) to create a database. Includes database design, data transfer, and spatial analysis.

### **SUR 5425: Cadastral Information Systems**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Methods of cadastral mapping for tax and/or GIS applications; interpretation of deed and survey information, the sectional survey system, conflict resolution, cadastral information.

### **SUR 5525: Least Squares Adjustment Computations**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* proficiency in computer language and consent of instructor.

Implementation of least squares solutions for survey-mapping and GIS applications, time and storage optimization; error analysis; initial approximation generation; robust estimations; and computer programming.

### **SUR 6375: Terrain Analysis and Mapping**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Digital and visual methods, interpretative techniques to identify landforms, soils, and potential site-analysis problems from aerial photography and digital maps.

### **SUR 6395: Topics in Geographic Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Database development, economic impact of GIS, development of standards, integration of data sets, hardware and software developments, and advances in GIS technology.

### **SUR 6427: Land Tenure and Administration**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate status.

Origins of property rights, common vs. individual property. Indigenous tenure systems in Africa and Latin America and their evolution. Process and benefits of property formalization.

### **SUR 6535: GPS-INS Integration**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Background in vector calculus and matrix algebra

Principles of inertial navigation and its integration with GPS; coordinate frames, modeling linear motion and rotational motion, mechanization of inertial navigation sensor measurements, space state representation of system errors and linear state equations.

**SUR 6905: Special Problems in Geomatics**

**Credits: 1-6    Max: 10    Grading Scheme: Letter**

Individual study of a selected topic in Geomatics as contracted with the instructor at the start of the term.

## SUR 6934: Topics in Geomatics

**Credits: 1-4    Max: 10    Grading Scheme: Letter**

Rotating Topic.

## SWS 5050: Soils for Environmental Professionals

**Credits: 3**                      **Grading Scheme: Letter**

Fundamentals of soil properties and processes that explain the central role soils play in the environment. Geared to environmental professionals with little knowledge of soil science. Also offered as a distance education course.

**SWS 5050L: Soils for Environmental Professionals Laboratory**

**Credits: 1**      **Grading Scheme: Letter**

*Corequisite:* SWS 5050: Soils for Environmental Professionals or consent of instructor.

Hands-on laboratory experience with many tools and techniques used in soil and water science, in relation to the environment.

**SWS 5115: Environmental Nutrient Management**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* SWS 3022 or SWS 5050: Soils for Environmental Professionals.

Consumption, manufacture, properties, and reserves of fertilizer materials. Methods of application, effects on soil reaction, and plant requirements of fertilizer nutrients. Understanding specific fertilizer reactions. Also offered as a distance education course.

### **SWS 5132: Tropical Soil Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or SWS 5050.

Characteristics and management of tropical soils. Technologies that minimize industrial inputs.

### **SWS 5182: Earth System Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None

MAC 2233, PHY 2048, or Similar Would Be Useful But Not A Requirement.

Analysis of global-scale interdependences between climate, biogeochemical cycles and humans using a systems approach.

### **SWS 5208: Sustainable Agricultural and Urban Land Management**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or equivalent course or with instructor approval.

Studying agricultural and urban water quality issues in Florida, their bases, land and nutrient management strategies, and the science and policy behind Best Management Practices (BMPs). Students will learn to evaluate BMP research and analyze its role in determining practices and policies that protect water quality.

### **SWS 5224: Environmental Biogeochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BSC 2009 and BSC 2009L or equivalent courses.  
OR, BSC 2010 and BSC 2010L or equivalent courses.

OR, CHM 2045 and CHM 2045L or equivalent courses.

Overviewing of the biogeochemical processes affecting elemental cycling (carbon, nitrogen, phosphorus, sulfur) in global environmental systems.

#### **SWS 5234: Environmental Soil, Water, and Land Use**

**Credits: 3**                      **Grading Scheme:** Letter

Suitability of soils for different uses. Proper use of soil survey reports, topographic maps, and related information. Relationships between land uses and water behavior in soils and landscapes. Water use and allocation. Also offered as a distance education course.

#### **SWS 5235: South Florida Ecosystems**

**Credits: 3**                      **Grading Scheme:** Letter

Five modules address major disciplines of science and interest. Modules focus on broad subject areas critical to understanding this framework and man's interaction with South Florida ecosystems.

#### **SWS 5246: Water Resource Sustainability**

**Credits: 3**                      **Grading Scheme:** Letter

Quantitative description of human impacts on hydrologic ecosystems (aquifers, watersheds, coastal zones, lakes, and wetlands). Case studies show the detrimental effects of unsustainable resource use and beneficial management strategies. Also offered as a distance education course.

#### **SWS 5247: Hydric Soils**

**Credits: 2**                      **Grading Scheme:** Letter



Concepts, field identification, and delineation of hydric soils. Instruction in accordance with the National Technical Committee for Hydric Soils and with regulatory agencies. Also offered as a distance education course.

### **SWS 5248: Wetlands and Water Quality**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2040.

Introduction to natural and constructed wetland ecosystems. Problems associated with eutrophication and water quality. Hydrology, soils, and biogeochemistry. Also offered as a distance education course.

### **SWS 5305C: Soil Microbial Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or SWS 5050, MCB 2000C.

Occurrence and activities of soil microorganisms and their influence on soil productivity and environmental quality. Also offered as a distance education course.

### **SWS 5308: Ecology of Waterborne Pathogens**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* MCB 3020, or MCB 3023, or MCB 4203, or equivalent.

Modern methods for molecular and cultivation-dependent identification of soil- and waterborne pathogens. Risk assessment. Survival strategies, gene regulation, and metabolism of waterborne pathogens outside of their mammalian hosts. Also offered as a distance education course.

### **SWS 5406: Soil and Water Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or SWS 5050; CHM 3120.

Theoretical background and current approaches to agricultural and environmental problems. Also offered as a distance education course.

### **SWS 5424C: Soil Chemical Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 3120.

Practical and theoretical aspects of instrumentation and techniques commonly used in analyzing soils and plants.

### **SWS 5551: Soils, Water, and Public Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* Graduate status.

Highlights important instances where soil and water science and public health overlap. Develops skills required for competency in both disciplines.

### **SWS 5605C: Environmental Soil Physics**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 2040, MAC 2312, PHY 2004, SWS 5050.

Transport processes for water, solutes, gases, and heat in the root zone. Important soil properties (physical, chemical, and biological) that influence the transfer processes characterized in the field and laboratory. Also offered as a distance education course.

### **SWS 5716C: Environmental Pedology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022, SWS 5050, or consent of instructor.

Soils in the environment. Heavily oriented toward field applications of pedological principles and processes. Also offered as a distance education course.

### **SWS 5721C: GIS in Land Resource Management**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to basic concepts and use of "Arc GIS" to address land resource management issues. Also offered as a distance education course.

### **SWS 5805: Environmental Soil and Water Monitoring Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* BSC 2010 & BSC 2010L; CHM 2045 & CHM 2045L

Introducing students to the principles, objectives, and practices in environmental monitoring. Students will learn the proper techniques in planning for monitoring projects, sampling design, sample collection, basic principles of laboratory analysis, and basic data analysis. Quality assurance and quality control requirements are introduced and emphasized.

### **SWS 6134: Soil Quality**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 5050 or consent of instructor.

State-of-the-art studies/knowledge on soil quality. Principle assessment of soil quality with respect to biological production, plant and animal health, food security, and environmental quality. Also offered as a distance education course.

### **SWS 6136: Soil Fertility**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 4116, 4213C, SWS 5050 or SWS 5406 or EES 4201.

Principles of advanced soil fertility, including soil chemical properties, crop management practices, plant nutritional requirements, soil fertility amendments, and physiological aspects of plant growth.

### **SWS 6161: Bioavailability of Soil Nutrients**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 3022 or SWS 5050, 4116 or equivalent, or consent of instructor.

Soil water regime, soil chemical reactions, and dynamic nature of root growth and root function as they influence and determine nutrient availability. Also offered as a distance education course.

### **SWS 6262: Soil Contamination and Remediation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 4213C or equivalent.

Interdisciplinary study on current topics of soil contamination (types, sources, pathways, impacts, and fates) and soil remediation technologies (chemical, physical, biological, and thermal). Also offered as distance education course.

### **SWS 6323: Advanced Microbial Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 5305C or consent of instructor.

Phylogeny and evolution; diversity of habitat; genetic exchange.

### **SWS 6325: Rhizosphere Biochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 5305C or SWS 6323 or consent of the instructor.

Signaling and gene regulation in rhizosphere. Roles of plants and microbes in nutrient cycling, plant disease, biocontrol, and bioremediation. Also offered as a distance education course.

### **SWS 6366: Biodegradation and Bioremediation**

**Credits: 3**                      **Grading Scheme:** Letter

Principles of biodegradation of toxic organic chemical; practices in conducting biodegradation studies in soils and water, and in microbial aspects of bioremediation of contaminated soils and water.

### **SWS 6448: Biogeochemistry of Wetlands and Aquatic Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Biogeochemical cycles of carbon, nitrogen, phosphorus, sulfur, and redox cations in wetland soils and sediments, as related to their agronomic, ecological, and environmental significance. Also offered as distance education course.

### **SWS 6454: Advanced Soil and Water Chemistry**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* CHM 3400, or equivalent.

Fundamental principles of surface chemistry as applied to soil and subsurface materials in natural waters. Chemical equilibria in natural systems, aqueous geochemistry, interfacial properties of soil and sedimentary colloids, and sorption of pollutants.

### **SWS 6456: Advanced Biogeochemistry**

**Credits: 3**                      **Grading Scheme:** Letter

Global elemental cycles in terrestrial, wetland, and aquatic systems as related to water quality, carbon sequestration, and climate change.

### **SWS 6464C: Soil Mineralogy**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Classification, structure, surface chemistry, equilibria, genesis, weathering, and distribution of soil minerals. Influence of minerals on soil properties.

### **SWS 6622: Vadose Zone Hydrology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SWS 4602C, MAC 2313, EGM 3311, or equivalent.

Physical concepts for movement and retention of water, solutes, and heat in the water-unsaturated vadose zone with emphasis on agricultural and environmental aspects of water and solutes in soils.

### **SWS 6722: Soil-Landscape Modeling**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* SWS 5721C, STA 6166, SWS 5716C, or equivalent, or consent of instructor.

Various concepts and quantitative methods to model and understand spatial distribution of soil properties.

### **SWS 6905: Special Problems**

**Credits: 1-4    Max: 8                      Grading Scheme:** Letter

*Prerequisite:* 15 credits of soil science.

Laboratory, library, and/or field study and research in a particular aspect of soils. Also offered as a distance education course.

### **SWS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme:** S/U

Also offered as a distance education course.

### **SWS 6931: Seminar**

**Credits: 1    Max: 3                      Grading Scheme:** Letter

Presentation of literature, methods of proposed thesis research, and selected topics.

**SWS 6932: Topics in Soils**

**Credits: 1-4    Max: 8                    Grading Scheme: Letter**

*Prerequisite:* SWS 3022.

Also offered as a distance education course.

**SWS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

Also offered as a distance education course.

**SWS 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

Also offered as a distance education course.

**SWS 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy. Also offered as a distance education course.

**SWS 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

Also offered as a distance education course.

**SYA 6018: Classical Social Theories**

**Credits: 3**                      **Grading Scheme:** Letter

Sociological theory from its inception in the early 19th century to about 1930. The ideas of Comte, Spencer, Marx, Weber, Simmel, Durkheim, Pareto, Mead, and others.

**SYA 6126: Contemporary Sociological Theory**

**Credits: 3**                      **Grading Scheme:** Letter

The study of modern sociological theories, roughly 1930 to the present.

**SYA 6305: Methods in Social Research I**

**Credits: 3**                      **Grading Scheme:** Letter

Survey of quantitative and qualitative methods of social research, design, and data collection.

**SYA 6306: Methods in Social Research II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* SYA 6305.

Evaluation and completion of topics and projects from SYA 6305.

**SYA 6315: Qualitative Research Methods**



**Credits: 3                      Grading Scheme: Letter**

Fieldwork, observation, participant observation, and other qualitative data-collection and analysis techniques.

**SYA 6327: Research Problems in Deviance**

**Credits: 3                      Grading Scheme: Letter**

Survey of substantive issues related to data sources, analysis methods, and specific research areas.

**SYA 6407: Quantitative Research Methods**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* STA 6126.

Applying selected quantitative methods to sociological research problems. Extensive practice applying the methods.

**SYA 6905: Individual Work**

**Credits: 1-4    Max: 3 for M.A. and 6 for post-M.A.                      Grading Scheme: Letter**

Work on subjects not available in currently offered courses.

**SYA 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**SYA 6942: Applied Social Research Project**

**Credits: 3                      Grading Scheme: Letter**

Supervised individual or team applied research project.

**SYA 6971: Research for Master's Thesis**

**Credits: 1-15                      Grading Scheme: S/U**

**SYA 7933: Special Study in Sociology**

**Credits: 3    Max: 9                      Grading Scheme: Letter**

**SYA 7979: Advanced Research**

**Credits: 1-12    Max: 24 , including SYA 7980, may be counted in 90 hours                      Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**SYA 7980: Research for Doctoral Dissertation**

**Credits: 1-15    Max: 24 , including SYA 7979, may be counted in 90 hours                      Grading Scheme: S/U**

**SYD 6436: Metropolitan Growth and Development**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* 8 hours in social sciences.

Examines the main facets of the dynamics of urban growth/decline and how these affect the social order of a given population: population factors, formation/deterioration of community ties, urban housing social control, transportation, and other subjects reflecting the complexity of urban life.

**SYD 6517: Seminar in Environment and Society**

**Credits: 3                      Grading Scheme: Letter**

Survey of sociological topics important for interdisciplinary environmental science.

**SYD 6518: Core Issues in Environmental and Resource Sociology**

**Credits: 3                      Grading Scheme: Letter**

Addressing the origins and current status of Environmental and Resource Sociology (ERS), central theoretical debates among ER sociologists, and focal topics of concern to ER sociologists, with emphasis on ERS topics current among ER sociologists at the University of Florida.

**SYD 6706: Racial and Ethnic Relations**

**Credits: 3                      Grading Scheme: Letter**

Overview of racial-ethnic oppression, stratification, and conflict in the U.S.

**SYD 6707: Black and White Americans: Sociological Perspectives**

**Credits: 3                      Grading Scheme: Letter**

Critical and comprehensive overview of current social science research. Racial images and perspectives, racial attitudes, images in the media, responses to discrimination, and public policies such as affirmative action.

**SYD 6806: Gender and Society**

**Credits: 3**                      **Grading Scheme:** Letter

Review of recent literature and field research on women, gender, and sexism. Barriers such as everyday discrimination.

**SYD 6807: Sociology of Gender**

**Credits: 3**                      **Grading Scheme:** Letter

Theoretical and empirical literature about social construction of gender. Overview of key literature.

**SYD 6825: Men and Masculinities**

**Credits: 3**                      **Grading Scheme:** Letter

How men's life course influences and is affected by the gendered social order. How masculinities are constructed in diverse contexts.

**SYD 7808: Reproduction and Gender**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* graduate standing.

Key reproductive issues in a U.S. context. The gendered nature of the reproductive realm. How cultural and social structures shape individuals' feelings, thinking, and actions in terms of specific reproductive choices.

**SYO 6107: American Families**

**Credits: 3**

**Grading Scheme:** Letter

The impact on families of rapid social changes. Racial, class, and ethnic variations. Gender issues and changing family roles. Alternative life styles and the changing nature of families.

**SYO 6126: Family Theories**

**Credits: 3**

**Grading Scheme:** Letter

Relationships, families, and households (RFH) from a social science (SS) perspective. Aims to synthesize elements of social theory, social research, and social policy.

**SYO 6175: Topics in Family Research**

**Credits: 3**

**Grading Scheme:** Letter

Seminar on major empirical approaches to analyzing family relationships.

**SYO 6407: Health Disparities**

**Credits: 3**

**Grading Scheme:** Letter

Health needs of vulnerable populations in the United States of America.

**SYO 6427: Health and Aging**

**Credits: 3**

**Grading Scheme:** Letter

Graduate seminar that focuses on the determinants and character of chronic disease epidemiology among adults in the United States.

**SYO 6535: Social Inequality****Credits: 3****Grading Scheme:** Letter

The unequal distribution among individuals and groups of wealth, power, and prestige. The effect of class systems on society. The effect of class membership on individuals. Social mobility.

**SYP 6115: Seminar in Symbolic Interaction****Credits: 3****Grading Scheme:** Letter

A sociological perspective on the self, with special emphasis on the role of language, symbols, and culture in relation to identity, socialization, and social structure.

**SYP 6517: Theories of Crime and Deviance****Credits: 3****Grading Scheme:** Letter

Review and critique of major social and behavioral theories of crime, delinquency, and deviance.

**SYP 6545: Sociology of Law****Credits: 3****Grading Scheme:** Letter

Sociological perspective on law and control in society, development of law, operation of the legal system, the legal profession, social change, power and conflict, and the impact of law and legal sanctions and society.

**SYP 6735: Sociology of Aging and the Life Course**

**Credits: 3                      Grading Scheme: Letter**

Social and personal conditions of post-retirement years. Family and housing patterns, income, leisure, health, group processes, and evaluation of institutional care of the aged.

**SYP 6736: Sociology of the Aged**

**Credits: 3                      Grading Scheme: Letter**

Major sociological issues and concepts related to aging and the aged. Social stratification, family, social norms, social networks, and community. Economic security, health, housing, and retirement.

**SYP 6745: Aging and End-of-Life Issues**

**Credits: 3                      Grading Scheme: Letter**

An exploration of dying well in old age from multiple perspectives, including sociology, psychology, biology, medical sciences, ethics, history, spirituality/religion, and economics.

**TAX 5005: Introduction to Federal Income Taxation**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* C grade or better in ACG 3482C; and AC standing.

Concepts and applications for all types of taxpayers. Influence of taxation on economic decisions, basic statutory provisions relevant to determining taxable gross income, allowable deductions, tax computations, recognition or nonrecognition of gains and losses on property transactions, and characterization of gains and losses.

**TAX 5025: Federal Income Tax 1**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* ACG 4111C, ACG 4341, CLASS GE 4, and COLLEGE EQ AC

First of a two-course sequence studying the concepts found in the Federal income tax code. Primary emphasis will be using the income tax code to understand gross income, income exclusions, as well as deductions for businesses.

### **TAX 5027: Federal Income Tax 2**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 5025, Class GE 4, and College EQ AC  
OR

TAX 4001C, Class GE 4, and College EQ AC

Second of a two-course sequence studying the concepts found in the Federal income tax code. Primary emphasis will be using the income tax code to understand property transactions in a business and investment context.

### **TAX 5065: Tax Professional Research**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 5005, GE 7AC standing  
OR

TAX 5027 and GE 7AC.

Use of professional tax literature and technology for problem solving. Case-based to provide experience in dealing with unstructured situations encountered in professional tax practice. Emphasizes problem identification and resolution.

### **TAX 6105: Corporate Taxation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 5065, Class GE 7, and College EQ AC.

In-depth study of taxation of corporate formations and ongoing operations. In addition, this course provides an introduction to accounting for income taxes.

### **TAX 6115: Advanced Corporate Taxation**

**Credits: 2**                      **Grading Scheme:** Letter



*Corequisite:* TAX 6105, Class GE 7, and College EQ AC

Second of a two-course sequence that continues the study of corporate taxation. The course emphasizes: liquidations, reorganizations, divisions; it introduces the taxation of S corporations.

### **TAX 6205: Partnership Taxation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 5065, Class GE 7, and College EQ AC.

Providing depth of knowledge in partnership taxation. Required for students pursuing the "tax" track. Elective for other MAcc. students.

### **TAX 6526: International Taxation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 6105 & GE 7AC

Expansion of introduction to international tax, addressing more complex concepts encountered by U.S. multinationals operating abroad. U.S. taxation of foreign persons with U.S. activities included.

### **TAX 6726: Executive Tax Planning**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 5065, 7AC standing.

Unique economic and tax planning scenarios faced by highly compensated executives throughout their working lives and as they face retirement and death.

### **TAX 6877: State and Local Taxation**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TAX 6105 and GE 7AC.

Tax issues involved when business enterprises operate in multiple taxing jurisdictions. Principles of both multi-state and international income taxation (and their overlap).

**THE 5238: African-American Theatre History and Practice**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* THE 2000 or 2020 or consent of instructor.

Origins and development of theatre by, for, and about Black America from the 18th century to the present.

**THE 5287: History of Decor and Architecture for the Stage**

**Credits: 3**                      **Grading Scheme:** Letter

Architecture and decor from prehistory to the 19th century as they reflect time and spirit in preparation for play production.

**THE 5910: Introduction to Graduate Study in Theatre**

**Credits: 1**                      **Grading Scheme:** Letter

Research methods, examination and thesis preparation, and classroom pedagogy for first-year MFA students.

**THE 6265: Costume History**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* admission to MFA.

Examines the history of fashion and costume, and its relation to the general intellectual, moral, and cultural climate of an era; and how the theatrical designer applies this analysis.

**THE 6525: History, Literature, and Criticism I**

**Credits: 3**                      **Grading Scheme:** Letter

Readings and discussions of Western and Japanese dramatic literature and criticism from their beginnings to the 18th century.

**THE 6526: History, Literature, and Criticism II**

**Credits: 3                      Grading Scheme:** Letter

Discussions of dramatic literature, performance theory, and stage practice from the 19th century to the modern and postmodern of Western, Indian, Chinese, and African cultures.

**THE 6565: Seminar in Creative Process**

**Credits: 3                      Grading Scheme:** Letter

Specialists in all areas of theatre explore the similarities in their creative thinking and methods.

**THE 6905: Individual Study**

**Credits: 1-9    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Reading, research, or performance project.

**THE 6933: Arts and Public Health Professional Seminar**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* HUM 5357 and HUM 5595

The online course provides a practical orientation to professional competencies, practice, and ethics for the arts and public health. The professional seminar will focus on core issues, trends, and critical debates central to current practice, and historical and contemporary applications of the arts in the field of public health.

**THE 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**THE 6941: Internship**

**Credits: 1-9    Max: 9            Grading Scheme: S/U**

Practical experience in residence with a professional theatre or equivalent.

**THE 6948: Arts and Public Health Practicum**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* HUM 5357 and HUM 5595

Engages the student in focused professional-level practice using arts strategies for promoting public health. The student will undertake 130 hours of work over 16 weeks, including project planning, implementation, and evaluation, in an approved healthcare or community program setting.

**THE 6950: Applied Theatre**

**Credits: 1-3    Max: 9            Grading Scheme: Letter**

Specialized practical experience achieved through participation in realized productions.

**THE 6955: Summer Repertory Theatre**

**Credits: 3-9    Max: 9            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Practical experience in repertory theatre, directly applying skills in all areas of theatre production.

**THE 6971: Research for Master's Thesis**

**Credits: 1-15      Grading Scheme: S/U**

**THE 6973C: Project in Lieu of Thesis**

**Credits: 1-9    Max: 9      Grading Scheme: S/U**

*Prerequisite:* admission to candidacy.

Creative project in lieu of traditional written thesis.

**TPA 5025: Lighting Design I**

**Credits: 3      Grading Scheme: Letter**

*Prerequisite:* admission to MFA or consent of instructor.

Advanced applications. In-depth practice of design concept formulation, use of advanced equipment, and complex scenographic documentation. Introduction to CAD for the lighting designer.

**TPA 5047: Costume Design I**

**Credits: 3      Grading Scheme: Letter**

*Prerequisite:* admission to MFA. Development of skills required for costume design.

Emphasizes character and play analysis for the costume designer.

**TPA 5067: Scene Design I**

**Credits: 3      Grading Scheme: Letter**

*Prerequisite:* TPA 4066; admission to MFA or consent of instructor.

Study and practice of the scenic design process. Developing scenic design techniques for theatre and dance. Emphasizes script analysis for the scenic designer.

### **TPA 5072: Drawing and Rendering**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* admission to MFA.

Application of advanced drawing and painting techniques for theatrical design. Mastering different media through experimentation. Using advanced techniques to enhance visual communication.

### **TPA 5079: Graduate Scene Painting**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* TPA 2075 or admission to MFA.

Advanced techniques in scene painting. Developing textural illusion, and enhancing volume through light and shadow.

### **TPA 5082: Advanced Theatre Graphics**

**Credits: 3                      Grading Scheme:** Letter

*Prerequisite:* TPA 4066; admission to MFA.

Rendering for theatrical design. Traditional techniques, computer aided applications, and model building.

### **TPA 5236: Costume Technologies Workshop**

**Credits: 3    Max: 9                      Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Costume crafts work through realized projects. Possible topics: millinery, stage jewelry, masks, prosthetics, wigs, puppetry, footwear, and dyeing.

**TPA 6005: Design I**

**Credits: 2**                      **Grading Scheme:** Letter

Applying the fundamental techniques of set, light, and costume design to various styles of dramatic literature.

**TPA 6006: Design II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prereq or coreq:* TPA 6005. Experience in design under simulated production conditions. Designers working in their major and minor areas of specialization.

**TPA 6009: Design Studio**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* admission to MFA.

Investigation of design theory, research, concept, and presentation used in production of theatre and dance.

**TPA 6026: Lighting Design II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TPA 5025.

In-depth study of processes. Refinement of aesthetic concept, complex productions, state-of-the-art technologies, CAD applications, and lighting for built environment.

**TPA 6048: Costume Design II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TPA 5047.

Advanced study. Specialized costume design problems for individual projects.

#### **TPA 6054: Detail Design for Costume Designers**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* TPA 6048 or consent of instructor.

Intensive study and practical application of designing specific motifs and accessories for costumes.

#### **TPA 6069: Scene Design II**

**Credits: 3                    Grading Scheme:** Letter

*Prerequisite:* TPA 5067 or admission to MFA.

Design work in a variety of genres. Complex multi-set productions.

#### **TPA 6235: Costume Construction**

**Credits: 3    Max: 9            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Detailed study of patterning and construction techniques used in men's and women's dress. Extensive hands-on work with contemporary and historical garments.

#### **TPA 6237: Pattern Making: Flat Patterning**

**Credits: 3    Max: 6            Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Using flat pattern techniques to create garments. Emphasizes period details.

#### **TPA 6243: Pattern Making: Draping**



**Credits: 3    Max: 6            Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Advanced study of draping methods of costume creation. Extensive hands-on work using the sculptural qualities of fabric and clothing.

**TPA 6258: Computer Drafting 2D**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* admission to MFA.

Study of computer aided drafting for the theatrical designer. Emphasizes techniques for the scenic and lighting designer.

**TPA 6357: Programming and Presentation for the Lighting Designer**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* TPA 5025, TPA 6026.

Intensive use of high-end software for programming and presenting lighting-design concepts, for the advanced designer.

**TPP 5234: Mutli-Cultural Performance Workshop**

**Credits: 1                    Grading Scheme: Letter**

Character and scene study using original material and a canon of minority and marginalized artists.

**TPP 6115: Graduate Acting I: Modern Acting Theory and Practice**

**Credits: 2-3                    Grading Scheme: Letter**

Diagnostics of analytical and technical skills of acting through exploration of psychological realism through the use of psycho-physical exercises.

### **TPP 6116: Graduate Acting II: Shakespeare and High Style**

**Credits: 2-3**                      **Grading Scheme:** Letter

Analytical, research and technical skills needed to perform plays written in "high verse" with particular focus on the plays of Shakespeare. Students will be directed in the formalist approach to classical performance style. The approach is designed to enhance each student's awareness, development, and capability for heightened performance requirements.

### **TPP 6145: Graduate Acting III: Period Styles**

**Credits: 2-3**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program, TPP 6115 : Graduate Acting I: Modern Acting Theory and Practice , TPP 6116 : Graduate Acting II: Shakespeare and High Style

The stylistic techniques, analysis, and performance of plays from ancient Greek to the early twentieth-century. The course is designed to enhance the imaginative artistry of the student and to develop awareness and capabilities for heightened performance techniques.

### **TPP 6149: Acting IV: Contemporary Realism**

**Credits: 2-3**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program, TPP 6115 : Graduate Acting I: Modern Acting Theory and Practice ,TPP 6116 : Graduate Acting II: Shakespeare and High Style , TPP 6117 Grad Period Styles

Investigating the fundamental principles of acting technique. Over a series of progressive exercises, students continue to discover an effective, dependable, repeatable set of working tools for the actor, derived from the teachings of contemporary acting theorists, to enhance their sense of purposefulness, immediacy and truthfulness in their performance work.

### **TPP 6225: Professional Seminar: Acting**

**Credits: 1**                      **Grading Scheme:** Letter

Performance techniques and methods for film, television, and theatre.

**TPP 6237: MFA Company Acting Workshop**

**Credits: 1-6    Max: 24                    Grading Scheme: Letter**

Student actors study, experiment, and produce in a laboratory emphasizing specialized skills and methods; and nonrealistic and period genres.

**TPP 6266: Acting for the Camera**

**Credits: 2-3                    Grading Scheme: Letter**

*Prerequisite:* Admission to the MFA Acting program Acting I, Acting II, Acting III, Acting IV

Investigating acting technique relative to the specific constraints and demands of the film/television medium. In addition, the class helps to prepare the actor to procure work in the industry through discussions of and explorations focused on the business aspects of being a professional actor.

**TPP 6285: Voice and Movement I**

**Credits: 3                    Grading Scheme: Letter**

Vocal skills, emphasizing versatility, production, power, and strength.

**TPP 6286: MFA Voice and Speech II: Shakespeare and High Styles**

**Credits: 2-3    Max: 3                    Grading Scheme: Letter**

*Prerequisite:* TPP 6116

Vocal skills unique to the execution of nontraditional and period roles. Continued development of a virtuoso vocal instrument through exploration and experimentation with consonant, structural, and tonal energy. A coherent approach to voice, speech, text, and actor preparation. Emphasis on Verse Drama and Heightened Style.

### **TPP 6297: The Alexander Technique I**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program.

Introducing fundamental principles of the Alexander Technique (AT); a mind-body approach to the use of self as applied to acting.

### **TPP 6298: The Alexander Technique II**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program and TPP 6297 .

Investigating the fundamental principles of the Alexander Technique (AT) introduced in Alexander Technique I. The course includes basic anatomy, developmental movement, breathing and relaxation techniques, and presentations.

### **TPP 6299: The Alexander Technique III**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program, TPP 6297, TPP 6298 .

Providing the opportunity to revisit the Alexander Technique principles in greater depth with an emphasis on applying those AT principles to acting challenges arising in the students' thesis production. This course provides experimental integration of the AT principles with selected acting techniques, and voice and movement techniques with specific consideration to their thesis roles. This graduate level course is designed for 3rd year MFA candidate.

### **TPP 6385: Directing**

**Credits: 3**                      **Grading Scheme:** Letter

Explores the philosophy and psychology of directing and the director. Applied to scene study.

### **TPP 6515: Graduate Movement Training**

**Credits: 2-3**

**Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program, TPP 6115 : Graduate Acting I: Modern Acting Theory and Practice

Helping the actor move freely and explore characterization through movement. This course introduces students to Period Styles and Social Deportment in order to develop awareness and capabilities for heightened performance techn

**TPP 6536: Graduate Stage Combat**

**Credits: 2-3**

**Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program

Instruction in standard stage combat techniques of Unarmed and Rapier & Dagger. Safety is emphasized in the creation of the illusion of armed and unarmed violence.

**TPP 6717: MFA Voice and Speech III: Period Styles**

**Credits: 2-3**

**Grading Scheme:** Letter

*Prerequisite:*  
Admission to the MFA Acting program

Emphasizing specialized voice an speech skills and methods of specific to the style of dramatic literature from ancient Greek to the early twentieth-century.

**TPP 6718: MFA Voice and Speech IV: Advanced Vocal Training for the Actor**

**Credits: 2-3**

**Grading Scheme:** Letter

*Prerequisite:* Admission to the MFA Acting program

Graduate Voice and Speech course emphasizing specialized skills and methods specific to modern and contemporary plays, film and television, and voice-over.

**TPP 6946: Performance Practicum**

**Credits: 3**                      **Grading Scheme:** Letter

Training in specialized areas of performance.

**TSL 5142: ESOL Curriculum, Methods, and Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TSL 3526.

Curriculum, methods, and assessment for second language learners in K-12 classrooms.

**TSL 5325: Secondary ESOL Teaching Strategies**

**Credits: 3**                      **Grading Scheme:** Letter

Teaching skills to be effective with ESOL students in a mainstream content class.

**TSL 6145: Curriculum and Materials Development for ESOL K-12**

**Credits: 3**                      **Grading Scheme:** Letter

Developing and adapting standards-based curriculum and materials for L2 oral language and literacy, academic content, and K-12 ESOL instruction.

**TSL 6171: TESL I: Materials and Techniques**

**Credits: 3**                      **Grading Scheme:** Letter

Theories of TESL teaching methods and materials. Instruction in classroom materials. Observation of ESL classroom procedures.

**TSL 6172: TESL II: Materials for Special Purposes**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TSL 6171.

Continuation of TSL 6171. Instruction in designing courses and programs in ESL. Each student will be required to develop a sample ESL course.

**TSL 6245: Language Principles for ESOL Teachers**

**Credits: 3**                      **Grading Scheme:** Letter

Applied linguistics for teachers. Language-acquisition theories related to learning a second language in school. Connections between language and literacy development and effective instruction for English language learners.

**TSL 6373: Methods of Teaching ESOL K-12**

**Credits: 3**                      **Grading Scheme:** Letter

Effective oral language and literacy instruction for K-12 English language learners.

**TSL 6440: Testing and Evaluation of ESOL**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to assessment issues and experience in developing assessment techniques for learners of English as a second language.

**TSL 6700: Issues in ESOL for School Counselors and Psychologists**

**Credits: 3**

**Grading Scheme:** Letter

Gives school counselors and psychologists an overview of key concepts and issues related to ESOL students in K-12 schools.

### **TTE 5006: Advanced Urban Transportation Planning**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* graduate standing and consent of instructor.

Analytical techniques for estimating future travel demands; and for for planning transportation facilities and locations. Review of transportation technology and future systems.

### **TTE 5256: Traffic Engineering**

**Credits: 3**

**Grading Scheme:** Letter

Traffic characteristics, studies and analyses, street operations, level of service analysis, congestion and access management, signs and markings, pedestrians, bicycles, parking, roadway lighting.

### **TTE 5305: Advanced Transportation Systems Analysis**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* TTE 4004.

Systems analysis in transportation planning and engineering, including supply, demand, equilibrium, evaluation, and decision analysis.

### **TTE 5805: Geometric Design of Transportation Facilities**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* TTE 4004 or consent of instructor.



Geometric design criteria and controls of highways and intersections.

### **TTE 5835: Pavement Design**

**Credits: 2**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 4811 or consent of instructor.

Design of flexible and concrete pavements.

### **TTE 5837: Pavement Management Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 5835.

Evaluation, analysis, design, performance prediction, planning, and maintenance of pavements.

### **TTE 6205: Freeway Operations and Simulation**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Uninterrupted traffic flow theory. Highway capacity analysis. Microscopic simulation. Freeway management and control methods.

### **TTE 6207: Advanced Highway Capacity Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 4004 or equivalent.

Procedures defined within the current Highway Capacity Manual (HCM), including analytical chapters for uninterrupted and interrupted flow.

### **TTE 6259: Urban Streets Simulation and Control**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 4201/TTE 5256.

Principles of simulation modeling and applications. Simulating urban street operations using commercially available packages; traffic signal control and optimization for urban streets; signal control hardware.

### **TTE 6267: Traffic Flow Theory**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 4201/TTE 5256.

Vehicle-roadway-infrastructure interactions, equations of motion, and car-following; microscopic and macroscopic traffic characteristics and traffic stream models; simulation, queueing theory, and shockwave analysis.

### **TTE 6306: Computational Methods in Transportation Engineering**

**Credits: 3**                      **Grading Scheme:** Letter

*Corequisite:* TTE 5256.

Applying numeric methods to traffic engineering/analysis. Key issues in implementing a computational methodology into a software format. Fundamentals of developing simulation software.

### **TTE 6315: Highway Safety Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

Statistics and characteristics of accidents, accident reconstruction, accident causation and reduction.

### **TTE 6505: Discrete Choice Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* consent of instructor.

Theory and models of individual choice behavior, unordered and ordered multinomial choice models, empirical specifications, maximum likelihood estimation, state-of-the-art methods, travel modeling applications.

### **TTE 6606: Urban Transportation Models**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* TTE 5305 or consent of instructor.

Mathematical models for decision making in planning and operations of urban highway and transit systems.

### **URP 6042: Urban Economy**

**Credits: 3**                      **Grading Scheme:** Letter

Principles of urban systems, including analytical techniques such as economic base analysis.

### **URP 6061: Planning Administration and Ethics**

**Credits: 3**                      **Grading Scheme:** Letter

Administration and management of public and private planning offices; ethics of planning profession.

### **URP 6100: Planning Theory and History**

**Credits: 3**                      **Grading Scheme:** Letter

History of planning and the associated development of theory. Synoptic versus disjointed incrementalism and the political setting for comprehensive planning are emphasized.

### **URP 6122: Alternative Conflict Management**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* graduate standing in college or consent of instructor.

General introduction to field. Case studies, simulations, readings, and external experiences.

**URP 6131: Growth Management Powers I**

**Credits: 3                      Grading Scheme: Letter**

Introduction to regulatory and nonregulatory techniques of plan implementation. Relationship of law and politics to the planning process. Police power as the basis for regulation. Mandatory planning and status of adopted comprehensive plans.

**URP 6132: Growth Management Seminar**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* URP 6131.

Introducing students with an interest in land use planning to the evolution of growth management planning law in Florida.

**URP 6203: Planning Research Design**

**Credits: 1-3    Max: 3                      Grading Scheme: Letter**

Emphasizes research design, and literature research; student presentations at appropriate stages in thesis work.

**URP 6231: Quantitative Data Analysis for Planners**

**Credits: 3                      Grading Scheme: Letter**

Planning problem formulation, quantitative research skills, and data gathering techniques. Statistical analysis and emphasis on computer applications.

### **URP 6270: Survey of Planning Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to concepts and theory associated with desktop GIS as related to urban (real estate) and regional (environmental) planning.

### **URP 6271: Planning Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced work in planning and analysis customizing the use of large databases. Emphasizes development monitoring systems and information systems in planning.

### **URP 6272: Spatial Analysis for Urban Planners**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6231 , URP 6270 , or Instructor Permission.

Theoretical and practical knowledge about the structure, use, and architecture of georeference database systems. Spatial relationships between network and area-related systems. Developing and maintaining geographic information systems as related to urban and regional planning.

### **URP 6274: GPS for Planners: Introduction to Global Positioning System**

**Credits: 1**                      **Grading Scheme:** Letter

Basics of digital field collection using GPS. GPS applications, components, concepts, mission planning, data collection in field, navigation, real-time and postprocessing correction using base station data, and exporting GPS to GIS.

### **URP 6275: Spatial Database Design and Development**

**Credits: 3**                      **Grading Scheme:** Letter

Advanced GIS data concepts and practices. Techniques for data creation, quality assurance and quality control, conversion, storage, manipulation, and presentation.

### **URP 6276: Internet Geographic Information Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6270

Examines the theoretic and technological background in the emerging technologies in web-based geographic information systems (GIS).

### **URP 6277: Land Use Visioning and Analysis**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6270 or consent of instructor.

Fundamental data analysis techniques and GIS skills necessary for land use analysis and visioning.

### **URP 6312: Land Development Planning and Evaluation**

**Credits: 3**                      **Grading Scheme:** Letter

Standards, criteria, policies, design techniques, and research systems used in designating proposed general distribution; location and extent of the uses of land and of population densities for all public and private land use categories as established by law, regulation, and social and economic justification at all levels of government in the U.S. and abroad.

### **URP 6341: Urban Planning Project**

**Credits: 1-12    Max: 12**

**Grading Scheme:** Letter, H

Projects encompass city wide comprehensive planning examining the interaction of urban and social systems cast in scenarios of future growth and development.

#### **URP 6421: Environmental Impact Statements**

**Credits: 3**

**Grading Scheme:** Letter

Management and decision-making aspects of impact statements under the U.S. Environmental Protection Act, Florida's Land and Water Management Act of 1972, and as a component of a comprehensive planning process.

#### **URP 6424: Sustainable Urbanism in the Americas**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* URP 6100 pr permission of the instructor.

An examination of sustainable patterns of growth in several urban environments in the Americas, within the context of specific cities and metropolitan regions. Urban management practices, particularly those related to urban lifestyles and consumption patterns are covered.

#### **URP 6428: Advanced Environmental Planning**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:*

URP 6421 or URP 6429 or consent of instructor.

The course will examine cutting edge environmental planning theory and practice that aims to collectively manage linked social and ecological systems that are important, complex, and adaptive.

#### **URP 6429: Natural Resources Planning and Management**

**Credits: 3**                      **Grading Scheme:** Letter

Natural resources planning, management principles, practices of natural resources, ecosystem, restoration planning, and management at local and regional levels

**URP 6445: Planning for Climate Change**

**Credits: 3**                      **Grading Scheme:** Letter

Overviewing the relationship between human activities and climate change and what can planning do to mitigate and adapt to climate change, including the science and scenarios of climate change, impacts on the built and natural environment, the mitigation measures, and adaptive planning approaches to build resilient communities.

**URP 6526: Health and the Built Environment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Using connections between urban planning and public health using an environmental health framework on a global, regional, and local scale. Historical connections and emerging issues, such as obesity and physical activity, sustainability, and environmental justice, climate change, social equality, children's health, and the role of land use, environmental and other planning decisions.

**URP 6541: Economic Development Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Major international and national economic development theory, issues and trends as they affect local economic development planning, methods, and practice.

**URP 6542: Urban Land Economics**

**Credits: 3**                      **Grading Scheme:** Letter



Review of land economics within the context of urban and regional planning.

**URP 6543: Seminar in Capital Improvement Finance**

**Credits: 1**                      **Grading Scheme:** Letter

Methods and means of local government finance of capital improvements.

**URP 6547: Local Public Finance for Urban Planners**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6042 or consent of instructor.

Role of local governments in the economy with special emphasis in the provision of urban goods and services, the funding sources for urban governments and the decision-making processes about expenditures and revenues.

**URP 6601: State Planning**

**Credits: 3**                      **Grading Scheme:** Letter

History, development, and administration of state planning in the 20th century with emphasis on recent growth management initiatives.

**URP 6603: Development Review**

**Credits: 3**                      **Grading Scheme:** Letter

Seminar on practice of local government planning with emphasis on development review and land development regulation.

### **URP 6610: International Development Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Critical examination of institutions that play a role in development issues in poorer nations within the context of international development strategies, exposing students to dominant strategies and emerging perspectives on international development.

### **URP 6711: Transportation and Land Use Coordination**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6716; URP 6131      *Corequisite:* URP 6716

Explores the connection between land use and transportation by considering how four major sets of actors shape the urban environment: individuals, businesses, the professions and governments.

### **URP 6716: Transportation Policy and Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to transportation policy planning in urban context. Transportation policy instruments and policy-making processes, critical issues in transportation policy, history of policy in U.S. at federal, state, and local levels.

### **URP 6718: Bikeways Planning and Design**

**Credits: 3**                      **Grading Scheme:** Letter

Planning and designing bicycle paths, greenways, and facilities that form a network for nonmotorized transportation. Oriented toward a systems approach.

### **URP 6743: Affordable Housing Law**

**Credits: 3**                      **Grading Scheme:** Letter

Broad understanding of the affordable housing crisis and the federal, state, and local regulatory schemes employed to correct this deficiency, as well as the legal battles which have served as the basis for such regulations or the challenge thereof. Enhancement of legal drafting skills through the preparation of research memoranda and comprehensive plan language.

**URP 6745: Housing, Public Policy, and Planning**

**Credits: 3**                      **Grading Scheme:** Letter

Supply, demand, and market relationships. History of government housing policy. Exploration of relationship between housing policy and urban and regional planning.

**URP 6746: Topical Debates in Housing**

**Credits: 3**                      **Grading Scheme:** Letter

Current housing problems, theories and approaches. Housing needs, available tools, formulation of recommendations, and examination of effects of implementation. Inclusionary zoning, gentrification, and smart growth.

**URP 6821: Transportation and Land-Use Modeling**

**Credits: 3**                      **Grading Scheme:** Letter

The planning process, modeling and applications for passenger transportation and land-use development of metropolitan areas with respect paid to its contribution to transportation project and policy analysis.

**URP 6855: Urban Form in Cities throughout the Americas**

**Credits: 3**                      **Grading Scheme:** Letter

Urban form and development theories and how planning interfaces with developmental trends in North, Central, and South America.

### **URP 6871: Planning and Design I**

**Credits: 3**                      **Grading Scheme:** Letter

Lectures, readings, and exercises in planning research and design methods. Emphasis on design graphics and other means of communication.

### **URP 6872: Planning and Design II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* URP 6101.

Focus on alternative roles and potential contributions from both private and public sector participants, case studies and exercises in formulation of urban design plans for private and public sectors.

### **URP 6880: Defensible Space and CPTED in Urban Design**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to crime prevention through environmental design (CPTED) and defensible space in urban planning design.

### **URP 6884: Community Conservation and Revitalization**

**Credits: 3**                      **Grading Scheme:** Letter

Community conservation is a major thrust of National Urban Policy. Relates community revitalization and conservation to the methodology of identification of problem areas, planning and replanning for all types of locations, use and adaptive uses. Federal and state assistance, tax incentives, and other programs.

**URP 6887: Advanced Defensible Space in Urban Design**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* URP 6880/4884

Advanced analysis of Defensible Space, CPTED, and other place-based crime prevention planning theories and practices in distressed communities.

**URP 6905: Exploration and Directed Study**

**Credits: 1-4    Max: 10                      Grading Scheme: Letter**

**URP 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**URP 6920: Colloquium**

**Credits: 1                      Grading Scheme: S/U**

Introduction to the field; historical and philosophical concepts, processes, and issues related to the profession of planning. For entering MAURP students.

**URP 6931: Topical Seminar**

**Credits: 1-4    Max: 6                      Grading Scheme: Letter**

Current planning opportunity examined.

**URP 6933: Planning Information Seminar**

**Credits: 1-2    Max: 2            Grading Scheme: Letter**

Current GIS topics. Discussions of emerging technologies, creative applications of GIS for particular projects, primers on operating systems, remote sensing, and spatial analysis.

**URP 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**URP 6941: Urban Planning Internship**

**Credits: 1-3    Max: 3            Grading Scheme: S/U**

Off-campus internship experience.

**URP 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**URP 6979: Terminal Project**

**Credits: 1-6    Max: 6            Grading Scheme: S/U**

This option, in lieu of thesis, accommodates a physical design or plan project which because of its map and graphic content does not fit comfortably within a thesis format.

### **VIC 5315: Corporate and Brand Identity on the Web**

**Credits: 3**                      **Grading Scheme:** Letter

Synthesizing two different but complementary tools of communication: graphic design and assembly (both print and electronic). You will learn fundamental design principles and techniques for effective visual communication.

### **VIC 5325: Digital Imagery in Web Design**

**Credits: 4**                      **Grading Scheme:** Letter

Constructing, deconstructing and further analyzing the impact of visual messages in interactive media. Gaining an understanding of how audiences form meanings, the importance of signs and symbols and how to manipulate images to reflect a point of view.

### **VIC 5326: Digital Media Layout and Design**

**Credits: 3**                      **Grading Scheme:** Letter

Introduction to the skills and concepts that will help create documents for both print and interactivity. The course teaches both the theory and application of design principles. Using Adobe InDesign, students will apply their understanding of these principles to create a portfolio project. While InDesign permits several possible workflows, this course will focus on those that most readily translate into digital design.

### **VIC 6316: Brand Management**

**Credits: 3**                      **Grading Scheme:** Letter

Developing an understanding of the importance of brand equity, how to build, measure, and manage brand equity. It will cover topics in the utilities of branding, steps/process of building brands, methods of measuring brand equity, strategies in managing brand portfolios, and management of brands over time, geographic boundaries, market segments.

### **VME 5162C: Avian Diseases**

**Credits: 3**                      **Grading Scheme: Letter**

Causes, epizootiology, diagnosis, and methods of prevention and control of avian diseases. Not open to students who have taken VME 4162.

### **VME 5244: Physiology: Organ Systems**

**Credits: 4**                      **Grading Scheme: Letter**

*Prerequisite:* knowledge of general biochemistry.

Emphasizes domestic animals commonly encountered in veterinary medicine. Physiology of nervous, muscle, blood, cardiovascular, respiratory, renal, gastrointestinal, and endocrine systems.

### **VME 6008: Care of Aquatic Megavertebrates**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Care of Florida megavertebrates including dolphins, other cetaceans, manatees, and sea turtles using lectures, tours, and hands-on experience.

### **VME 6010: Aquatic Animal Conservation Issues**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite:* None.

An online introduction to some controversial conservation issues, surrounding aquatic species, ranging from invertebrates to marine mammals, culminating in a 5-page grant proposal and review.

### **VME 6011: Introduction to Aquatic Wildlife Health Issues**



**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite: None.*

An online introduction to the natural history, anatomy, physiology, behavior, and health issues of aquatic wildlife: marine mammals, sea turtles, crocodilians, and some fish and invertebrates, culminating in a five- page grant proposal and review.

#### **VME 6017: Manatee Health & Conservation**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite: None.*

Introducing graduate students to manatee natural history, anatomy, physiology, behavior, conservation and health issues. Students will gain a working knowledge of these topics, exposure to current experts in these fields, be able to evaluate and discuss common health and mortality issues, and explain current management strategies.

#### **VME 6051: Cruelty to Animals and Interpersonal Violence**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite: None.*

The relationship between cruelty to animals and interpersonal violence has been substantiated by as significant body of work in the social sciences. Participants in this course will gain a fundamental knowledge of this connection, examine both qualitative and quantitative studies and case histories of the correlation between cruelty to animals, child abuse, domestic violence, elder abuse, and teen violence. Participants will learn how to recognize the connection between cruelty to animals and human violence and will review a variety of intervention programs for victims and at-risk or offending populations.

#### **VME 6052: Animal Crime Scene Processing**

**Credits: 3**                      **Grading Scheme: Letter**

*Prerequisite: None.*

This course provides the student with formal academic training in basic crime scene processing techniques specialized for the analysis of crime scenes involving injured or deceased animals, or scenes involving acts of animal cruelty. A focus will be on the recognition, documentation, and preservation of various types of physical evidence involving animal abuse, cruelty, neglect and death.

## **VME 6054: Scientific and Legal Principles of Forensic Evidence**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None

This course will focus on crime scene integrity, crime scene searches, chain of custody issues, courtroom presentation of physical evidence, and expert witness testimony. Emphasis will also be placed on the management of scene personnel, the media, victims, and suspects.

## **VME 6056: Animal Law**

**Credits: 3**                      **Grading Scheme:** Letter

Animal law is a quickly growing field and is becoming essential to social policy in the United States as well as around the world. This course introduces and surveys important overarching legal themes that occur throughout the unique relationship between humans and animals.

## **VME 6076C: Andrology**

**Credits: 2**                      **Grading Scheme:** Letter

Applied male reproductive physiology, anatomy, and assisted reproduction. Later, student presentations of a chosen in-depth area.

## **VME 6135: Diseases of Laboratory Animals I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* DVM degree and/or consent of instructor.

Etiology, pathogenesis, clinical signs, gross and microscopic pathology, diagnosis, and control of diseases in laboratory rats, mice, and other rodents. Emphasizes infectious diseases and understanding and preventing complications from disease in modern biomedical research.

## **VME 6136: Diseases of Laboratory Animals II**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* DVM degree and/or consent of instructor.

Etiology, pathogenesis, gross and microscopic pathology, diagnosis, and control of diseases of laboratory primates, rabbits, ferrets, and miscellaneous species. Emphasizes infectious diseases and understanding and preventing complications from disease in modern biomedical research.

#### **VME 6186: Advanced Topics in Disease Pathogenesis**

**Credits: 2-4    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* advanced course in immunology, molecular pathogenesis, or pathology.

Current research on pathogenetic mechanisms of diseases. Molecular and cellular mechanisms of cell injury and death, repair, inflammation, neoplasia, hemodynamic disorders, and other diseases.

#### **VME 6421: Biology and Molecular Biology of Avian Viruses**

**Credits: 2    Max: 4                      Grading Scheme: Letter**

*Prerequisite:* general virology and immunology.

Current scientific papers on biology of avian viruses of economic importance and on molecular approaches to understanding gene expression and function for diagnosis and immunization.

#### **VME 6430C: Contemporary Issues in Small Animal Surgery**

**Credits: 3    Max: 6                      Grading Scheme: S/U**

*Prerequisite:* DVM (or equivalent degree); master's students or Small Animal Surgical Residents pursuing a master's degree.

Current or significant scientific papers from the veterinary and human literature, formal presentations will be given on topics relevant to contemporary small animal surgery, including comparative/translational aspects. Emphasizes morbidity and mortality discussions on recent clinical soft-tissue and orthopedic case material.

#### **VME 6464: Molecular Pathogenesis**

**Credits: 3    Max: 6                      Grading Scheme: Letter**

*Prerequisite:* biochemistry, immunology, or consent of instructor.

Papers on mechanisms of pathogenesis and molecular approaches toward diagnosis and control of either parasitic or viral and bacterial diseases. Focus varies each semester.

### **VME 6505: Autoimmunity**

**Credits: 1    Max: 3            Grading Scheme:** Letter

*Prerequisite:* GMS 6006 or consent of instructor.

Biological and biochemical aspects of immunology, focusing on molecular and cellular events involved in genetic susceptibility, pathogenesis, and treatment of human autoimmune diseases.

### **VME 6570: Wildlife Conservation and Forensic Science**

**Credits: 3                    Grading Scheme:** Letter

Learning the fundamental concepts of animal conservation and protection. The course will also address the applicability and importance of forensic science in wildlife investigations, including an introduction to the scientific and forensic method, crime scene analysis and processing, types of evidence, evidence collection, and field analyses.

### **VME 6571: Forensic Applied Animal Behavior**

**Credits: 3                    Grading Scheme:** Letter

Reviewing Forensic Applied Animal Behavior, which is defined as the application of knowledge of animal behavior to the purpose of the law. This includes documenting the behavioral effects of abuse, neglect or inadequate care that may be in violation of laws, regulations, and industry or community standards.

### **VME 6572: Forensic Aspects of Agricultural Animal Welfare**

**Credits: 3                    Grading Scheme:** Letter

Introducing agricultural animal welfare with a focus on the legal aspects associated with abusive care of agricultural animals. This course explores scientific and ethical dialogue on agricultural animal welfare issues. Completing this course will provide an understanding of current U.S. laws governing agricultural animal welfare as well as the ability to minimally evaluate and assess the welfare of an agricultural animal.

#### **VME 6573: Wildlife Forensic Genetics**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing the student to the basic understanding of DNA and how it is used to identify species and provide evidence for criminal investigations. Upon completion of this course, the student will have basic knowledge of how DNA is used to identify species, gender and individual identification, chain of custody, and the agencies and laboratories doing veterinary and wildlife forensic DNA assays.

#### **VME 6575: Veterinary Forensic Medicine**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* None.

Introducing students to the application of veterinary medicine to the forensic sciences. Course topics will focus on the interpretations of injury patterns, cause, manner and mechanism of death. Upon completion of this course, the student will have a basic knowledge of the pathological documentation required for scenes involving animals, including recognition of abuse, crime scene investigation, and interacting with the legal community.

#### **VME 6576: Veterinary Forensic Pathology**

**Credits: 3**                      **Grading Scheme:** Letter

Introducing and developing in-depth the field of veterinary forensic pathology, including how to perform and document, through photographs and written reports, a professional necropsy.

#### **VME 6577: Practicing Pathology**

**Credits: 3**                      **Grading Scheme:** Letter

Strengthening and broadening students' knowledge of the pathologic basis of disease as well as specific systemic diseases, and how to apply this knowledge when performing a necropsy. Necropsy technique itself will be covered in depth. The course teaches astute observation, accurate description, and educated interpretation of the changes observed at necropsy, in addition to postmortem case management, using examples of relevance in shelter populations.

#### **VME 6578: Forensic Veterinary Osteology**

**Credits: 3**                      **Grading Scheme:** Letter

Providing an introduction to the non-human skeleton emphasizing the general identification of complete and fragmentary skeletal remains. This course, will cover bone biology, development and anatomy, taphonomy, age, and sex. This knowledge forms the underpinning for advanced study in veterinary forensic osteology or zooarchaeology. Learning objectives will be accomplished through a combination of lecture material, readings, quizzes, a case study, and online active discussions.

#### **VME 6579: Veterinary Forensic Radiology and Imaging**

**Credits: 3**                      **Grading Scheme:** Letter

Students completing this course will gain an understanding of how radiology and imaging can be used in the veterinary forensic sciences. Topics include: imaging modalities, the performance, interpretation and reportage of veterinary imaging studies as applied to the courts or the law.

#### **VME 6602: General Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* background in biochemistry, physiology, and pharmacology.

General principles of toxicology. Mechanisms for occurrence of toxic effects in target organs and tissues.

### **VME 6603: Advanced Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* VME 6602.

Survey of the health effects of each major class of toxicants.

### **VME 6604: Literature Survey in Toxicology**

**Credits: 1-2**    **Max: 2**                      **Grading Scheme:** Letter

Critical presentation and evaluation of current literature in selected topics in toxicology.

### **VME 6605: Toxic Substances**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* general toxicology.

In-depth information on signs, symptoms, underlying mechanisms, diagnosis, and management of poisoning by drugs and chemicals.

### **VME 6606: Ecological Risk Assessment**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* VME 6602.

In-depth information on signs, symptoms, underlying mechanisms, diagnosis, and management of poisoning by drugs and chemicals.

### **VME 6607: Human Health Risk Assessment**

**Credits: 4**                      **Grading Scheme:** Letter

Conceptual approaches and computational techniques for quantitative health risk assessment.

### **VME 6613: Forensic Toxicology I**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* organic chemistry recommended.

Analytical techniques used to examine forensic drug and forensic toxicology specimens.

### **VME 6614: Forensic Toxicology II**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* VME 6613.

Toxicology of compounds commonly encountered in forensic specimens.

### **VME 6615: Veterinary Forensic Toxicology**

**Credits: 3**                      **Grading Scheme:** Letter

Encompassing the concepts of veterinary forensic toxicology including basic principles of veterinary toxicology, legal aspects of veterinary toxicology, utilization of veterinary diagnostic laboratories in forensic cases, conducting veterinary toxicology field investigations, history-taking, and proper collection, handling and preservation of samples. Species-relevant aspects of veterinary toxicology will be covered.

### **VME 6650: Principles of Mammalian Pharmacology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* graduate-level physiology course.

Principles of drug action. Emphasizes mechanisms of action and side effects for major drug classes used in humans and other mammals.



**VME 6766: Laboratory Quality Assurance/Quality Control**

**Credits: 3**                      **Grading Scheme:** Letter

Procedures for ensuring quality practices in the analytical laboratory.

**VME 6767: Issues in the Responsible Conduct of Research**

**Credits: 1**                      **Grading Scheme:** S/U

Presentation and discussion of issues; guiding principles and potential pitfalls.

**VME 6771: Veterinary Epidemiologic Research**

**Credits: 3**                      **Grading Scheme:** Letter

Design, analysis, and interpretation of epidemiologic studies.

**VME 6810: Integrating Veterinary Medicine with Shelter Systems**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Students should be currently enrolled in a professional veterinary medicine program leading to a DVM degree or should already hold a DVM or VMD degree.

Understanding and appreciation of the critical role played by veterinarians in protecting the health and welfare of sheltered dogs and cats.

**VME 6811: Shelter Animal Physical Health**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* Students should be currently enrolled in a professional veterinary medicine program leading to a DVM

or VMD degree; or should already hold a DVM or VMD degree. Equivalent degree programs from international veterinary medical schools are acceptable.

Construction, critique, and implementation of policies and protocols to protect and enhance the physical health and well-being of sheltered dogs and cat, including recognizing and responding to threats to physical health.

#### **VME 6812: Shelter Animal Behavior and Welfare**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite:* Students should be currently enrolled in a professional veterinary medicine program leading to a DVM or VMD degree; or should already hold a DVM or VMD degree. Equivalent degree programs from international veterinary medical schools are acceptable.

Concepts related to shelter behavior programs; evaluation of quality of shelter behavior programs; and implementation of changes to promote shelter animal behavior and welfare.

#### **VME 6905: Problems in Veterinary Medical Sciences**

**Credits: 1-4    Max: 12                      Grading Scheme: Letter, H**

#### **VME 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

#### **VME 6931: Seminar in Veterinary Medical Sciences**

**Credits: 1    Max: 8                      Grading Scheme: S/U**

#### **VME 6932: Seminar in Physiological Sciences**

**Credits: 1    Max: 8                    Grading Scheme: S/U**

Weekly seminar series on topics in comparative physiological sciences, including nervous, cardiovascular, gastrointestinal, urogenital, and musculoskeletal systems.

**VME 6933: Seminar in Infectious Diseases and Experimental Pathology**

**Credits: 1    Max: 8                    Grading Scheme: S/U**

Weekly seminar series on topics in infectious diseases of animals presented by students, faculty, and visiting speakers.

**VME 6934: Topics in Veterinary Medical Sciences**

**Credits: 1-4    Max: 10                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Studies in topics involving new developments and/or research techniques in veterinary medical sciences.

**VME 6936: Seminar in Pathophysiology**

**Credits: 1    Max: 8                    Grading Scheme: S/U**

*Prerequisite:* physiology, biochemistry.

Weekly seminar series in mammalian pathophysiology.

**VME 6938: Topics in Aquatic Animal Health**

**Credits: 1    Max: 4                    Grading Scheme: Letter**

Presentation/discussion by students of selected articles relating to aquatic animal health, including both vertebrates and invertebrates.

**VME 6940: Supervised Teaching**

**Credits: 1-5    Max: 5            Grading Scheme: S/U**

**VME 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**VME 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students in veterinary medical sciences before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**VME 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**WIS 5323C: Impact of Diseases on Wildlife Population**

**Credits: 3                    Grading Scheme: Letter**

*Prerequisite:* WIS 3401 or equivalent.

Diseases of wildlife, with emphasis on their impact on avian and mammalian populations of North America.

### **WIS 5496: Research Design in Wildlife Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* STA 3023 or equivalent; upper-division course in ecology.

Scientific philosophy and logic of modern ecological approaches, and practical research design as applied to wildlife field ecology. Offered fall term.

### **WIS 5521: Plant-Animal Interactions**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* PCB 4674 and one of the following courses: PCB 4044C or WIS 3401 or PCB 3601C.

Major types of plant-animal interactions and the conceptual and empirical approaches used to study them. Offered even-numbered years.

### **WIS 5555C: Conservation Biology**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* basic courses in ecology, genetics.

Application of biological and resource management theory to the problem of the conservation of natural communities. Offered fall term.

### **WIS 6444: Advanced Wetlands Ecology**

**Credits: 4**                      **Grading Scheme:** Letter

*Prerequisite:* WIS 4443, SOS 4242, EES 6308C, or consent of instructor.

Examination of geology, hydrology, chemistry, flora, fauna, and ecology of major wetland systems in North America.

### **WIS 6455: Wildlife Population Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

Rigorous background in population analysis covering population growth and regulation, species interactions, life-history theory, and population viability analysis.

**WIS 6466: Wildlife Population Modeling**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* one course in calculus or linear algebra; one course in basic or popular ecology.

Theory and applications of life tables, age, and stage-structured matrix population models. Sensitivity analysis and analysis of life table response experiments. Unstructured population models.

**WIS 6468C: Pattern and Process in Landscape Ecology**

**Credits: 3**                      **Grading Scheme:** Letter

Exploration of applied and quantitative methods to explore links between landscape patterns and processes.

**WIS 6525: Environmental Interpretation**

**Credits: 3**                      **Grading Scheme:** Letter

Theory and practice of environmental interpretation for natural resource management. Design, implementation, and evaluation of programming about environment for variety of audiences and settings.

**WIS 6543: Wildlife and Agriculture**

**Credits: 3**                      **Grading Scheme:** Letter

*Prerequisite:* WIS 3401 Wildlife Ecology and Management or equivalent.

Wildlife ecology and management in agricultural lands. Effects of agriculture on wildlife. Policies affecting wildlife in agricultural systems. Methods of integrating wildlife and agriculture. Offered spring term in odd-numbered years.

**WIS 6544: Administration in Natural Resources**

**Credits: 3**                      **Grading Scheme:** Letter

Natural resource agency administration primer in budgets, personnel management, program development, leadership, and strategic planning.

**WIS 6557: Wildlife Conservation Laws and Legislation**

**Credits: 3**                      **Grading Scheme:** Letter

Provides an understanding of the legal considerations surrounding wild animals. Emphasis will be placed on the laws and policies applicable to domestic national and international wildlife and environmental conservation, and the organizations tasked with developing and enforcing the law.

**WIS 6559: Contemporary Issues in Wildlife Protection and Conservation**

**Credits: 3**                      **Grading Scheme:** Letter

Provides students with an understanding of the fundamental concepts of animal protection, as well as social, ethical, and legal issues involving animal management. Students will have learned conservation methodologies and practices, wildlife management theories and techniques, applied ecology, and regulation of wildlife populations.

**WIS 6561: Wildlife Crime Scene Processing**

**Credits: 3**                      **Grading Scheme:** Letter

Provides a detailed understanding of forensic science and medicine and how to properly document and process a crime scene where wildlife may be the victim, or possibly the perpetrator. Focus is on evidence recognition and handling as well as techniques for the improvisation of crime scene processing equipment under field conditions.

**WIS 6575: Mammalian Carnivores: Conservation and Management Issues**

**Credits: 2                      Grading Scheme: Letter**

*Prerequisite:* PCB 3034C or 4044C.

Strategies and paradigms for management and conservation of mammalian carnivore populations. Social systems, life history variables, conflicts with human, reintroduction and translocation. Offered spring term of odd-numbered years.

**WIS 6578: Human Dimensions of Biological Conservation**

**Credits: 3                      Grading Scheme: Letter**

Interdisciplinary overview of theory and practice of conservation education, communication, and integrated resource management using local and international models.

**WIS 6905: Research Problems in Wildlife and Range Sciences**

**Credits: 1-6    Max: 10                      Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

**WIS 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**WIS 6933: Seminar**

**Credits: 1                      Grading Scheme: S/U**

**WIS 6934: Topics in Wildlife and Range Sciences**



**Credits: 1-4    Max: 10                    Grading Scheme: Letter**

*Prerequisite:* WIS 6452 , WIS 5555C, or consent of instructor.

Advanced concepts and practices in wildlife management and conservation. Topics vary.

**WIS 6940: Supervised Teaching**

**Credits: 1-5    Max: 5                    Grading Scheme: S/U**

*Prerequisite:* consent of instructor.

**WIS 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**WIS 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**WIS 7980: Research for Doctoral Dissertation**

**Credits: 1-15                    Grading Scheme: S/U**

**WST 5933: Proseminar in Women's Studies**

**Credits: 3    Max: 6**

**Grading Scheme:** Letter

Proseminar (seminar that prepares you for more advanced work) introducing graduate students to Women's Studies scholarship. Overview of feminist thought, interdisciplinary research, and feminist practice. Students are introduced to scholars in the field, and learn how to design and implement an independent research project appropriate to Women's Studies.

**WST 6348: Ecofeminism**

**Credits: 3**

**Grading Scheme:** Letter

Holistic framework for understanding connections among environmental, feminist, and social justice issues. Critical analysis of positions within ecofeminist theory.

**WST 6508: Advanced Feminist Theory**

**Credits: 3**

**Grading Scheme:** Letter

*Prerequisite:* Graduate-level course in feminist theory or equivalent.

Introduction to contemporary theoretical ideas in feminist thought. Often taught with a common theme, in and across disciplines.

**WST 6905: Independent Study**

**Credits: 1-3    Max: 6**

**Grading Scheme:** Letter

*Prerequisite:* consent of instructor and department chair; and 1 women's studies course, or course that counts for women's studies.

Independent reading or research under guidance.

**WST 6935: Special Topics in Women's Studies**

**Credits: 3    Max: 9**

**Grading Scheme:** Letter

Selected topics in gender and women's studies, emphasizing new knowledge production and contributions in feminist scholarship. Examines a specific topic, a major figure, or a current problem in more depth than is regularly possible in a more general course.

**WST 6936: Feminist Challenges to Disciplinary Paradigms**

**Credits: 3    Max: 6            Grading Scheme: Letter**

Examines how feminist scholarship can transform traditional disciplines and bodies of knowledge. Acquaints students with the major feminist challenges to ways of thinking in one or more fields of study. Such ways of thinking can include theory, methodology, disciplinary assumptions, and/or applications.

**WST 6946: Internship in Applied Women's Studies and Gender Research**

**Credits: 1-3    Max: 6            Grading Scheme: S/U**

*Prerequisite:* permission of program director.

Practical experience in community. Internship with local agency, group, or business in women's issues.

**WST 6957: International Studies in Women's Studies and Gender Research**

**Credits: 1-6    Max: 12            Grading Scheme: S/U**

*Prerequisite:* admission to approved study abroad program and permission of department.

**WST 6971: Research for Master's Thesis**

**Credits: 1-15            Grading Scheme: S/U**

**ZOO 5115C: Vertebrate Paleontology**

**Credits: 3                      Grading Scheme: Letter**

*Prerequisite: ZOO 3713C.*

Evolutionary history of major vertebrate groups, emphasizing the principles of prehistoric investigations.

**ZOO 5486C: Mammalogy**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite: ZOO 2203C.*

Study of the ecology, natural history, behavior, and evolutionary history of mammals.

**ZOO 6005: Integrative Principles of Zoology I**

**Credits: 4                      Grading Scheme: Letter**

Integrative approach to fundamental principles of ecology, evolution, and comparative biology.

**ZOO 6308: Dynamic Optimization Modeling in Behavioral and Evolutionary Ecology**

**Credits: 3                      Grading Scheme: Letter**

Powerful and simple techniques for formalizing hypotheses. Appropriate to address questions of relative fitness of alternative choices or strategies. Instruction in computer programming and dynamic modeling.

**ZOO 6406: Biology of Sea Turtles**

**Credits: 3                      Grading Scheme: Letter**

All aspects of biology of sea turtles and how their biology affects their conservation.

**ZOO 6456C: Ichthyology**

**Credits: 4                      Grading Scheme: Letter**

*Prerequisite: ZOO 2203C.*

**ZOO 6542: Nutritional Ecology**

**Credits: 3                      Grading Scheme: Letter**

Interactions of nutrition and ecology, emphasizing how digestive processes regulate animal productivity and plant/animal interactions.

**ZOO 6905: Individual Studies**

**Credits: 1-8    Max: 12                      Grading Scheme: Letter**

**ZOO 6910: Supervised Research**

**Credits: 1-5    Max: 5                      Grading Scheme: S/U**

**ZOO 6920: Zoology Colloquium**

**Credits: 1    Max: 9                      Grading Scheme: S/U**

Readings and oral presentations on general topics in zoology. Discussions with eminent scientists in the discipline.

**ZOO 6927: Special Topics in Zoology**

**Credits: 1-4    Max: 15                    Grading Scheme: Letter**

**ZOO 6931: Seminar in Marine Turtle Biology**

**Credits: 1-2    Max: 5                    Grading Scheme: Letter**

*Prerequisite:* consent of instructor.

Advanced topics in biology and conservation of marine turtles.

**ZOO 6939: Seminar in Animal Behavior**

**Credits: 1-3    Max: 9                    Grading Scheme: Letter**

*Prerequisite:* graduate standing or consent of instructor.

Advanced topics in animal behavior.

**ZOO 6971: Research for Master's Thesis**

**Credits: 1-15                    Grading Scheme: S/U**

**ZOO 7979: Advanced Research**

**Credits: 1-12                    Grading Scheme: S/U**

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been admitted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

**ZOO 7980: Research for Doctoral Dissertation**

**Credits: 1-15**

**Grading Scheme: S/U**

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## **Interdisciplinary Concentrations**

Agroforestry  
Animal Molecular and Cell Biology  
Clinical and Translational Science  
Geographic Information Systems  
Historic Preservation  
Hydrologic Sciences  
Quantitative Finance  
Sustainable Architecture  
Sustainable Design  
Tropical Conservation and Development  
Wetland Sciences  
Women's and Gender Studies

## **Interdisciplinary Graduate Concentrations**

A number of graduate programs offer interdisciplinary enhancements in the form of concentrations, field research, or certificates. The following programs offer interdisciplinary study leading to a concentration or minor, whether offered by a single college or by multiple colleges. Please follow individual links within the Majors Section of this catalog or contact the programs directly for further information.

### **Agroforestry**

The agroforestry interdisciplinary concentration is administered through the School of Forest Resources and Conservation. It offers facilities for interdisciplinary graduate education (M.S., Ph.D.) by combining course work and research around a thematic field focusing on agroforestry, especially in the context of tropical land use. Students seeking admission to the concentration need a degree in a relevant field such as agronomy, forestry, horticulture, soil science, or social sciences. They should apply to the School of Forest Resources and Conservation or another academic unit that closely represents their background and interest. Course work may be chosen from several related disciplines. Thesis research can be undertaken in Florida or overseas. Degrees are awarded through the academic units the candidates are enrolled in.

In conjunction with the graduate degree, a student can earn a concentration or minor in agroforestry by fulfilling certain requirements. Students who have a primary interest in agroforestry and undertake graduate research on an agroforestry topic can seek the concentration. Those who have an active interest and some training in agroforestry, but do not conduct graduate research on an agroforestry topic, can earn a minor. Candidates meeting the requirements can have Concentration in Agroforestry or Minor in Agroforestry appear on their transcripts.

Each option requires completing FNR 5335 (Agroforestry) and an appropriate number of approved supporting courses. These courses should be distributed over at least two academic units outside the major to prepare the student to function in multidisciplinary teams and to associate with professionals from other disciplines. Students whose background is in biology are encouraged to take social science courses, and vice versa.

For a student with a concentration or minor in agroforestry, at least one member of the supervisory committee should represent agroforestry. The Agroforestry Program Advisory Committee requires this member to counsel the student on selecting courses and the research topic.

For more information, contact the Agroforestry Program Leader, 330 Newins-Ziegler Hall, Phone (352) 846-0880, Fax (352) 846-1277, E-mail [pknair@ufl.edu](mailto:pknair@ufl.edu).

## **Animal Molecular and Cell Biology**

The interdisciplinary concentration in animal molecular and cell biology (AMCB) gives graduate students in the animal and veterinary sciences an understanding of principles of molecular and cell biology as applied to animal health and production. It emphasizes participation in molecular and cell biology research and provides an intellectual environment for cross-fertilization among disciplines. The AMCB gives graduate students access to the diverse research facilities needed to study cellular and molecular biology, reproductive biology, virology, immunology, and endocrinology. Facilities exist for recombinant DNA research, experimental surgery, in vitro culture of cells, tissue and organ explants, embryo manipulation, vaccine production, and recombinant protein engineering.

Ph.D. degrees are awarded by participating academic units, with an interdisciplinary concentration in animal molecular and cell biology. Applicants need a strong background in animal or veterinary sciences. Graduate degree programs are designed by each student's supervisory committee, headed by the member who represents AMCB. All students must complete a core curriculum, may obtain cross-disciplinary training through rotations in laboratories of participating faculty, and may participate in the AMCB seminar series.

Requirements for admission to AMCB are the same as for the faculty adviser's academic unit and college.

Note that typically students interested in education through the AMCB enroll in the AMCB graduate program rather than the AMCB interdisciplinary concentration. For more information, contact Dr. Peter J. Hansen, Department of Animal Sciences, [pjhansen@ufl.edu](mailto:pjhansen@ufl.edu).

## **Clinical and Translational Science**

This unique concentration in the Master of Science program in medical sciences was developed by an interdisciplinary faculty to provide sound didactic background in the foundations of clinical research. Core course requirements cover study design, data analysis, ethical conduct of research, epidemiology, manuscript and abstract writing, and grant writing. Additional electives in specific fields may be taken from other concentrations or programs. A research thesis designed and conducted with a clinical research mentor is required.

For clinically trained M.D.s and other doctoral-level health professionals, the M.S. concentration in clinical and translational science (MS-CTS) may be part of a more-complete training experience in clinical research offered through the College of Medicine as the Advanced Postgraduate Program in Clinical Investigation (APPCI).

For more information:

Dr. Marian Limacher  
Program Director  
P.O. Box 100277  
Health Science Center  
Gainesville, FL 32610



## Geographic Information Systems

**Geographic Information Systems (GIS)** revolutionized the way land features are located, measured, inventoried, managed, planned, and studied. GIS provides theories and methods for measuring location and topography, physical and biological attributes, and distribution of cultural components through data storage, analysis, modeling, mapping, and data display.

GIS applications are diverse. They include determining the suitability of land for different uses, planning future land uses, setting cadastral boundaries for the purpose of property recognition and taxation and regulation, analyzing land and land-cover for both resource inventories and scientific studies, and siting commercial enterprises.

Users and producers of GIS include engineers, geographers, planners, biologists and ecologists, land resource managers, archaeologists, sociologists, public health professionals, medical researchers, property tax assessors, law enforcement officers, land-development companies, utility companies, and retail stores. Undergraduate and graduate students who learn to use GIS technology are in high demand and so start at higher salaries than their non-GIS peers. As a result the GIS community at the University of Florida developed the **Interdisciplinary Concentration for Geographic Information Systems (ICGIS)**.

The ICGIS integrates existing GIS resources on campus, for graduate students, in response to changing regulatory environments in institutions and governments at all levels. This concentration established a standard set of courses and activities that allow graduate students to become experts in creating, studying, and using geographic information. Such graduates are in strong positions to meet future regulatory requirements for certification as professionals. Structurally, the ICGIS established a five-category curriculum within the standard M.S., M.A., M.E., or Ph.D. requirements. Completing the GIS concentration is officially recognized by statements on transcripts and a certificate.

For more information, contact Dr. Scot E. Smith, University of Florida, P.O. Box 110565, Gainesville FL 32611, Phone (352) 392-4990 , E-mail [sesmith@ifas.ufl.edu](mailto:sesmith@ifas.ufl.edu).

## Historic Preservation

Historic preservation is the safeguarding of all cultural heritage: tangible and intangible. The College of Design, Construction, and Planning offers an interdisciplinary opportunity to study for the profession through multiple fields including archeology, architecture, landscape architecture, urban and regional planning, interior design, building construction, museum studies, law, and cultural tourism. The master's degree course work is practical and technical in scope and includes the study of history, research techniques, traditional crafts, materials conservation, documentation, interpretation, cultural research management, housing, urban rejuvenation and adaptive use of historic structures, restoration methodologies, economics, green design and sustainable/livable communities.

The 21st century offers significant expansion of the field of heritage conservation to address smart growth, sustainability, and economic development initiatives. Many related jobs exist, including preservation consultant, preservation contractor, preservation researcher, Main Street program director, site manager, lawyer, archaeologist, cultural resource manager, historian, real estate professional, and policy administrator.

The College offers several nationally recognized field schools or practica: Preservation Institute: Nantucket, Traditional Crafts Field School, and the National Historic Landmarks District in Saint Augustine, America's oldest city.

**The Interdisciplinary Concentration and Certificate in Historic Preservation (ICHP)** integrates resources throughout UF to address the diverse topics relevant to the field. Thus, the ICHP establishes a set of courses that allow graduate students to gain expertise in researching and applying historic preservation in the United States and abroad. Depending on the student's career goals and background, this can include recognizing, documenting, and protecting historic structures and sites; rehabilitation and restoration technologies; and exploring emerging and related specializations such as community development and sustainable development.

The interdisciplinary curriculum structure draws on course work providing 12 credits for master's students and 15 credits for Ph.D. students specializing in historic preservation. The concentration is officially recognized by statements on the transcript and by a certificate.

For more information, contact Morris Hylton, Director of Historic Preservation Programs. University of Florida, P.O. Box 115701, Gainesville FL 32611. Phone (352)392-0252, ext. 457. E-mail [mhylton@ufl.edu](mailto:mhylton@ufl.edu).

The University of Florida College of Design, Construction and Planning offers a **Master of Historic Preservation** degree using an interdisciplinary variety of coursework in the basic and applied skills and arts of historic preservation, anthropology, archeology, architecture, building construction, cultural tourism, history, interior design, landscape architecture, museum studies, and urban and regional planning. The coursework totals 42 hours. Students must take 12 hours of core courses, 6 hours of pre-approved history electives, and may choose from pre-approved and specially approved electives from across the campus. A true thesis to meet Graduate Requirements relating to historic preservation is required.

### **Program of Study**

The Master of Historic Preservation degree program promotes interdisciplinary thinking in historic preservation by combining (1) required coursework in history and theory, research, documentation and recording historic sites, conservation of building materials and systems, and practical or other practical experience with (2) two courses in the history of the designed environment (including, for example architecture, urban development, landscape architecture, archeology, or material culture.) with (3) electives from a list of courses identified by the faculty, in the subject areas of resource-related studies including design issues, neighborhood issues (zoning, strategic planning, housing and social aspects of real estate development) historic and cultural landscape issues, historic interior issues, economic issues (marketing principles, private and public finance, property management and budget preparation), legal issues (Constitutional law, preservation case law, federal, state and local regulatory legislation and administration) sustainability issues traditional building crafts and curatorial issues (site development interpretation, management and cultural tourism). A true thesis that meets Graduate Requirements on an approved historic preservation topic is also required.

For more information contact:

For more information contact

Marty Hylton  
Graduate Coordinator  
[mhylton@dcp.ufl.edu](mailto:mhylton@dcp.ufl.edu)  
352-392-0252 ext. 457

Pat DeJong  
Student Affairs Coordinator  
[patricde@dcp.ufl.edu](mailto:patricde@dcp.ufl.edu)  
352-392-4836 ext. 312

### **Hydrologic Sciences**

Interdisciplinary graduate studies in hydrologic sciences are for science and engineering students seeking advanced training in diverse aspects of water quantity and quality, and water-use issues. This concentration emphasizes (1) understanding the physical, chemical, and biological processes occurring over broad spatial and temporal scales; and (2) skills in hydrologic policy and management based on a strong background in natural and social sciences and engineering.

Graduate Faculty from eight departments in three colleges contribute to this interdisciplinary concentration. Depending on academic background and research interests, students may earn a degree in any one of the following departments: Agricultural and Biological Engineering, Civil and Coastal Engineering, Environmental Engineering

Sciences, Food and Resource Economics, Forest Resources and Conservation, Geography, Geological Sciences, , and Soil and Water Science.

M.S. (thesis and non-thesis option) and Ph.D. studies are available. Interdisciplinary graduate requirements recognize diversity in the academic backgrounds and professional goals of the students. A core curriculum (12 credits for M.S.; 18 credits for Ph.D.) provides broad training in six topics: subsurface hydrology, surface hydrology, hydrologic chemistry, hydrologic ecology, hydrologic analysis and techniques, and hydrologic policy and management. Research projects involving faculty from several academic units can provide the basis for thesis and dissertation research topics.

Students with B.S. or M.S. degrees in any of the following disciplines are encouraged to consider this specialization in their graduate program: engineering (agricultural, chemical, civil, environmental); natural sciences (physics, biology, chemistry); social sciences (agricultural and resource economics); forestry; and earth sciences (geography, geology, soil and water science).

For more information, contact Dr. Wendy Graham, UF Water Institute, P.O. Box 116601, Gainesville FL 32611, Phone (352) 392-5893, E-mail [water-institute@ufl.edu](mailto:water-institute@ufl.edu); or visit the Hydrologic Sciences Academic Cluster website (<http://www.hydrology.ufl.edu>).

## **Quantitative Finance**

The interdisciplinary concentration in quantitative finance trains students for academic and research positions in quantitative finance, and risk management. It gives graduates an edge in the job market by providing substantial expertise in key related disciplines: finance, operations research, statistics, mathematics, and software development. It is focused in teaching and research on design, development, and implementing new financial and risk management products, processes, strategies, and systems to meet demands of various institutions, corporations, governments, and households. Emphasis is on an interdisciplinary approach requiring knowledge in finance, economics, mathematics, probability/statistics, operations research, engineering, and computer science.

Four academic units participate in this interdisciplinary concentration: Industrial and Systems Engineering (College of Engineering), Mathematics (College of Liberal Arts and Sciences), Statistics (College of Liberal Arts and Sciences), and Finance, Insurance, and Real Estate (College of Business Administration). To be eligible, a student must be admitted to a Ph.D. program in one of these participating academic units. Students seeking admission to the concentration need strong quantitative skills and a degree in one of the relevant fields such as finance, engineering, statistics, or mathematics. Students with a background in several disciplines are welcome. Application should be submitted to one of the participating academic units.

Each student takes basic courses and meets the home academic unit's Ph.D. requirements. The student also takes approved courses in the other participating academic units to meet the requirements of the concentration.

Dissertation research is conducted in quantitative finance, risk management, and relevant areas involving quantitative finance approaches. The student receives a Ph.D. degree and a Certificate in Quantitative Finance.

Activities of the Ph.D. concentration in quantitative finance are supported by the Risk Management and Financial Engineering Laboratory (RMFE Lab), <http://www.ise.ufl.edu/rmfe>. The RMFE Lab facilitates research and applications in the area of risk management and financial mathematics/engineering, including organizing research meetings, seminars, and conferences. It provides a basis for the collaborative efforts of multidisciplinary teams of UF researchers, governmental institutions, and industrial partners.

## **Sustainable Architecture**

**The Concentration and Certificate in Sustainable Architecture** is for architecture graduate students (in the M.Arch. or M.S.A.S. program) seeking advanced courses on a wide range of topics related to sustainable architecture. The concentration in sustainable architecture supports detailed rigorous study in specific areas of

expertise. Furthermore, the program requirements recognize the inherent diversity of academic backgrounds and professional goals of the students. Thus, there is flexibility in the selection of a suite of courses, while maintaining exposure to the multidisciplinary subject matter of sustainable architecture. This essential feature of the program allows students to develop individualized yet focused plans of study. Students select from a variety of approved courses offered in the College of Design, Construction, and Planning (the School of Architecture, the School of Building Construction, the Department of Interior Design, the Department of Landscape Architecture, and the Department of Urban and Regional Planning); and in other colleges in the University. Course work may include the following sustainability issues.

- **Architectural design and preventing environmental degradation:** protecting ecosystems, fauna and flora, energy consumption, energy conservation, architectural commissioning, maintenance, water consumption, land use, and materials selection (resource depletion, environmental degradation, and healthy environments)
- **Providing healthy architectural environments:** indoor air environmental quality, nontoxic environments, and sustainable ecosystems and landscapes
- **Responsive and responsible building design and construction:** environmentally responsive architecture, and environmentally responsible architecture
- **Sustainable architectural and environment theory:** the philosophy of sustainable design, ecological theory, sustainability and ethics, deep ecology, and systems theory
- **Enhancing the community environment:** historic preservation, sustainable developments, community and neighborhood design, regional design, and systems theory
- **Mitigating the environmental effects of construction operations:** life cycle operations, design longevity, reusing materials, recycling materials, deconstruction, and reconstruction.

Students enrolled in the Concentration and Certificate Program in Sustainable Architecture must complete at least 12 credits of approved sustainable architecture electives. Students must complete at least 6 credits within the School of Architecture; and at least one approved 3 credit course from outside the School of Architecture. Students also must complete a research project or thesis on a subject pre-approved by the concentration's Governing Board, related to sustainable architecture. For more information, contact the Graduate Program Assistant, School of Architecture, University of Florida, Box 115702, Gainesville FL 32611-5702, Phone (352) 392-0205 ext. 202, E-mail [bhuds@ufl.edu](mailto:bhuds@ufl.edu)

## Sustainable Design

**The Interdisciplinary Concentration and Certificate in Sustainable Design (ICCSd)** is for master's-level students in the College of Design, Construction, and Planning. This concentration allows students to become proficient in one or more of the following areas: sustainable architecture, sustainable construction, sustainable interior design, sustainable landscape architecture, or sustainable urban planning. Course work deals with the following issues.

- **Preventing environmental degradation:** protecting ecosystems, fauna and flora, energy conservation, energy consumption, architectural commissioning, maintenance, water consumption, land use, site selection, and materials selection (resource depletion, environmental degradation, and healthy environments)
- **Providing healthy environments:** indoor air environmental quality, outdoor environmental quality, nontoxic environments, and sustainable ecosystems and landscapes
- **Responsive and responsible building construction:** construction impacts on sites, environmentally responsive architecture, environmentally responsible architecture (preventing environmental degradation), and designing sustainable building components
- **Mitigating the environmental effects of construction operations:** life cycle operations, design longevity, reusing materials, recycling materials, deconstruction, reconstruction, and historic preservation
- **Enhancing the community environment:** sustainable developments, community and neighborhood design, regional design, and city planning design
- **Environmental theory:** the philosophy of sustainable design, ecological theory, sustainability and ethics, deep ecology, and systems theory.

Students wishing to participate in the ICCSD should notify their department or school as early in the graduate program as possible. To participate in the ICCSD, a student must be admitted and enrolled in one of the departments

participating in the ICCSD. Students will complete the concentration for either the master's degree or Master of Science degree, but not for both degrees if awarded from the University of Florida. **Students cannot enroll in two concentration programs at the same time.**

To successfully complete the ICCSD, the student must earn 12 credit hours in sustainable design research and course work from a list of recommended courses. To satisfy the interdisciplinary intent of the ICCSD, the student must take one of the approved 3 credit courses outside their home department or school, but within the College of Design, Construction, and Planning; and at least one approved 3 credit course from another college of the University. For more information, contact the Dean's Office in the College of Design, Construction, and Planning, University of Florida, Box 115701, Gainesville FL 32611, Telephone (352) 392-4836.

## **Tropical Conservation and Development**

The Tropical Conservation and Development Program (TCD), in the Center for Latin American Studies, offers an interdisciplinary graduate certificate and graduate concentration focused on integrative approaches to conservation and development in the tropics, including sub-tropical and temperate areas in developing countries. Both the certificate and concentration are open to students who are interested in acquiring interdisciplinary knowledge and technical skills to pursue a career in conservation and development research and practice. These students must be enrolled in master's or Ph.D. programs in TCD's affiliate academic units at the University of Florida.

Course work for the certificate and the concentration includes social science theory, principles of tropical ecology, and patterns and trends of tropical resource use and conservation. TCD core courses also allow students to gain essential practical skills. Emphasis is on communication and presentation techniques, grant writing, proposal writing, and fundraising; facilitation and conflict management; participatory methods for research and project implementation; and project design, analysis, and evaluation. Summer research, practitioner experiences, and field-based training programs provide learning opportunities outside the classroom.

On completing the certificate or concentration, students should have an in-depth understanding of the relationships among biological conservation, resource management, and the livelihood needs of rural communities; and the appropriate professional skills for a career in research, field practice, or both.

TCD's affiliate academic units are African Studies, Agricultural and Biological Engineering, Agricultural Education and Communication, Agronomy, Anthropology, Architecture, Biology, Comparative Law, Entomology and Nematology, Food and Resource Economics, Forest Resources and Conservation, Geography, Geology, Latin American Studies, Natural History Museum, Natural Resources and Environment, Plant Medicine, Political Science, Religion, Sociology, Soil and Water Science, Tourism, Recreation and Sports Management, Urban and Regional Planning, Wildlife Ecology and Conservation, and Women's Studies.

Master's students can earn a certificate in TCD by completing 12 credits of approved course work: 2 interdisciplinary core courses and 1 course each in tropical ecology and social science. Ph.D. students can earn a certificate by completing 15 credits of approved course work (3 interdisciplinary core courses and 1 course each in tropical ecology and social science). Students from natural science academic units must take the social science credits outside their major. Otherwise, courses from the student's major can count toward program requirements. Substitutions need prior approval from the TCD faculty adviser.

To earn a concentration in TCD, students must complete the course requirements for the certificate (as explained above) and they must focus on conservation and development in their thesis, dissertation, or final project. One member of the student's supervisory committee must be a TCD affiliate faculty member. This person is responsible for judging whether the student's thesis focuses on tropical conservation and/or development. For the faculty member to make this judgment, the student must articulate in writing how the research fits in the broader context of biodiversity conservation and/or rural development in the tropics, subtropics, or temperate areas in developing countries. This person cannot count as the external member of the committee.

For more information on the TCD certificate and concentration program, and for a list of approved courses, visit the TCD website (<http://www.ufl.edu>), or contact Bette Loiselle, TCD Director, 347 Grinter Hall, (352) 273-4706, E-mail [Loiselle@latam.ufl.edu](mailto:Loiselle@latam.ufl.edu) or Patricia Sampaio, TCD Program Coordinator, 343 Grinter Hall, (352) 273-4734, Email [PSampaio@latam.ufl.edu](mailto:PSampaio@latam.ufl.edu).

## **Wetland Sciences**

The **Interdisciplinary Concentration in Wetland Sciences (ICWS)** is a unified interdisciplinary program in wetland science and policy for master's and doctoral students.

Graduate faculty from the following academic units contribute to the wetlands sciences concentration: Agricultural and Biological Engineering, Botany, Civil Engineering, Environmental Engineering Sciences, Fisheries and Aquatic Sciences, Forest Resources and Conservation, Geography, Geological Sciences, Landscape Architecture, Law, Soil and Water Sciences, Urban and Regional Planning, Wildlife Ecology and Conservation, and Zoology. Students in any of these programs may elect to participate in the ICWS. A major strength of the ICWS is the breadth of wetlands-related courses and research opportunities in many academic programs across campus. The ICWS exposes students to perspectives outside their disciplines and provides a rigorous, substantive education in wetlands sciences in addition to their disciplinary focus.

Students may complete the ICWS for either the M.S. or Ph.D. degree. A core curriculum (15 credits for M.S. and 18 credits for Ph.D.) provides the opportunity for interdisciplinary training in four broad subject areas:

- wetlands science (1 course each in wetlands ecology, wetland hydrology, and wetlands biogeochemistry),
- wetlands systems,
- wetlands organisms, and
- wetlands policy/law.

Additional course work in a student's disciplinary focus may strengthen the student's knowledge base or allow for specialization in one or more of the areas.

For more information, contact Dr. Mark T. Brown, Director, Howard T. Odum Center for Wetlands, Phelps Lab, P.O. Box 116350, Gainesville FL 32611, Phone (352) 392-2424; or visit the website (<http://www.cfw.ufl.edu>).

## **Women's and Gender Studies**

Two certificates, one master's degree (thesis or non-thesis option), and a doctoral concentration are offered in women's and gender studies. Participating graduate faculty are from several academic units, campus-wide, including Agricultural and Life Sciences, Anthropology, Counselor Education, English, German and Slavic Studies, History, Journalism and Communications, Latin American Studies, Linguistics, Medicine, Nursing, Philosophy, Psychology, Religion, Romance Languages and Literatures, Sociology, and Teaching and Learning.

The two graduate certificates in women's studies for master's and doctoral students are offered in conjunction with degree programs in other academic units. The Graduate Certificate in Women's Studies and the Graduate Certificate in Gender and Development require specific sets of course work to thoroughly ground students in the discipline. The Graduate Certificate in Women's Studies is a general introduction to the field, and the Graduate Certificate in Gender and Development allows students to focus on issues related to gender, economic development, and globalization.

The doctoral interdisciplinary concentrations in women's and gender studies give graduate students a thorough grounding in the new scholarship produced by the intersection of women's studies and other academic fields. The concentration facilitates analysis and assessment of theories about the role of gender in cultural systems and its intersections with other categories of differences, such as race, ethnicity, religion, class, sexuality, physical and mental ability, age, and economic and civil status. Emphasis is on participating in women's and gender studies research and on providing an intellectual environment for cross-fertilization among disciplines. Women's and gender studies critically explores the role and status of women and men, past and present.

Participating academic units award Ph.D. degrees with an interdisciplinary concentration in women's and gender studies. Study plans are designed by each student's supervisory committee, whose chair is affiliated with women's and gender studies.

Admission requirements are those of the student's home academic unit and college. After admission to the degree-granting academic unit, the application is sent to the Graduate Coordinator of Women's and Gender Studies who chairs an admissions committee.

For more information on the master's degree, contact the Director, Center for Women's Studies and Gender Research, 3324 Turlington Hall.

## Research Facilities and Other Campus Resources

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

Art Galleries  
Computer Facilities  
Florida Museum of Natural History  
Libraries  
Office of Research  
Oak Ridge Associated Universities  
Performing Arts Venues  
University Press of Florida

Additional Interdisciplinary Centers and Offerings

## University Galleries

University Galleries is comprised of three art galleries that play an integral role in the teaching mission of the School of Art + Art History, College of the Arts at the University of Florida, as well as serving the entire UF and Gainesville community.

**UNIVERSITY GALLERY**, located at the intersection of SW 13th Street and SW 4th Avenue, presents primarily contemporary exhibitions that rotate every two to eight weeks. For the past 14 years University Gallery has collaborated with myriad UF colleges, community and regional entities in creating a trans-disciplinary venue for the visual arts. Exhibitions feature nationally/internationally known artists in the fall, and an annual studio art faculty exhibition, juried student art show and two MFA graduating thesis project shows in the spring. The 3,000 square foot space is a lively, exciting venue that is utilized for many events throughout the academic year.

University Gallery is open Tuesdays, Wednesdays and Fridays 10 am–5 pm; Thursdays 10 am–7 pm; and Saturdays 12–4 pm.

The gallery is closed Mondays, Sundays and academic holidays.

**LIBBY GALLERY** is an 850-square-foot space that presents student-curated exhibitions featuring student, alumni and Florida/regional artists. This venue also features special projects for university-wide faculty members and students. Libby Gallery is located adjacent to the lobby of the School of Art + Art History's Fine Art Building C.

Libby Gallery is open Monday through Friday, 10 am–5 pm and is closed weekends and holidays.

**GRINTER GALLERY** is located in the lobby entry area of Grinter Hall which houses Graduate School offices, and the Centers for Latin American Studies and African Studies. Its mission is to present art and artifacts by international and multicultural artists through student curated exhibitions.

Grinter Gallery is open Monday through Friday 8 am–5 pm and is closed weekends and holidays.

## **UFIT Computer Labs**

Services available to graduate students include electronic thesis and dissertation computing support, phone and walk-in application support, plotter printing, technical & mobile device consulting, email support, software distribution (including statistical software), and the use of computer classrooms. These computer classrooms are available for personal and academic use. They are equipped with both Windows and Macintosh-compatible computers, laser printers, plotters, and scanners. Information regarding all facilities is located at <https://labs.at.ufl.edu/>. Students can find a complete list of each lab's hours, services, and software available for use.

Instructors may use the site-licensed E-Learning course management system to provide online course tools such as syllabus, content and secure grade posting. Instructors may reserve a computer classroom or multimedia lecture classroom for class sessions. For more information about these and other UFIT services, contact the UF Computing Help Desk, 132 Hub, <http://helpdesk.ufl.edu>, (352) 392-HELP (4357).

## **Florida Museum of Natural History**

**The Florida Museum of Natural History** was created by the Legislature in 1917 as a department of the University of Florida. Through its affiliation with the University, it carries dual responsibility as the official State Museum of Florida and as the University museum. The public education and exhibits division of the Museum is in Powell Hall, on Hull Road at the western edge of campus, situated between the Harn Museum of Art and the Phillips Center for the Performing Arts. Powell Hall is devoted exclusively to permanent and traveling exhibits, educational and public programs, special events, and includes the Butterfly Rainforest. It is staffed by specialists in interpreting natural history through exhibits and educational programs. Consult the website for hours and admission fees (<http://www.flmnh.ufl.edu>). The Museum also operates as a center of research in anthropology and natural science. The research and collections division is in Dickinson Hall, at the corner of Museum Road and Newell Drive. This building is not open to the public. The Department of Natural History houses the state's natural history collections and is staffed by scientists and support personnel concerned with the study of modern and fossil plants and animals, and historic and prehistoric people and their cultures; scientific and educational faculty (curators) hold appointments in appropriate UF academic units. Through these appointments, they participate in both undergraduate and graduate teaching programs. The Museum's newest addition is the McGuire Center for Lepidoptera and Biodiversity. This world-class facility features a 46,000-square-foot Lepidoptera center devoted to housing one of the world's largest and most comprehensive Lepidoptera collections, and state-of-the-art research facilities for their study. It also contains dynamic public exhibitions and a live Butterfly Rainforest with a walking trail, educational exhibits, and hundreds of living butterflies.

The **Randell Research Center** at the Pineland archaeological site near Fort Myers, Florida, is dedicated to learning and teaching the archeology, history, and ecology of Southwest Florida.

The **Herbarium at UF** is also a division of the Museum. It contains specimens of vascular and nonvascular plants. The research collections are in the care of curators who encourage scientific study of the Museum's holdings. Materials are constantly being added to the collections both through gifts from friends and as a result of research activities of the Museum staff. The archaeological and ethnographic collections are noteworthy, particularly in the aboriginal and Spanish colonial material remains from the southeastern United States and the Caribbean. There are extensive study collections of birds, mammals, mollusks, reptiles, amphibians, fish, invertebrate and vertebrate fossils, and plant fossils, and a bioacoustic archive consisting of original recordings of animal sounds. Opportunities are provided for students, staff, and visiting scientists to use the collections. Research and field work are presently sponsored in the archaeological, paleontological, and zoological fields.



Students interested in these specialties should apply to the appropriate academic units. Graduate assistantships are available in the Museum in areas emphasized in its research programs.

## Libraries

The libraries of the University of Florida (UF Libraries) form the largest information resource system in the state of Florida and include seven libraries. Six are in the system known as the George A. Smathers Libraries, and one (Legal Information Center) is attached to the law school's administrative unit. All of the libraries serve the entire community, but each has a special mission to be the primary support of specific colleges and degree programs. Because of the interdisciplinary nature of research, scholars may find collections built in one library to serve a specific discipline or constituency to be of great importance to their own research. The University of Florida Gator 1 card provides access to library services.

The library home page offers a wealth of information about the libraries and links to a vast array of resources. Print and electronic collections can be accessed through the library catalog as well as through general and subject specific databases. Library Guides are available by subject to guide the user to appropriate resources. Materials not held on campus can be quickly located and borrowed through Interlibrary Loan. Reference service is available in each library as well as via phone, email and chat. All of the libraries provide special services to help students and faculty with disabilities.

For Library Hours

<http://www.uflib.ufl.edu/ps/hours/>

Workstations in UF libraries provide access to the whole array of electronic resources and services. Licensing for library databases, e-journals and e-books restricts off-campus access to staff, students and faculty.

Library orientation programs are offered at the beginning of each term. In addition, instruction librarians will work with faculty and teaching assistants to develop and present course-specific library instruction sessions for their students. Subject specialists, who work closely with faculty and graduate students to select materials for the collections, also advise graduate students and other researchers who need specialized bibliographic knowledge to define local and global information resources available to support specific research.

**Library West** houses most of the humanities and social science collections; professional collections in support of business, health and human performance, journalism and public relations; the African Studies Collection; the Asian Studies Collection; and the Isser and Rae Price Library of Judaica. Library West includes 84 individual graduate study carrels that are assigned for the academic year. An online application form is available here:

<http://apps.uflib.ufl.edu/cars/>. In addition, the sixth floor of Library West is a study area reserved for graduate students. Access is provided after students register at the Circulation Desk.

**Marston Science Library** houses collections in agriculture, life sciences, engineering, physical sciences, mathematics and earth sciences. The first floor Collaboration Commons includes a multipurpose conference room featuring a multi-touch visualization wall. The first floor is also home to MADE@UF, a collaboration space created by the Libraries and Academic Technology to be used for creative activities such as mobile app development, 3D scanning and other "maker" initiatives.

**Health Science Center Libraries** serve the academic, research and clinical information needs of the Colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health and Health Professions and Veterinary Medicine, as well as the affiliated research institutes, hospitals and clinics. The Borland Library serves UF Health Jacksonville, and the Veterinary Medicine Reading Room in the College of Veterinary Medicine Building, while not a branch library, is supported by the HSCL. The HSCL was an early leader among health sciences libraries in providing liaison librarian services, is integrated into the curricula of the health science colleges, and collaborates with faculty in the provision of instruction and on other projects. Librarians at the HSCL also provide clinical rounding, basic bioinformatics, and systematic review services.

**Smathers Library** (formerly known as Library East) holds the Latin American and Caribbean Collection, the Map & Imagery Library, and the Special Collections: rare books and manuscripts, the Baldwin Library of Historical Children's Literature, P. K. Yonge Library of Florida History, and the University Archives (custodian of the University's historically significant public records including the administrative files of its past presidents).

**Architecture & Fine Arts Library** (201 Fine Arts Building A) holds visual arts, art history, architecture, landscape architecture, interior design, building construction and urban planning materials and the music collection — music scores, books, periodicals and other music sources, as well as a non-circulating collection of recordings.

**Education Library** (1500 Norman Hall) holds education, child development, higher education, psychology and counseling collections. In addition to electronic and print research materials, there are other specialized collections such as the Children's Literature Collection, the K-12 Textbook Collection, and the ERIC Documents Microfiche and other multimedia collections.

**Lawton Chiles Legal Information Center** holds resources for law and related social sciences with over 595,000 volumes and equivalents. It is named in honor of the former governor and senator and housed in a completely renovated facility that is the largest in the Southeast. The Lawton Chiles Legal Information Center occupies the bottom three floors of Holland Hall with computer support on the top floor. The facility includes 13 student study rooms, a lactation/meditation room, lounge seating, open reserve area and carrels.

**UF Digital Collections** (<http://ufdc.ufl.edu/>) comprise a constantly growing collection of digital resources from the University of Florida's library collections, as well as partner institutions.

The Libraries participate in UBBorrow which allows users to request materials through the online library catalog directly from participating Florida state university libraries. If a book is unavailable in the University of Florida collection, but is available elsewhere in the state, the UBBorrow icon will appear on the library catalog search page. Clicking this link will take the user to the statewide catalog, where they can provide their library credentials, and specify a pickup site. UBBorrow loans usually arrive within a few days. This unmediated borrowing service creates a virtual statewide library of over 16 million items.

## Office of Research

The University of Florida's Office of Research facilitates and manages the university's external research funding enterprise. The office provides many services for UF faculty, staff and students, from identifying a grant opportunity to managing proposals and awards and protecting and promoting intellectual property. The Division of Sponsored Programs facilitates institutional approval for all extramural proposal submissions, accepts and administers grant awards, and negotiates contracts and other research-related agreements on behalf of the University of Florida. The Division of Research Program Development identifies funding opportunities for faculty, manages internal funding programs and assists in planning and coordinating large, interdisciplinary research initiatives.

The Division of Research Compliance assists faculty, staff and students in conducting research in compliance with applicable research regulatory requirements and institutional policies. The goal of the Division of Research Compliance is to promote compliance while facilitating research. The Division of Research Operations and Services provides support that underpins the campus-wide services that are part of the Office of Research portfolio.

The University of Florida Research Foundation is a non-profit, direct-support organization that manages the university's royalty and licensing enterprise. The Office of Technology Licensing handles patenting, marketing and licensing of intellectual property. OTL works closely with UF inventors in identifying and protecting new inventions. All patents, copyrights and trademarks are processed and managed by OTL, which also helps researchers develop confidentiality, mutual secrecy, and material transfer agreements.

The Office of Research provides funds for the Grinter Fellowship program. These fellowships are part of funding packages awarded by academic units to support recruitment of outstanding new graduate students. The Office of Research also supports individual graduate students by offering competitive travel grants and other types of awards.

This office also provides an important centralized location for other internal and external funding opportunities by offering a host of resources at <http://www.research.ufl.edu/research-program-development/internal-competitive-funding.html>.

For more information, contact:

The Office of Research  
P.O. Box 115500  
(352) 392-1582

## **Oak Ridge Associated Universities**

Since 1948, UF students and faculty of the University of Florida have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 98 colleges and universities and a contractor of the U.S. Department of Energy in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, and faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program lengths range from 1 month to 4 years. Many of these programs aim to increase the number of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive list of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the *ORISE Catalog of Education and Training Programs*, which is available at <http://www.ornl.gov/orise/educ.htm>, or by calling either of the contacts below.

ORAU's Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU's members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research, and support programs as well as services to chief research officers.

### **For more information:**

The Office of Institutional Planning and Research website provides access to the Florida ExpertNet searchable database of Centers and Institutes. Go to the search function and choose "University of Florida" from the "Limit By" drop-down menu toward the bottom of the page. Finally, click "search" for a complete list of UF Interdisciplinary Research Centers.

For more information about ORAU and its programs, visit the ORAU home page at <http://www.ornl.gov>.

## **Performing Arts Venues**

University of Florida Performing Arts brings a diverse range of events to its venues each season, including theater, chamber, classical, dance, jazz, world performances and more. The 1,700-seat Phillips Center features computerized lighting and sound systems. The Squitieri Studio Theatre is used for experimental or small musical productions, recitals and receptions. The historic University Auditorium seats 839 and provides a classic setting for chamber and solo concerts, musical performances, lectures and more. The Baughman Center, a breathtaking pavilion on the shores of Lake Alice, is an inspirational setting for both contemplation and celebration.

UFPA offers discounted tickets (for most events) to students with a valid Gator 1 card. For more information about student tickets, please visit the website.

For information about UFPA:  
Administrative offices,  
Phone (352) 273-2457.

For event information or tickets:  
Phillips Center Box Office,  
Phone (352) 392-ARTS,  
Website <http://www.performingarts.ufl.edu>

## **University Press of Florida**

The University Press of Florida is the official scholarly publishing agency of the State University System of Florida. The Press (just off campus, at 15 NW 15th Street) reports to the President of the University, who supervises the Press on behalf of the 11 state universities. The statewide Council of Presidents is the governing board for the Press.

An advisory board, consisting of representatives from each of the 11 state universities, determines whether manuscripts submitted to it reflect appropriate academic, scholarly, and programmatic standards of the Press.

The Press publishes scholarly works of intellectual distinction and significance, books that contribute to improving the quality of higher education in Florida, and books of general and regional interest and usefulness to the people of Florida, reflecting their rich historical, cultural, and intellectual heritage and resources. The Press publishes works in the following fields: the Caribbean and Latin America; the Middle East; North American archeology, American history, and culture; Native Americans; literary theory; medieval studies; architecture; ethnicity; natural history; conservation biology; the fine arts; and Floridiana.

Submit manuscripts to

The Editor-in-Chief,  
University Press of Florida,  
15 NW 15th Street,  
Gainesville, FL 32611

## **Graduate Certificates**

### **Advanced Manufacturing (Engineering)**

The Advanced Manufacturing certificate program is designed for manufacturing professionals and students interested in modern advanced manufacturing techniques. The program is composed of a three course sequence offered annually. These courses will cover traditional manufacturing processes, such as forming, machining, and welding; nontraditional manufacturing processes; and related engineering topics. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours (3 courses)

Student must earn a grade of "B" or higher in each course for certificate completion

2 Required Courses:

EML 6324 : Fundamentals of Production Engineering

EML 6934 : Special Topics in Mechanical Engineering

1 Elective (choose from following):

EML 5045 : Computational Methods for Design and Manufacturing

EML 5526 : Finite Element Analysis and Application

EGM 6341 : Numerical Methods of Engineering Analysis I

EMA 6510 : Survey of Materials Analysis Techniques

EMA 6938 : Special Topics in Materials Science and Engineering

CGN 6905 : Special Problems in Civil Engineering

Contact Information:

Dr. John K. Schueller

352-392-0822

schuejk@ufl.edu

## **African Studies Certificate (Agricultural and Life Sciences, Liberal Arts and Sciences, Fine Arts, Business Administration, Education, Journalism and Communications, Law)**

Director and Graduate Coordinator: A. Goldman.

**The Center for African Studies**, a National Resource Center on Africa (funded partly by Title VI of the Higher Education Act), directs and coordinates interdisciplinary instruction, research, and outreach related to Africa. In cooperation with participating academic units throughout the University, the Center offers a Certificate in African Studies for master's and doctoral students. The curriculum provides a broad foundation for students preparing for teaching or other professional careers requiring knowledge of Africa.

The Center offers the Certificate in African Studies for master's and doctoral students in conjunction with disciplinary degrees. Graduate courses on Africa or with African content are available in the Colleges, Schools, or Departments of Agricultural and Life Sciences, Anthropology, Art and Art History, Botany, Economics, Education, English, Food and Resource Economics, Forest Resources and Conservation, Geography, History, Journalism and Communications, Law, Linguistics, Music, Political Science, and Sociology. The Certificate Program in African Studies is described in the *Special Programs* section of this catalog. Course offerings are listed by academic unit in this catalog, or may be obtained from the Director, 427 Grinter Hall.

### Courses

- AFS 5061: Africana Bibliography
- AFS 6060: Research Problems in African Studies
- AFS 6905: Individual Work in African Studies

**Graduate fellowships and assistantships:** Students pursuing degrees in participating academic units can compete for graduate assistantships and Title VI Foreign Language and Area Studies fellowships. Extracurricular activities: The Center for African Studies sponsors the annual *Carter Lectures on Africa* on a given theme, a weekly colloquium series (BARAZA) with invited speakers, an African film series, and periodic brown bag discussions. Other conferences and lectures, and performances and art exhibits in conjunction with other campus units, are held throughout the academic year. The Center also directs an extensive outreach program addressed to public schools, community colleges, and universities nationwide.

**Library resources:** The Center for African Studies gives direct support for African library acquisitions to meet the instructional and research needs of its faculty and students. The Africana Collection exceeds 120,000 volumes and 500 periodicals. The Map Library has 360,000 maps and 165,000 serial photographs and satellite images and is among the top five academic African map libraries in the U.S.

Graduate certificate program: The Center for African Studies, cooperating with participating academic units, offers a Certificate in African Studies in conjunction with the master's and doctoral degrees.

For more information about the various programs and activities of the Center, contact the Director, Center for African Studies, 427 Grinter Hall, website <http://www.africa.ufl.edu>.

### **Arts Administration Graduate Online Certificate (Fine Arts)**

The online graduate certificate program is offered by the College of the Arts at the University of Florida. This program is designed to help working professionals, in the arts industry, become leaders of their respective organizations. The online delivery of this program allows students to further their education and enrich their career without having to sacrifice commitments to their family and career.

The following courses are offered:

FYC 6421: Nonprofit Organizations

FYC 6424: Fund Raising for Community Nonprofit Organizations

HUM 6340: Arts Advocacy and Public Policy

HUM 6944: Arts in Action: Consulting Project in Performing Arts Management

For more information, please contact

Elizabeth Bolton, Ph.D.

Professor, Family, Youth and Community Sciences

College of Agricultural and Life Sciences

or

Kevin Marshall

Director, Center for Arts and Public Policy

College of Fine Arts

School of Theater and Dance

### **Arts in Medicine Graduate Online Certificate (Fine Arts)**

The Graduate Certificate in Arts in Medicine recognizes the acquisition of knowledge and skills related to the use of the arts to enhance individual and community health and to impact healthcare environments. The Certificate is designed to enable graduate students and professionals in the arts, health sciences, and other health-related professions to effectively engage the arts to enhance health outcomes in individuals and communities, and to effectively manage arts programs in healthcare and community settings. The Certificate is offered by the College of Fine Arts and administered through the Center for Arts in Medicine.

#### **Student Eligibility:**

- Graduate students in any major may complete the Graduate Certificate in Arts in Medicine.
- Non-degree seeking students may pursue the Graduate Certificate in Arts in Medicine as long as the applicant has at least a bachelor's degree or equivalent from a regionally accredited institution.
- All students (degree seeking, non-degree seeking, or post-baccalaureate) wishing to complete the Certificate must apply and be accepted to the Certificate program.

**Prerequisites:** Admission to the Certificate program requires a bachelor's degree in an arts, health, or related field of study, and completion of the Introduction to the Arts in Healthcare course at UF, completion of an Arts in Healthcare Summer Intensive, or a minimum of one year of professional experience as an artist or administrator in the field of Arts in Medicine.

**Requirements:** The Graduate Certificates in Arts in Medicine will be awarded after successful completion of all requirements and will be posted to the academic transcript. Completion of 12 credits of the following coursework with a 3.0 or higher GPA.

- Creativity and Health: Foundations of the Arts in Medicine

- Arts in Medicine in Practice
- Arts in Medicine Graduate Practicum
- Arts in Medicine Professional Seminar

For more information contact the certificate coordinator, Amber Danielecki, at [adanielecki@arts.ufl.edu](mailto:adanielecki@arts.ufl.edu) or the UF Center for Arts in Medicine director, Jill Sonke, at [jsonke@ufl.edu](mailto:jsonke@ufl.edu).

## **Biomaterials and Tissue Engineering Certificate (Engineering)**

The Biomaterials & Tissue Engineering certificate covers scientific and engineering developments of the latest bio-polymers, bio-metals, and bio-ceramic materials and clinical applications. Courses also cover socio-economic issues that affect the quality of healthcare including: ethics, technology transfer, regulatory processes, economic factors, and the role of technology in achieving quality of life in various populations. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Materials Science & Engineering

Curriculum:

9 credit hours (3 courses)

Student must earn a grade of "B" or higher in each course for certificate completion

EMA 6580 : Science of Biomaterials I

EMA 6938 : Special Topics in Materials Science and Engineering

EMA 6938 : Special Topics in Materials Science and Engineering

Contact Information:

John J. Mecholsky

352-846-3306

[jmech@mse.ufl.edu](mailto:jmech@mse.ufl.edu)

## **Chemical Physics Certificate**

The Chemical Physics certificate is awarded to those students who have taken four courses listed in the Physical Chemistry requirement list, three credits from another division of Chemistry, and nine credits from math or physics at the 5000 or 6000 level. This certificate is intended for doctoral students interested in gaining expertise in the field of chemical physics.

The four core courses from the Physical Chemistry requirement list include

CHM 6430: Chemical Thermodynamics

CHM 6470: Chemical Bonding and Spectra I

CHM 6490: Theory of Molecular Spectroscopy

CHM 6720: Chemical Dynamics

## **Control Systems Certificate (Engineering)**

The Control Systems certificate is designed to prepare for careers related to control systems technologies. Areas of emphasis include advanced control engineering concepts, state-space representation of dynamic systems, advanced analytical techniques, linear, optimal, and nonlinear control design methodologies, state and parameter estimation, as well as robust and adaptive control synthesis. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours

Student must earn a grade of "B" or higher in each course for certificate completion

Choose 3 of the following:

EML 5311 : Control System Theory

ECH 6326 : Computer Control of Processes

EML 6350 : Introduction to Nonlinear Control

EML 6351 : Nonlinear Control II: Adaptive Control

EML 6352 : Optimal Estimation and Kalman Filtering

EML 6365 : Robust Control Synthesis

EML 6934 : Special Topics in Mechanical Engineering

EML 6934 : Special Topics in Mechanical Engineering

Contact Information:

Dr. Warren Dixon

352-392-7303

wdixon@ufl.edu

## **Critical Infrastructure Protection Certificate (Engineering)**

The Civil and Coastal Engineering (CCE) Department, an academic unit of the Engineering School of Sustainable Infrastructure and Environment (ESSIE), has established a Critical Infrastructure Protection Certificate (CIPC) program for graduate students with interests in the area of protecting the Nation's critical infrastructure systems against blast, shock, and impact incidents. This is a 9-credit program, compatible with the decision by the College of Engineering (COE) to select the area of security and critical infrastructure protection as one of its focus areas. The Center for Infrastructure Protection and Physical Security (CIPPS), established at the University of Florida in 2006, provides a solid foundation for both the proposed focus area in the College of Engineering and the CIPC program.

The proposed Critical Infrastructure Protection Certificate was formulated to meet the education needs of a diverse group of students, while working within the current CCE curriculum to optimize the delivery of education and faculty resources. It is further anticipated that offering this Certificate will strengthen relationships between the COE and government and industry sectors, which are expected to increased enrollment in both the MS and PhD programs, following completion of the Certificate. Further, it is envisioned that this new program will create new R&D funding opportunities, and enhanced job placement for participating students. The Certificate is awarded to participants upon the completion of their graduate degree studies.

Participants in the Critical Infrastructure Protection Certificate program can select three courses from the list shown below.

- Introduction to Protective Structures (required of all participants)
- Advanced Protective Structures
- Retrofit Methods for Protective Structures
- Applied Protective Technology
- Impact Engineering

Typically, graduate students involved with the R&D activities at CIPPS take all five courses.

The prerequisites for program participation are

- A BS degree in civil engineering with a specialization in structures
- Must be a graduate degree seeking student
- Completion of CES 6108 – Structural Dynamics
- Maintain a minimum GPA of 3.2 in the graduate program

## **Disaster Mental Health Counseling Certificate Certificate (Education)**



The College of Education at UF offers an online graduate certificate in Disaster Mental Health Counseling. This certificate is intended for licensed mental health professionals and state-certified school counselors, who are drawn to the field of disaster counseling. This certificate is designed for professional counselors seeking to specialize in disaster and crisis response. The program allows participants to learn new skills related to disaster mental health and to build their credentials in this emerging discipline.

### **Ecological Engineering Certificate (Engineering)**

The Graduate Certificate in Ecological Engineering is for graduate engineering students wishing to develop expertise in ecological solutions to engineering problems. Students interested in the certificate must apply for admission through the Department of Environmental Engineering Sciences. The certificate program is open to individuals in any graduate program who hold an undergraduate engineering degree, or who complete the additional undergraduate engineering articulation courses needed to bring the student's background to the minimum level required for engineers by the Accreditation Board for Engineering and Technology.

The certificate program consists of 15 course credits, and a research project with content materially related to some aspect of ecological engineering. If appropriate, the 15 credits of graduate course work may count toward the minimum requirements for the graduate degree. The student's terminal project, master's thesis, or individual studies project may satisfy the ecological engineering project requirement. For more information, contact the Graduate Coordinator, Department of Environmental Engineering Sciences, P.O. Box 116450, University of Florida, Gainesville FL 32611, Phone (352) 392-8450.

### **Education and Health Care Transition Online Certificate (Education)**

Medical advances have led to 90% of youth with chronic health conditions living to adulthood. Education transition and health care transition are currently separate fields. Professionals in these fields need to work together to support our youth in moving forward. Our fully online certificate program provides the necessary training for this collaboration. Upon successful completion of this certificate, participants will be able to:

- Describe the rationale for promoting Education and Health Care Transition (EdHCT).
- Analyze and synthesize the literature from the health, education, family, and other perspectives.
- Identify the perspectives, goals, and strategies of EdHCT disciplines, and develop a working knowledge of legal issues and professional cultures.
- Identify evidence-based practices to assist students in managing their health in post-secondary settings, navigate the adult health care system, and self-advocate for their health needs.
- Integrate effective EdHCT practices in educational and health care settings for children and youth with special health care needs and invisible chronic illness.
- Identify potential barriers, along with solutions, to collaboration between the multiple health and educational disciplines.
- Develop implementation strategies in EdHCT.

### **Emerging Infectious Disease Certificate (Public Health and Health Professions)**

The primary purpose of this Certificate is to support sponsoring organizations (e.g. United States Department of Defense Global Emerging Infections Surveillance and Response System (DoD-GEIS), Centers for Disease Control and Prevention (CDC), US Department of State, United States Agency for International Development (USAID), Fogarty International Center, etc) by providing special graduate level education in emerging infectious disease research to nominated international public health professionals. By making advanced training available to international public health practitioners, the program will help to build sustainable epidemiological research capacity in infectious diseases and promote new collaborations between international US laboratories and other countries. The program is also open to anyone who provides independent support for his/her studies, including public health professionals and University of Florida undergraduate and graduate students.

Each year, a class of up to 50 international public health professionals are provided with tuition scholarships and travel funding to participate in this Certificate program. A number of independently funded students and professionals may also be enrolled each year. The Certificate is earned through 18 to 20 days of intensive training at the University of Florida coupled with year-round Web-based, asynchronous, distance learning training. Training includes lectures, tutorials, field experiences, laboratory exercises, public health demonstrations, and written examinations, with the goal of introducing students to the many facets of studying emerging infectious diseases. Disciplines reviewed include: epidemiology, biostatistics, zoonotic diseases, entomology, microbiology, water quality assessments, scientific research, and food safety.

The Certificate will be awarded after a student successfully completes the 12 credits of prescribed course work with a grade point average (GPA) of at least a 2.75 on a 4.0 scale. Course work must be completed within a 5-year time period. After demonstrating excellence in performance, successful certificate trainees may compete for further scholarship support (Fogarty, USAID, etc.) and apply 9 credits of the training toward a Master in Public Health degree at the University of Florida.

Required courses (6 credits) include:

PHC 6006: An Introduction to One Health Problem Solving  
PHC 6561 :Public Health Laboratory Techniques  
PHC 6515 : Introduction to Entomology Zoonotic Diseases and Food Safety

Two additional courses (6 credits) from this list:

PHC 6050 : Statistical Methods for Health Sciences Research I  
PHC 6001 : Principles of Epidemiology in Public Health  
PHC 6313 : Environmental Health Concepts in Public Health

Interested in becoming a student? [Click here](#) for more information.

## **Energy Management Certificate (Engineering)**

The Energy Management certificate is designed for careers related to commercial energy technologies. Areas of emphasis include energy conversion, modeling thermal equipment, system simulation, optimization, design, building envelopes, mechanical systems, industrial processes, air-handling design, temperature & humidity control, economic analysis, vapor compression, adsorption, steam-jet, thermoelectric, and modern energy management methods. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours

Student must earn a grade of "B" or higher in each course for certificate completion

Choose 3 of the following:

EML 6451 : Energy Conversion  
EML 5465 : Energy Management for Mechanical Engineers  
EML 5516 : Design of Thermal Systems  
EML 5605 : Advanced Refrigeration  
EML 6606 : Advanced Air Conditioning  
EML 5104 : Classical and Statistical Thermodynamics

Contact Information:

Dr. Pamela Dickrell

352-392-9672  
pld@ufl.edu

## **Environmental Policy and Management Certificate (Engineering)**

The Certificate in Environmental Policy and Management emphasizes scientific, technologic, economic, legal, political, and social dimensions of policy formation and implementation, and environmental management. Individuals working in, or interested in learning more about, environmental policy and management can become certified in a body of knowledge in these specializations. The distance learning delivery mode allows students in remote locations to complete course assignments and communicate with faculty and other students anywhere and in their own time. The program maintains the high academic standards of the University of Florida. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Environmental Engineering Sciences

Curriculum:

5 Courses Total: 4 Required Courses and 1 Elective

Required Course 1: EES 5075 Environmental Policy or ENV 6441 : Water Resources Planning and Management

Required Course 2: EES 6932 Natural Res and Envir Policy or ENV 6932 Env. Institutions and Regulations

Required Course 3: EES 6318 : Principles of Industrial Ecology or EES 5307 : Ecological Engineering

Required Course 4: EES 6501 Advance Env. Planning and Design or ENV 6932 : Special Problems in Environmental Engineering

Elective (choose 1):

ENV 6441 : Water Resources Planning and Management

EES 5245 : Water Quality Analysis

EES5305 Ecological & General Systems

EES 6932 Wetland Treatment Systems

EES 5306 : Energy Analysis

EES 6932 Spring Systems

ENV 6932 Global Environment Policies & Institutions

ENV 6932 Adv. Environmental Resources Management

EES 5415 : Environmental Health

ENV 6511 : Biological Wastewater Treatment

EES 6007 : Advanced Energy and Environment

SOS 5246 Water Resource Sustainability

EES 6308C Wetlands Ecology

Contact Information:

Dr. Mark Brown

352-392-2425

mtb@ufl.edu

## **Forensic Vocational Rehabilitation Online Graduate Certificate (Public Health and Health Professions)**

The Department of Behavioral Science & Community Health at the University of Florida offers an online Forensic Vocational Rehabilitation graduate certificate program. This program is designed for working professionals that currently have a Master's degree in Rehabilitation Counseling or working professionals that are already certified rehabilitation counselors. This program is offered online, so students will not have to sacrifice their work and family life in order to further their education and enrich their careers.

### **Course Sequence**

- Course 1: Orientation to Forensic Vocational Practice
- Course 2: Forensic Case Analysis
- Course 3: Professional Practice for Vocational Forensic Experts

#### **Minimum Requirements for Acceptance**

- Master's degree in Rehabilitation Counseling (or equivalent); or are in the final stages of their educational program
- A GPA of 2.5 or better

For information, please feel free to contact Amanda Glynn at 352-273-6491, with any questions you may have.

### **Gas Turbines Certificate (Engineering)**

The Gas Turbines certificate is designed to prepare for careers related to gas turbine technologies. Areas of emphasis include theory and analysis of gas turbine engines and components, fatigue life, mechanical design, fatigue life analysis, energy conversion, physical metallurgy, strengthening alloys, process selection, and design principles for elevated temperature applications. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours (3 courses; 1 required and 2 electives)

Student must earn a grade of "B" or higher in each course for certificate completion

Required Course:

EML 5515 : Gas Turbines and Jet Engines

Electives (choose 2 of following)

EML 6451 : Energy Conversion

EML 6934 : Special Topics in Mechanical Engineering

EML 5104 : Classical and Statistical Thermodynamics

Contact Information:

Dr. Pamela Dickrell

352-392-9672

[pld@ufl.edu](mailto:pld@ufl.edu)

### **Global Strategic Communication Certificate (Journalism and Communications)**

The Global Strategic Communication program is designed to prepare students for career advancement and development. A special emphasis on international perspectives and persuasive communication is stressed throughout the curriculum. This interdisciplinary program is entirely on-line and is delivered using the University of Florida E-Learning Computer Management System.

The program requires the successful completion of four graduate level courses with a grade of C or higher. Each course will run for twelve weeks.

ADV 6405 : International Advertising

MMC 5708 : Foundations of Intercultural Communication

MMC 6936 : Special Topics in Mass Communication

PUR 6608 : International Public Relations

Online courses utilize audio and video lectures, electronic slideshows, chat room interaction with faculty, online guest lectures, web site field trips, exercises, and other techniques designed to support mastery of the material.

For further information about this certificate program, contact Dr. Molleda at [jmolleda@jou.ufl.edu](mailto:jmolleda@jou.ufl.edu).

### **Geriatric Care Management Certificate (Public Health and Health Professions)**

The Geriatric Care Management Graduate Certificate program is designed to meet the needs of today's working professionals. The program requires the successful completion of four graduate level courses with a grade of B or higher as well as a 50-hour supervised clinical experience to be completed in the area in which the student resides. The courses associated with this program are offered on a semester basis (Spring, Summer and Fall) and each semester is thirteen weeks in length.

All courses are taught utilizing a web based e-learning system. The courses are organized in weekly modules which include audio power point presentations, video lectures, assigned reading and on-line discussion forums. The material is designed to be completed in self paced / flexible format. Each course utilizes an electronic discussion board that provides an in depth interactive experience while at the same time offering individual flexibility to the working professional student.

The final requirement for the Graduate level certificate is the supervised clinical experience. Depending upon the individual professional background most students are required to complete a supervised clinical experience under the supervision of a professional practicing in the field of geriatric care management. If you are already employed as a professional geriatric care manager you may be able (based on your individual background) to waive this requirement. For further information, please contact UF - GCM Program via an e-mail to [gcmsupport@dce.ufl.edu](mailto:gcmsupport@dce.ufl.edu).

### **Health Outcomes and Policy Certificate (Medicine)**

The Graduate Certificate in Health Outcomes and Policy is designed both to complement other concurrent courses of study and to provide continuing education opportunities for faculty. The program provides students with foundational knowledge and skills to interpret and participate in health outcomes assessments and clinical effectiveness research in clinical research and community-based research settings.

Students who complete the Graduate Certificate in Health Outcomes and Policy will gain understanding about health policy processes and their influence on health care practices and delivery in both clinical and community settings; obtain foundational knowledge in the scientific methods used to conduct health outcomes and policy research, including study design, database management, outcomes and evaluation measurements, and applied statistical methods; and become familiar with the key areas of clinical and translational science and how health outcomes and policy research fits into the translational research spectrum.

Students enrolled in the program will have the opportunity for a one-on-one mentored research experience with faculty. Health professionals who complete the certificate program can expect to have enhanced career opportunities due to their ability to more effectively participate in and conduct health outcomes assessment, clinical effectiveness research, and policy development, implementation and evaluation. For more information, please contact the Department of Health Outcomes and Policy Educational Coordinator: [cwflowers@ufl.edu](mailto:cwflowers@ufl.edu).

### **Historic Preservation Certificate, Concentration, Master's Degree (Design, Construction and Planning)**

Historic preservation is the safeguarding of all cultural heritage: tangible and intangible. The College of Design, Construction, and Planning offers an interdisciplinary opportunity to study for the profession through multiple fields including archeology, architecture, landscape architecture, urban and regional planning, interior design, building construction, museum studies, law, and cultural tourism. The master's degree course work is practical and technical in scope and includes the study of history, research techniques, traditional crafts, materials conservation, documentation, interpretation, cultural research management, housing, urban rejuvenation and adaptive use of historic structures, restoration methodologies, economics, green design and sustainable/livable communities.

The 21st century offers significant expansion of the field of heritage conservation to address smart growth, sustainability, and economic development initiatives. Many related jobs exist, including preservation consultant, preservation contractor, preservation researcher, Main Street program director, site manager, lawyer, archaeologist, cultural resource manager, historian, real estate professional, and policy administrator.

The College offers several nationally recognized field schools or practica: Preservation Institute: Nantucket, Traditional Crafts Field School, and the National Historic Landmarks District in Saint Augustine, America's oldest city.

**The Interdisciplinary Concentration and Certificate in Historic Preservation (ICCHP)** integrates resources throughout UF to address the diverse topics relevant to the field. Thus, the ICCHP establishes a set of courses that allow graduate students to gain expertise in researching and applying historic preservation in the United States and abroad. Depending on the student's career goals and background, this can include recognizing, documenting, and protecting historic structures and sites; rehabilitation and restoration technologies; and exploring emerging and related specializations such as community development and sustainable development.

The interdisciplinary curriculum structure draws on course work providing 12 credits for master's students and 15 credits for Ph.D. students specializing in historic preservation. The concentration is officially recognized by statements on the transcript and by a certificate.

For more information, contact Roy Eugene Graham, FAIA, Bienecke-Reeves Distinguished Professor, Director of Historic Preservation Programs, University of Florida, P.O. Box 115701, Gainesville FL 32611, Phone (352)392-0205, ext. 233, E-mail [regraham@ufl.edu](mailto:regraham@ufl.edu).

The University of Florida College of Design, Construction and Planning offers a **Master of Historic Preservation** degree using an interdisciplinary variety of coursework in the basic and applied skills and arts of historic preservation, anthropology, archeology, architecture, building construction, cultural tourism, history, interior design, landscape architecture, museum studies, and urban and regional planning. The coursework totals 42 hours. Students must take 12 hours of core courses, 6 hours of pre-approved history electives, and may choose from pre-approved and specially approved electives from across the campus. A true thesis to meet Graduate Requirements relating to historic preservation is required.

### **Program of Study**

The Master of Historic Preservation degree program promotes interdisciplinary thinking in historic preservation by combining (1) required coursework in history and theory, research, documentation and recording historic sites, conservation of building materials and systems, and practica or other practical experience with (2) two courses in the history of the designed environment (including, for example architecture, urban development, landscape architecture, archeology, or material culture.) with (3) electives from a list of courses identified by the faculty, in the subject areas of resource-related studies including design issues, neighborhood issues (zoning, strategic planning, housing and social aspects of real estate development) historic and cultural landscape issues, historic interior issues, economic issues (marketing principles, private and public finance, property management and budget preparation), legal issues (Constitutional law, preservation case law, federal, state and local regulatory legislation and administration) sustainability issues traditional building crafts and curatorial issues (site development interpretation, management and cultural tourism). A true thesis that meets Graduate Requirements on an approved historic preservation topic is also required.

For more information contact  
Kay Williams, FASLA  
*Graduate Coordinator*  
352-392-6098 ext. 326

Becky Hudson  
*Program Assistant*  
352-392-0205 ext. 202

## **Latin American Studies Certificate (College of Agricultural and Life Sciences, Business Administration, Design, Construction and Planning, Education, Fine Arts, Journalism and Communications, Law or Liberal Arts and Sciences (Master's Degree (Liberal Arts and Sciences)**

Founded in 1930, the UF Center for Latin American Studies is the oldest in the U.S. and remains a premier institution. It offers interdisciplinary teaching and research programs focused on Latin America and the Caribbean. The M.A. program draws on 20 center-based Graduate Faculty and more than 160 faculty affiliates who teach courses or carry out research related to Latin America.

**Master of Arts degree in Latin American Studies:** This M.A. degree requires a thesis and 30 credits, including a 15 credit specialization in either a discipline or a topic.

**Discipline** specializations emphasize training and research in area and language studies in a specific academic unit, such as Anthropology, Geography, History, Political Science, Romance Languages and Literatures (Spanish, Portuguese, or Haitian Creole), or Sociology. This option is especially suited to students interested in pursuing a Ph.D. in a related discipline.

**Topical** specializations cluster course work and research around a thematic field focusing on contemporary Latin American problems, such as Andean studies, Brazilian studies, Caribbean studies, development, gender studies, international communications, Latin American business environment, Latino studies, religion and society, and tropical conservation and development. This option prepares students for technical and professional work related to Latin America and the Caribbean.

Additional requirements for both options are as follows:

- 2 required gateway seminars: LAS 6220 , Issues and Perspectives in Latin American Studies and LAS 6293 , Design and Methods of Research in Latin American Studies; ideally, both seminars are taken in the first semester;
- 9 credits of Latin American area or language courses outside the specialization; and
- Intermediate proficiency in Spanish, Portuguese, or Haitian Creole; and
- An interdisciplinary thesis on a Latin American topic.

Although the M.A. degree in Latin American studies is a terminal degree, many past recipients have entered the Ph.D. programs in related disciplines preparing for university teaching and research careers. Other graduates are employed in the Foreign Service, educational and research institutions, international organizations, government or nonprofit agencies, and private companies in the United States and Latin America.

Requirements for admission to the program are:

- A baccalaureate degree from an accredited college or university;
- Grade point average of at least 3.2 for all upper-division undergraduate work;
- Acceptable scores on the Graduate Record Examination;
- For international students, a satisfactory score on one of the following: TOEFL (Test of English as a Foreign Language: computer=213, paper=550, web=80), IELTS (International English Language Testing System: 6), MELAB (Michigan English Language Assessment Battery: 77), or successful completion of the UF English Language Institute Program;
- Basic knowledge of either Spanish or Portuguese; some Latin American course work.

**Juris Doctor/Master of Arts program:** This joint degree culminates in the Juris Doctor degree awarded by the College of Law and the Master of Arts degree in Latin American studies awarded by the College of Liberal Arts and Sciences. The joint degrees can be completed in four years rather than the five years required if earning each degree separately.

Candidates for the joint program must be admitted to both academic units. See *Requirements for Master's Degrees* for admission criteria for the M.A. program. Contact the College of Law for J.D. requirements. For more information, contact Dr. Richmond Brown, Center for Latin American Studies (rbbrown@latam.ufl.edu).

**Graduate Certificates in Latin American Studies:** Graduate students may earn a Certificate in Latin American Studies along with a degree from the College of Agricultural and Life Sciences; Business Administration; Design, Construction, and Planning; Education; Fine Arts; Journalism and Communications; Law; or Liberal Arts and Sciences.

M.A. thesis or Ph.D. students need at least 12 credits of Latin American course work distributed as follows:

- 3 credits of LAS 6938 ;
- At least 3 credits of Latin American course work in one academic unit outside the major;
- 6 credits of courses with Latin American content within the major (to the extent possible);
- Intermediate proficiency in a Latin American language (language courses at the 3000 level or higher count toward the certificate); and
- a thesis or dissertation on a Latin American topic.

Non-thesis master's degree candidates must have at least 15 credits of Latin American course work distributed as follows:

- 3 credits of LAS 6938 ;
- At least 6 credits of Latin American courses in an academic unit or units outside the major;
- 6 credits of courses with Latin American content within the major (to the extent possible); and
- intermediate proficiency in a Latin American language. For more information, see <http://www.latam.ufl.edu/academic/programs>

**Financial support:** The Center for Latin American Studies provides several graduate assistantships and academic year and summer FLAS fellowships for Portuguese, Haitian Creole, and/or Garifuna. The Center also provides substantial financial support for UF graduate students pursuing research in Latin America, the Caribbean, and Latino Studies.

**Research:** Several research and training programs provide opportunities and financial support for graduate students, especially in the Amazon, the Andes, and the Caribbean.

**Library resources:** The Latin American Collection of the UF libraries holds more than 400,000 volumes of printed works and manuscripts, maps, and microforms and more than 1,000 serial titles dealing with Latin America and the Caribbean. All areas are well-represented but particular strengths are on Brazil and the Caribbean. UF's Caribbean Collection is the largest in the world.

**Other activities:** The Center for Latin American Studies sponsors conferences, colloquia, and cultural events; supports publication of scholarly works; provides educational outreach service; and cooperates with other campus units in overseas research and training activities. The Center also administers summer programs in Brazil and Mexico.

For more information on the Center's programs and activities, contact the Center's Associate Director for Academic Programs and Student Affairs, Dr. Richmond Brown, 319F Grinter Hall, E-mail [rbbrown@latam.ufl.edu](mailto:rbbrown@latam.ufl.edu), Phone (352) 392-0375, ext 807.

## Medical Physics (Engineering)

The Medical Physics certificate is designed for physicists, engineers and qualified scientists, to continue their education through graduate certification in Medical Physics. The required courses of this certificate are designed to help scientists and engineers with a strong background in physics expand their knowledge into the clinically relevant aspects of Medical Radiological Physics. The courses offered through this Certificate Program are designed to supplement fundamental physics knowledge with applications to the utilization of physics principles in clinical



practice. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: J. Crayton Pruitt Family Department of Biomedical Engineering

Curriculum:

(5 UF courses required)

BME 6938 : Special Topics in Biomedical Engineering

ENU 6636 : Medical Radiation Shielding & Protection

BME 6938 : Special Topics in Biomedical Engineering

ENU 5626 : Radiation Biology

ENU 6627 : Therapeutic Radiological Physics

Successful completion of the Certificate also requires the completion of an upper division course in Anatomy and Physiology that must be approved by the Program Director.

Student must earn a grade of "B" or higher in each course for certificate completion.

Contact Information:

Dr. David Hintenlang

352-273-0301

[dhinten@ufl.edu](mailto:dhinten@ufl.edu)

## **Medieval Archeology Certificate (Liberal Arts and Sciences)**

This interdisciplinary program, the only one of its kind in North America, recognizes the importance of the special skills required in the field of Medieval Archeology (analytical skills, basic field techniques, knowledge of medieval history, ability to combine written with archaeological sources), and can serve as a credential for developing career options. Students admitted to the graduate program (MA or PhD) in either History or Anthropology may subsequently request admittance into this certificate program.

To qualify for a certificate, students must have an overall GPA of 3.0 or better in all courses included in the certificate curriculum. The certificate program consists of five courses (with a minimum of 15 credit hours). Of those, at least two courses must be in Anthropology (ANG) and at least two in History (EUH). All students must take either EUH 6126 : Readings in Medieval History or its equivalent, or ANG 5172 : Historical Archeology . In addition, all students must take the Medieval Archeology Field Practicum (as EUH 5934 /4186 for 6 credit hours) or Field Sessions in Archeology (ANG 5824L ), or otherwise petition to substitute field experience on an archaeological site pertaining to the Middle Ages. All students must maintain a minimum grade of B in each course in order for that course to count towards completion of requirements. Beyond the required courses, students may choose from a list of approved courses and/or petition to substitute one-time "topical" courses (such as ANG 6186 , ANG 6930 , EUH 5934 , or EUH 6126 ). Students must file a plan of study for the concentration at least two semesters prior to graduation, in which they should indicate the list of courses taken (or to be taken) to meet the certificate program's requirements. The plan of study must be approved by the program advising committee, which includes five affiliated faculty members, at least one of whom is from Anthropology and another from History (in addition to the program coordinator).

Detailed information on the program is available at <http://www.clas.ufl.edu/medarch/index.html>

Inquiries should be directed to Certificate Program Coordinator Florin Curta, Department of History ([fcurta@ufl.edu](mailto:fcurta@ufl.edu)) or Program Advisor Susan Gillespie, Department of Anthropology ([sgillesp@ufl.edu](mailto:sgillesp@ufl.edu)).

## **Modern European Studies Certificate (Liberal Arts and Sciences)**

The Center for European Studies, a National Resource Center on Europe (funded partly by Title VI of the Higher Education Act), directs and coordinates interdisciplinary instruction, research, and outreach related to Europe. In cooperation with participating academic units throughout the University, the Center offers a Certificate in Modern

European Studies for master's and doctoral students. The curriculum provides a broad foundation for students preparing for teaching or other professional careers requiring knowledge of Europe.

**Graduate fellowships and assistantships:** Students pursuing degrees in participating academic units can compete for graduate assistantships and Title VI Foreign Language and Area Studies fellowships.

**Extracurricular activities:** The Center for European Studies sponsors various conferences, lectures, film series, performances, and art exhibits in conjunction with other campus units. The Center also directs an extensive outreach program addressed to public schools, local community, as well as business groups.

**Library resources:** The Center for European Studies gives direct support for European library acquisitions to meet the instructional and research needs of its faculty and students.

**Graduate certificate program:** The Center for European Studies, cooperating with participating academic units, offers a Certificate in Modern European Studies in conjunction with the master's and doctoral degrees. To obtain the Certificate, students at the master's level need to complete 13 credit hours and students at the doctoral level need to complete 16 credit hours of courses with European content. Both master's and doctoral students are required to complete a 1-unit EUS 6005: Introduction to European Studies course. Given the critical role of languages to the comprehensive study of Europe all certificate recipients are required to complete at least one year of training at the 2000 level or above in at least one European language. However, in accordance with Graduate School regulations no language courses below the 3000 level will be included within the certificate program itself. Those students with a high level of language training, however, may count up to a maximum of two language courses at the 3000 level or higher towards the completion of the Certificate in Modern European Studies. In all cases students must complete at least 9 credit hours of course work outside their home department or unit.

For more information about the various programs and activities of the Center, contact the Director, Center for European Studies, 3324 Turlington Hall, Website <http://www.ces.ufl.edu>.

## **Museum Studies Certificate (Fine Arts)**

The College of the Arts has had a 48-credit, master's degree program in place in Museology/Museum Studies since 1999. This certificate is intended for graduate students from other disciplines who want formal acknowledgement of their work in museology. The classes will take place on campus, while the internship will take place off campus. Contact Dr. Glenn Willumson for further information.

## **Public Health Online Certificate (Public Health and Health Professions)**

A certificate in public health will provide professionals working in health-related fields an opportunity to receive graduate academic training in critical areas in public health. Students will receive training in the five core courses of the University of Florida's MPH program with this certificate. Participants do not have to apply to graduate school to participate, though they may opt to transfer their certificate credits into the UF MPH program upon successful completion.

Courses:

- Environmental Health Concepts in Public Health
- Statistical Methods for Health Sciences I
- Principles of Epidemiology
- Psychological, Behavioral and Social Issues in Public Health
- Introduction to Public Health Administrative Systems

5 courses (15 credit hours) over 3 semesters; max of 3 years to complete program

Delivery: Web--Distance Programs in Public Health and Health Professions

Prerequisites: Bachelor's degree

Contact: Heather Winnie  
tel: (866) 62-UFMPH, (352) 273-6443  
College of Public Health and Health Professions  
Distance Public Health Program  
4100 HPNP Building

More Information is available at the program's website.

## **Quantitative Finance Certificate (Business Administration, Engineering, Liberal Arts and Sciences)**

The interdisciplinary concentration in quantitative finance trains students for academic and research positions in quantitative finance, and risk management. It gives graduates an edge in the job market by providing substantial expertise in key related disciplines: finance, operations research, statistics, mathematics, and software development. It is focused in teaching and research on design, development, and implementing new financial and risk management products, processes, strategies, and systems to meet demands of various institutions, corporations, governments, and households. Emphasis is on an interdisciplinary approach requiring knowledge in finance, economics, mathematics, probability/statistics, operations research, engineering, and computer science.

Four academic units participate in this interdisciplinary concentration: Industrial and Systems Engineering (College of Engineering), Mathematics (College of Liberal Arts and Sciences), Statistics (College of Liberal Arts and Sciences), and Finance, Insurance, and Real Estate (College of Business Administration). To be eligible, a student must be admitted to a Ph.D. program in one of these participating academic units. Students seeking admission to the concentration need strong quantitative skills and a degree in one of the relevant fields such as finance, engineering, statistics, or mathematics. Students with a background in several disciplines are welcome. Application should be submitted to one of the participating academic units.

Each student takes basic courses and meets the home academic unit's Ph.D. requirements. The student also takes approved courses in the other participating academic units to meet the requirements of the concentration.

Dissertation research is conducted in quantitative finance, risk management, and relevant areas involving quantitative finance approaches. The student receives a Ph.D. degree and a Certificate in Quantitative Finance.

Activities of the Ph.D. concentration in quantitative finance are supported by the Risk Management and Financial Engineering Laboratory (RMFE Lab), <http://www.ise.ufl.edu/rmfe>. The RMFE Lab facilitates research and applications in the area of risk management and financial mathematics/engineering, including organizing research meetings, seminars, and conferences. It provides a basis for the collaborative efforts of multidisciplinary teams of UF researchers, governmental institutions, and industrial partners. For details, visit <http://www.ise.ufl.edu/rmfe/qf>.

## **Shelter Medicine Certificate (Veterinary Medicine)**

Students at the University of Florida have the opportunity to earn a Certificate in Shelter Medicine, a credential that documents their intensive study and expertise in this emerging area of veterinary medicine. The Shelter Medicine Certificate Program offers a broad range of training opportunities in this emerging field of specialization. Certificate students will develop strong skills in companion animal group health and sterilization. Students exposed to the sheltering system and the problems of animal homelessness first-hand will graduate with a clear understanding of the urgency of the problem and how they are positioned as veterinary professionals to provide key leadership to benefit shelters. Thus, even those students who do not elect to pursue a career in shelter medicine are likely to be supportive of their colleagues that do or to help in other ways through their own private practices.

The Certificate in Shelter Medicine will expose students to a cross-section of opportunities in the field, including veterinary care of sheltered animals, animal disaster management, disease outbreak intervention, cruelty investigation and forensics, shelter animal behavior and welfare, high-quality high-volume sterilization surgery, and

research in shelter medicine. A Special Projects elective offers the opportunity for mentored in-depth participation in an a shelter-related topic, such as working with a shelter to perform a shelter population management analysis, the creation and implementation of shelter medicine protocols, or directed study in a topic of importance in shelter medicine. The certificate will identify students who have completed an intensive training program in this field, providing a valuable credential for students seeking employment in animal sheltering or the pursuit of residency training.

For further information about the program, please contact:

Rachel Michaud, CAWA  
Shelter Medicine Program Coordinator  
rmichaud@ufl.edu  
(352) 273-8725  
V2-110

or

Jen Atkins  
Shelter Medicine Program Assistant  
jenatkins@ufl.edu  
(352) 294-4499  
V2-110

## **Solar Energy Certificate (Engineering)**

The Solar Energy certificate is designed to prepare for careers related to solar technologies. Areas of emphasis include solar energy characteristics, availability, collection, storage, conversion, use as heat, refrigeration, thermal electric, photovoltaic conversion, solar radiation heat transfer, advanced solar reactors, concentrated solar energy, solar-thermal-chemical conversion processes, and energy conversion. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours (3 courses; 1 required and 2 electives)

Student must earn a grade of "B" or higher in each course for certificate completion

Required Course:

EML 6417 : Solar Energy Utilization

Electives (choose 2 of following)

EML 6934 : Special Topics in Mechanical Engineering

ECH 7938 : Advanced Special Chemical Engineering Topics for Doctoral Candidates

EML 6451 : Energy Conversion

EML 5104 : Classical and Statistical Thermodynamic

Contact Information:

Dr. Pamela Dickrell  
352-392-9672  
pld@ufl.edu

## **Sustainable Architecture Certificate, Concentration (Design, Construction and Planning)**

**The Concentration and Certificate in Sustainable Architecture** is for architecture graduate students (in the M.Arch. or M.S.A.S. program) seeking advanced courses on a wide range of topics related to sustainable

architecture. The concentration in sustainable architecture supports detailed rigorous study in specific areas of expertise. Furthermore, the program requirements recognize the inherent diversity of academic backgrounds and professional goals of the students. Thus, there is flexibility in the selection of a suite of courses, while maintaining exposure to the multidisciplinary subject matter of sustainable architecture. This essential feature of the program allows students to develop individualized yet focused plans of study. Students select from a variety of approved courses offered in the College of Design, Construction, and Planning (the School of Architecture, the School of Building Construction, the Department of Interior Design, the Department of Landscape Architecture, and the Department of Urban and Regional Planning); and in other colleges in the University. Course work may include the following sustainability issues.

- **Architectural design and preventing environmental degradation:** protecting ecosystems, fauna and flora, energy consumption, energy conservation, architectural commissioning, maintenance, water consumption, land use, and materials selection (resource depletion, environmental degradation, and healthy environments)
- **Providing healthy architectural environments:** indoor air environmental quality, nontoxic environments, and sustainable ecosystems and landscapes
- **Responsive and responsible building design and construction:** environmentally responsive architecture, and environmentally responsible architecture
- **Sustainable architectural and environment theory:** the philosophy of sustainable design, ecological theory, sustainability and ethics, deep ecology, and systems theory
- **Enhancing the community environment:** historic preservation, sustainable developments, community and neighborhood design, regional design, and systems theory
- **Mitigating the environmental effects of construction operations:** life cycle operations, design longevity, reusing materials, recycling materials, deconstruction, and reconstruction.

Students enrolled in the Concentration and Certificate Program in Sustainable Architecture must complete at least 12 credits of approved sustainable architecture electives. Students must complete at least 6 credits within the School of Architecture; and at least one approved 3 credit course from outside the School of Architecture. Students also must complete a research project or thesis on a subject pre-approved by the concentration's Governing Board, related to sustainable architecture. For more information, contact the Graduate Program Assistant, School of Architecture, University of Florida, Box 115702, Gainesville FL 32611-5702, Phone (352) 392-0205 ext. 202, E-mail [bhuds@ufl.edu](mailto:bhuds@ufl.edu)

## **Sustainable Design Certificate, Concentration (Design, Construction and Planning)**

**The Interdisciplinary Concentration and Certificate in Sustainable Design (ICSD)** is for master's-level students in the College of Design, Construction, and Planning. This concentration allows students to become proficient in one or more of the following areas: sustainable architecture, sustainable construction, sustainable interior design, sustainable landscape architecture, or sustainable urban planning. Course work deals with the following issues.

- **Preventing environmental degradation:** protecting ecosystems, fauna and flora, energy conservation, energy consumption, architectural commissioning, maintenance, water consumption, land use, site selection, and materials selection (resource depletion, environmental degradation, and healthy environments)
- **Providing healthy environments:** indoor air environmental quality, outdoor environmental quality, nontoxic environments, and sustainable ecosystems and landscapes
- **Responsive and responsible building construction:** construction impacts on sites, environmentally responsive architecture, environmentally responsible architecture (preventing environmental degradation), and designing sustainable building components
- **Mitigating the environmental effects of construction operations:** life cycle operations, design longevity, reusing materials, recycling materials, deconstruction, reconstruction, and historic preservation
- **Enhancing the community environment:** sustainable developments, community and neighborhood design, regional design, and city planning design
- **Environmental theory:** the philosophy of sustainable design, ecological theory, sustainability and ethics, deep ecology, and systems theory.

Students wishing to participate in the ICSD should notify their department or school as early in the graduate program as possible. To participate in the ICSD, a student must be admitted and enrolled in one of the departments participating in the ICSD. Students will complete the concentration for either the master's degree or Master of Science degree, but not for both degrees if awarded from the University of Florida. **Students cannot enroll in two concentration programs at the same time.**

To successfully complete the ICSD, the student must earn 12 credit hours in sustainable design research and course work from a list of recommended courses. To satisfy the interdisciplinary intent of the ICSD, the student must take one of the approved 3 credit courses outside their home department or school, but within the College of Design, Construction, and Planning; and at least one approved 3 credit course from another college of the University. For more information, contact the Dean's Office in the College of Design, Construction, and Planning, University of Florida, Box 115701, Gainesville FL 32611, Telephone (352) 392-4836.

## **Sustainable Development Practice Certificate (Liberal Arts and Sciences)**

The certificate provides training in interdisciplinary knowledge and skills related to sustainable development practice. The 12 credits for Master's students and 15 credits for Ph.D. students include one required social science course plus 3-4 additional courses in the fields of health sciences, natural sciences, and management skills.

### **Requirements**

Students may apply for the Certificate program and the Interdisciplinary Concentration program through the Master's in Sustainable Development Practice (MDP) Graduate Coordinator.

For the Certificate, Master's students are required to earn 12 credit hours and Ph.D. students are required to earn 15 credit hours that include the following courses:

- 3 credit hours of LAS 6943 /AFS 6905 Development Theory and Practice in Africa and Latin America (social science course)
- 3 MDP required courses (9 additional credit hours), or equivalents, one each in natural sciences, health sciences, and management skills (the latter may include up to 3 credits of a supervised practicum in development practice, taken as LAS 6941 Tropical Conservation and Development Practicum)
- At the Ph.D. level, one additional MDP required course, or equivalent.

To fulfill these requirements, students will select from existing MDP courses or appropriate substitutes approved by the MDP Graduate Coordinator. Courses may be counted from the student's major. Students must achieve a GPA of 3.00 or higher in these certificate courses.

For more information, contact Dr. Marianne Schmink at [schmink@latam.ufl.edu](mailto:schmink@latam.ufl.edu).

## **Sustainable Engineering Certificate (Engineering)**

The Sustainable Engineering certificate consists of 3 graduate courses, which can be completed in one year. Courses are structured for students and working professionals with an engineering or science undergraduate background that want to receive graduate level continuing education in Sustainable Engineering. Topics covered include: environmental attributes in process and design, opportunities for pollution prevention and waste minimization in products, life cycle assessments, corporate environmental management, environmental ethics, resources, laws, economics, environmental accounting, and materials selection for sustainability. This certificate is offered on-campus or online (through, UF EDGE [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.  
Department: Environmental Engineering Sciences

Curriculum:

9 credit hours (3 courses)

Student must earn a grade of "B" or higher in each course for certificate completion

ENV 6932 : Special Problems in Environmental Engineering  
EES 6318 : Principles of Industrial Ecology  
CGN 6905 : Special Problems in Civil Engineering

Contact Information:  
Dr. L. Amelia Dempere  
352-846-2200  
ldemp@mse.ufl.edu

### **Translational Health Science Certificate**

**(Agricultural and Life Sciences, Dentistry, Engineering, Fine Arts, Health and Human Performance, Journalism and Communications, Liberal Arts and Sciences, Medicine, Nursing, Pharmacy, Public Health and Health Professions, Veterinary Medicine)**

College of Medicine

The Certificate in Translational Health Science (CTHS) program is designed for individuals who wish to learn more about the key areas of clinical/ translational science, including grant and manuscript writing, biostatistics, ethics, and study design. Individuals who have completed an M.D., Ph.D., DMD/DDS or PharmD program (or equivalent) are eligible to apply.

Required Courses:

GMS 7093 Introduction to Clinical and Translational Research (2 credits)  
GMS 6861 Applied Biostatistics I (3 credits)  
GMS 6862 Applied Biostatistics II (3 credits)  
GMS 6903 Manuscript and Abstract Writing for Clinician/Scientists (2 credits)  
GMS 6931 Ethical and Policy Issues in Clinical Research (2 credits)  
GMS 6190 APPCI Seminar (1 credit)  
PET 5936 or PHC 6937 Grant Writing (3 credits/2 credits respectively)

Certificate students are also highly encouraged to take PHC 6001: Principles of Epidemiology in Public Health (3 credits)

For more information about the program: <http://www.ctsi.ufl.edu/education/programs/junior-faculty/appci-certificate-program/>

### **Tropical Agriculture Certificate, Minor (Agricultural and Life Sciences)**

The Center for Tropical Agriculture, in the Institute of Food and Agricultural Sciences, seeks to stimulate interest in research and curriculum related to the tropical environment and its development. Website: <http://cta.ufl.edu>.

**Research:** International agricultural development assistance contracts frequently have research components. The Center helps coordinate this research.

**Minor in tropical agriculture:** An interdisciplinary minor in tropical agriculture is available for both master's and doctoral students majoring in agriculture, forestry, and other fields where knowledge of the tropics is relevant. The minor may include courses treating specific aspects of the tropics such as natural resource management (e.g., soils, water, biodiversity), climate, agricultural production, and the languages and cultures of those who live in tropical countries.

Requirements for the minor at the master's level include a minimum of 7 letter-graded credit hours. Six letter-graded credit hours chosen from the list of approved courses with the guidance of the supervisory committee. Selected courses must be from outside the student's major and may not include courses from other academic units which qualify for graduate credit within the home department. One letter-graded credit hour must be a "hands-on"

experience in the student's tropical agriculture selected focus. This experience may take the form of a study abroad, internship, field trip, or special project and must have a time equivalent at least equivalent to a 1-credit graded course.

Requirements for the minor at the Ph.D. level include a minimum of 12 letter-graded credits. Selected courses must be from outside the student's major and may not include courses from academic units which qualify for graduate credit within the home department. One letter-graded credit hour must be a "hands-on" experience in the student's tropical agriculture selected focus. This experience may take the form of a study abroad, internship, field trip or special project that must have a time equivalent to a 1 credit letter-graded course. See the list of suggested courses that can be used to meet this requirement. An intent of the minor at the Ph.D. level is to insure each student has an appreciation of the social context within which tropical agriculture is often practiced. To that end, at the discretion of the CTA faculty member, if the student does not have a background that addresses the social context, 3 letter-graded credits may be selected from the social science section of the approved list.

**Certificate in Tropical Agriculture (CTA):** The certificate emphasizes breadth in topics relevant to tropical agriculture for graduate students (available through the College of Agricultural and Life Sciences). The CTA prepares students for work requiring knowledge of biological and social aspects of tropical agriculture. Students entering the program receive guidance from members of the CTA Steering Committee regarding course work appropriate for careers in international agricultural development.

The CTA requires at least 12 credits. The "typical" certificate program has 12 to 24 credits. These credits may, with approval from supervisory committees, also count toward the M.S. or Ph.D. While foreign language abilities and work experience in a foreign country are strongly encouraged, they are not requisites for the CTA.

For information or application brochure, contact Dr. Richard E. Litz, Director, Center for Tropical Agriculture, University of Florida, c/o Tropical Research and Education Center, 18905 SW 280th Street, Homestead FL 33031, e-mail [relitz@ufl.edu](mailto:relitz@ufl.edu) or Dr. Nicholas B. Comerford, Soil and Water Science Department, P.O. Box 110290, University of Florida, Gainesville, FL 32611, E-mail [nbc@ufl.edu](mailto:nbc@ufl.edu).

**Other activities:** The Center seeks broad dissemination of knowledge about tropical agriculture by sponsoring conferences, short courses, and seminars featuring leading authorities on the tropics; publishing books, monographs, and proceedings; and by acquiring materials for the library and the data bank.

### **Tropical Conservation and Development Certificate, Concentration (Agricultural and Life Sciences, Design, Construction and Planning, Liberal Arts and Sciences, Law)**

The Tropical Conservation and Development Program (TCD), in the Center for Latin American Studies, offers an interdisciplinary graduate certificate and graduate concentration focused on integrative approaches to conservation and development in Latin America and other tropical regions. Both the certificate and concentration are open to students who are interested in acquiring interdisciplinary knowledge and technical skills to pursue a career in conservation and development research and practice. These students must be enrolled in master's or Ph.D. programs in TCD's affiliate academic units at the University of Florida

Course work for the certificate and the concentration includes social science theory, principles of tropical ecology, patterns and trends of tropical resource use and conservation, and research methods. TCD core courses also allow students to gain essential practical skills. Emphasis is on communication and presentation techniques, grant writing, proposal writing, and fundraising; facilitation and conflict management; participatory methods for research and project implementation; and project design, analysis, and evaluation. Summer research, practitioner experiences, and field-based training programs provide learning opportunities outside the classroom.

On completing the certificate or concentration, students should have an in-depth understanding of the relationships among biological conservation, resource management, and the livelihood needs of rural communities; and the appropriate professional skills for a career in research, field practice, or both.



TCD's affiliate academic units are Agricultural Education and Communication, Agronomy, Anthropology, Comparative Law, Botany, Food and Resource Economics, Forest Resources and Conservation, Geography, Geological Sciences, Latin American Studies, Natural Resources and Environment, Political Science, Religion, Sociology, Soil and Water Science, Urban and Regional Planning, Wildlife Ecology and Conservation, Women's Studies, and Zoology.

Master's students can earn a certificate in TCD by completing 12 credits of approved course work: 2 interdisciplinary core courses and 1 course each in tropical ecology and social science. Ph.D. students can earn a certificate by completing 15 credits of approved course work (3 interdisciplinary core courses and 1 course each in tropical ecology and social science). Students from natural science academic units must take the social science credits outside their major. Otherwise, courses from the student's major can count toward program requirements. Substitutions need prior approval from the TCD faculty adviser.

To earn a concentration in TCD, students must complete the course requirements for the certificate (as explained above) and they must focus on tropical conservation and development in their thesis, dissertation, or final project. One member of the student's supervisory committee must be a TCD affiliate faculty member. This person is responsible for judging whether the student's thesis focuses on tropical conservation and/or development. For the faculty member to make this judgment, the student must articulate in writing how the research fits in the broader context of biodiversity conservation and/or rural development in the tropics. This person cannot count as the external member of the committee.

For more information on the TCD certificate and concentration program, and for a list of approved courses, visit the TCD website ([www.tcd.ufl.edu](http://www.tcd.ufl.edu)), or contact Bette Loiselle, TCD Director, 347 Grinter Hall, 352-273-4706, e-mail [Bloiselle@latam.ufl.edu](mailto:Bloiselle@latam.ufl.edu).

### **Veterinary Forensic Sciences Certificate (Veterinary Medicine)**

The University of Florida's online graduate certificate program in Veterinary Forensic Sciences is comprised of five 3-credit courses and is provided by the University of Florida, College of Veterinary Medicine in partnership with the American Society for the Prevention of Cruelty to Animals (ASPCA). The program is aimed at professionals working in the forensic medicine and veterinary science fields. This includes, but is not limited to

- Practicing veterinarians
- Veterinary technicians
- Individuals involved in shelter medicine operations
- Animal control officers
- Law enforcement officials
- Forensic investigators

On completion of the 15-credit certificate program, students will receive a University of Florida Certificate in Veterinary Forensics. This certificate program is open to appropriately qualified local, national, and international students. The following courses are available through this program (see website for scheduling information):

- VME 6052 : Animal Crime Scene Processing
- VME 6054 : Scientific and Legal Principles of Forensic Evidence
- VME 6051 : Cruelty to Animals and Interpersonal Violence
- VME 6575 : Veterinary Forensic Medicine
- ENY 6706 : Forensic Entomology

For more information about the specifics of this program, [click here](#).

### **Web Design and Online Communication Certificate (Journalism and Communications)**

Students may apply to complete a graduate certificate in Web Design and Online Communication. The certificate program consists of 4 classes: Digital Imagery in Web Design, Digital Media Layout and Design, Web Design

Principles, and Corporate and Brand Identity on the Web. Complete applications consist of official transcripts, a resume, and a personal statement (brief description of how the program will help you and your suitability for the program). GRE scores are not required for the certificate. For more information and instructions on how to apply to the certificate program, click [HERE](#).

### **Wind Turbines Graduate Certificate (Engineering)**

The Wind Turbines certificate is designed to prepare for careers related to wind turbine technologies. Areas of emphasis include energy conversion, unusual energy environments, thermionic and thermoelectrical conversion, airfoil design, stress analysis, performance metrics, wind turbine airfoil design and analysis, structural composites for aerodynamic structures, fatigue life, and structural design. This certificate is offered on-campus or online (through UF EDGE, [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu)) for distance students worldwide to participate.

Department: Mechanical & Aerospace Engineering

Curriculum:

9 credit hours

Student must earn a grade of "B" or higher in each course for certificate completion

Choose 3 of the following:

EML 6451 : Energy Conversion

EAS 6939 : Special Topics in Aerospace Engineering

EAS 6242 : Advanced Structural Composites

EML 6934 : Special Topics in Mechanical Engineering

EML 5104 : Classical and Statistical Thermodynamics

Contact Information:

Dr. Pamela Dickrell

352-392-9672

[pld@ufl.edu](mailto:pld@ufl.edu)

### **Women's and Gender Studies Certificate, Concentration, Master's degree (Agricultural and Life Sciences, Education, Liberal Arts and Sciences, Journalism and Communications, Medicine, Nursing)**

Two certificates, one master's degree (thesis or non-thesis option), and a doctoral concentration are offered in women's and gender studies. Participating graduate faculty are from several academic units, campus-wide, including Agricultural and Life Sciences, Anthropology, Counselor Education, English, German and Slavic Studies, History, Journalism and Communications, Latin American Studies, Linguistics, Medicine, Nursing, Philosophy, Psychology, Religion, Romance Languages and Literatures, Sociology, and Teaching and Learning.

The two graduate certificates in women's studies for master's and doctoral students are offered in conjunction with degree programs in other academic units. The Graduate Certificate in Women's Studies and the Graduate Certificate in Gender and Development require specific sets of course work to thoroughly ground students in the discipline. The Graduate Certificate in Women's Studies is a general introduction to the field, and the Graduate Certificate in Gender and Development allows students to focus on issues related to gender, economic development, and globalization.

The doctoral interdisciplinary concentrations in women's and gender studies give graduate students a thorough grounding in the new scholarship produced by the intersection of women's studies and other academic fields. The concentration facilitates analysis and assessment of theories about the role of gender in cultural systems and its intersections with other categories of differences, such as race, ethnicity, religion, class, sexuality, physical and mental ability, age, and economic and civil status. Emphasis is on participating in women's and gender studies

research and on providing an intellectual environment for cross-fertilization among disciplines. Women's and gender studies critically explores the role and status of women and men, past and present.

Participating academic units award Ph.D. degrees with an interdisciplinary concentration in women's and gender studies. Study plans are designed by each student's supervisory committee, whose chair is affiliated with women's and gender studies.

Admission requirements are those of the student's home academic unit and college. After admission to the degree-granting academic unit, the application is sent to the Graduate Coordinator of Women's and Gender Studies who chairs an admissions committee.

For more information on the master's degree, see the Programs Section of this catalog; or contact the Director, Center for Women's Studies and Gender Research, 3324 Turlington Hall.

## **Academic Assessment Plans**

Visit <http://assessment.aa.ufl.edu/graduate-academic-assessment-plans> for the Academic Assessment Plans for each graduate degree program.

## **Publication Policy**

The Graduate Catalog is published annually by the University of Florida and has been adopted as a rule of the University pursuant to the provision of Chapter 120 of the Florida Statutes. Published editions of this official record correspond to an academic year and will remain in effect as published from the Fall Term through the following Summer C Term. The Graduate Catalog provides official university rules, policies and regulations; it establishes minimum eligibility requirements for admission and reflects degree requirements; it provides approved calendar and curricular information; and it contains general information about the University community, the University, and its services and facilities.

## **Updates to the Graduate Catalog**

Changes will be made to this academic record to correct errors or omissions. The University is not responsible for information obtained through Internet links from this catalog to other websites. Every effort has been made to ensure the accuracy of information. However, all courses, course descriptions, degree requirements, and fees are subject to change. Updates to the material listed within the Graduate Catalog should be sent to the editors, via an e-mail to [gradcatalog@aa.ufl.edu](mailto:gradcatalog@aa.ufl.edu); every effort will be made to ensure the accuracy of the material listed herein.

*The information in this catalog is current as of June 2015. Please contact individual programs for any additional information or changes.*

## **Additional Interdisciplinary Offerings and Centers**

Biological Sciences  
Clinical and Translational Science  
Electronic Delivery of Graduate Engineering (EDGE)  
Engineering Research  
Florida Agricultural Experiment Station  
Health Science Center  
Quantum Theory Project  
Toxicology

Tropical Agriculture  
Tropical Conservation and Development  
Vision Sciences

## **Biological Sciences and the Institute of Food and Agricultural Sciences**

**The Archie Carr Center for Sea Turtle Research** conducts research on all aspects of the biology of sea turtles. Researchers at the Center for Sea Turtle Research, collaborating with students and faculty of various academic units, take a multidisciplinary approach to address the complex problems of sea turtle biology and conservation. Scientists from the Center have investigated questions of sea turtle biology around the world, from the molecular level to the ecosystem level, from studies of population structure based on mitochondrial DNA to the effects of ocean circulation patterns on the movements and distribution of sea turtles. Long-term field studies of the Center are conducted mainly at two research stations in the Bahamas and the Azores. For more information, contact the Director, Archie Carr Center for Sea Turtle Research, 223 Bartram Hall, Phone (352) 392-1126, Website <http://accstr.ufl.edu>.

**The Whitney Laboratory** for Marine Bioscience is a UF research center for biomedical research and biotechnology. Founded in 1974, the Whitney Lab is dedicated to using marine model animals for studying fundamental problems in biology and applying that knowledge to issues of human health, natural resources, and the environment. The academic staff of the Whitney Laboratory consists of 10 tenure-track faculty members, together with over 50 associates, students, and visiting scientists. The Laboratory is led by Director Dr. Mark Q. Martindale.

Fields of research conducted at the Whitney Laboratory include biomechanics/neuroethology, chemosensory and visual physiology, neurogenomics and comparative marine genomics, synaptogenesis and synaptic physiology, regenerative biology, and the evolution of development. This research uses the techniques of modern cell and molecular biology, for which the Laboratory is particularly well equipped and recognized. The Laboratory provides research support to units on campus and collaborates with several national studies focused on marine genomics.

Research at Whitney Laboratory attracts graduate students, postdocs, and scientists from all over the United States and abroad. Students enroll in the graduate programs of academic units on campus and complete their course work before moving to the Whitney Laboratory, where they conduct their dissertation research under the supervision of resident faculty. An NSF undergraduate research training program at the Whitney Laboratory is also available for 11-week periods in the summer. Whitney also has an active K-12 STEM outreach program, and a public lecture series (Evenings at Whitney) offering community educational opportunities for graduate students.

For more information, contact the Director, Mark Q. Martindale, PhD, Whitney Laboratory for Marine Bioscience, 9505 Ocean Shore Blvd, St. Augustine, FL 32080-8610, Phone (904) 461-4000; Fax (904) 461-4052; Website: [www.whitney.ufl.edu](http://www.whitney.ufl.edu)

**The UF Marine Laboratory at Seahorse Key** Seahorse Key Marine Laboratory is a field station providing (a) support for research by students, faculty, and visiting scientists; (b) an outstanding teaching program in marine and coastal related subjects; and (c) public education outreach programs related to marine, estuarine, and coastal resources of Florida. Seahorse Key is 57 miles west of Gainesville on the Gulf Coast, 3 miles offshore and opposite Cedar Key. Facilities include a 42 foot research vessel, several smaller outboard-powered boats for shallow water and inshore work, a 20 x 40 foot research and teaching building, and a historic residence building, with 2 kitchens, 2 bathrooms, dining area, and dormitory accommodations for 26 persons.

## **Clinical and Translational Science**

The Clinical & Translational Science (CTS) predoctoral training program of the UF CTSI provides clinical and translational research training for pre-doctoral students performing research in health-related fields at UF using a team science approach. This program is part of the fully integrated approach of the UF CTSI to advance education and career development by early identification, recruitment, and training of a critical mass of multidisciplinary, clinical and translational investigators working to improve human health. The program is intended to increase motivation of graduate students for selection into health-relevant multidisciplinary clinical and translational research careers among the participating students. The CTS predoctoral program is aligned with the focus of the NIH on translational research to bridge the gap between basic science and improved human health, and is supported in part by the UF Clinical & Translational Science Award (CTSA). Trainees will develop skill sets to lead and participate effectively in team oriented translational science. Participation in the program will give trainees an advantage in preparing for successful careers in a variety of settings, including academia, industry, biotech, and government. The UF CTSI exists to enhance the ability of the University of Florida to develop new therapies, test those therapies in real-world settings, promote therapies found to be of value, and continuously evaluate the effectiveness of therapies. In this context, a "therapy" can be any approach to bettering human health--from lifestyle changes to genetic interventions, from drug discovery to public health.

Find out more here:

<https://www.ctsi.ufl.edu/> or for additional information about the UF CTSI, please call 352-273-8700 or email [info@ctsi.ufl.edu](mailto:info@ctsi.ufl.edu).

## **College of Engineering Research**

The College of Engineering performs research that benefits the state's industries, health, welfare, and public services. The College also works to enhance our nation's global competitive posture by developing new materials, devices, and processes. There are significant opportunities for undergraduate and graduate engineering students to participate in hands-on, cutting-edge research.

The college addresses a wide variety of state and national research issues through the college's academic departments and engineering research centers. It takes an interdisciplinary approach to research by involving talents from diverse areas of the College and the University. Particle science and technology, nanoscience and technology, materials, intelligent machines, transportation, biomedical engineering, computer technologies and systems, communications, information systems, energy systems, robotics, construction and manufacturing technologies, computer-aided design, process systems, a broad spectrum of research related to the "public sector" (agricultural, civil, coastal, and environmental) represent some of the broad-based research programs.

## **Florida Agricultural Experiment Station**

The Florida Agricultural Experiment Station conducts statewide research programs in agriculture, natural resources, and human systems. Research deals with agricultural production, processing, marketing, human nutrition, veterinary medicine, renewable natural resources, and environmental issues. This research program includes activities by faculty on the Gainesville campus and on the campuses of Research and Education Centers throughout the state. Close cooperation with numerous Florida agricultural and natural resource related agencies and organizations is maintained to provide research support for 300 agricultural commodities and Florida's rich natural resources.

The land-grant philosophy of research, extension, and teaching is strongly supported and administered by the Senior Vice President for Agriculture and Natural Resources. The Institute of Food and Agricultural Sciences, under his leadership, is comprised of the Florida Agricultural Experiment Station, the Florida Cooperative Extension Service, the College of Agricultural and Life Sciences, and elements of the College of Veterinary Medicine, each functioning under a dean. Most UF/IFAS faculty have joint appointments involving teaching, research, and/or extension.

Research and graduate programs are conducted in 14 departments and two schools: Agricultural and Biological Engineering; Agricultural Education and Communication; Agronomy; Animal Sciences; Entomology and Nematology; Environmental Horticulture; Food and Resource Economics; Food Science and Human Nutrition; Family, Youth and Community Sciences; Horticultural Sciences; Microbiology and Cell Science; Plant Pathology; Soil and Water

Science; Wildlife Ecology and Conservation; the School of Forest Resources and Conservation; and the School of Natural Resources and Environment. Additional support units vital to research programs include UF/IFAS Communications, the Office of Facilities Planning and Operations, the Office of Budget and Finance, UF/IFAS Global, the Office of Human Resources, and the Office of Governmental Affairs.

Outside of Gainesville, UF/IFAS faculty and graduate students are located at 12 Research and Education Centers throughout Florida, from Homestead in the extreme south, to Jay in the extreme west. Extension personnel are located in all of Florida's 67 counties.

Additional research is conducted through the Center for Agricultural and Natural Resource Law; the Center for Aquatic and Invasive Plants; the Center for Food Distribution and Retailing; the Center for Nutritional Sciences; the Center for Remote Sensing; the Center for Sustainable and Organic Food Systems; the Center for Tropical Agriculture; the Florida Center for Renewable Chemicals and Fuels; the Center for Landscape Conservation and Ecology, the Center for Public Issues Education in Agriculture and Natural Resources, the Ordway-Swisher Biological Station; the Plant Science Research and Education Unit; the Florida Sea Grant Program; the Florida Cooperative Fish and Wildlife Research Unit; the Fisheries and Aquatic Sciences and Marine Sciences Programs; the Tropical Aquaculture Laboratory, the Emerging Pathogens Institute; the UF Genetics Institute; the Florida Climate Institute; Animal Molecular and Cellular Biology Program; Center for Smell and Taste; Florida Partnership for Water, Agriculture and Community Sustainability; Plant Innovation Center; Plant Molecular and Cellular Biology Program and the UF Water Institute.

**Ordway-Swisher Biological Station.** The Ordway-Swisher Biological Station (OSBS) (<http://ordway-swisher.ufl.edu>) is a biological field station established for the long-term study and conservation of unique ecosystems through research, teaching, and management. It is managed for the University of Florida by the UF/IFAS Office of the Dean for Research. The 9500-acre facility is located in Putnam County, Florida (roughly 26 miles from Gainesville) and is not open to the general public. The Station contains a mosaic of wetlands and uplands that include sandhills, xeric hammock, upland mixed forest, swamps, marshes, clastic upland lakes, sandhill upland lakes, and marsh lakes. A variety of fauna inhabit OSBS, including a number of state and federally listed species. Wildfires and prescribed burning have had a strong influence on the landscape. The station is a member of the Organization of Biological Field Stations (OBFS) and serves as the southeastern core site for the N

## Health Science Center Interdisciplinary Research

The HSC is a world leader in interdisciplinary research. The Clinical and Translational Science Institute, McKnight Brain Institute, UF Health Cancer Center, UF Genetics Institute, UF Institute on Aging and the UF Emerging Pathogens Institute are designed to create synergies and collaborative research opportunities that focus on the translational nature of biomedical research, following the continuum from fundamental research to clinical research to patient care. In the summer of 2009, UF became the only university in Florida to receive the National Institutes of Health's Clinical and Translational Science Award. This \$26 million five-year grant is geared toward accelerating scientific discovery, enhancing medical care, producing highly skilled scientists and physicians and fostering partnerships with industry; it supports multidisciplinary research in a wide range of fields such as biomedical informatics, gene therapy, aging, nanotechnology and infectious diseases.

For more information, please visit [ufhealth.org/health-science-center/overview](http://ufhealth.org/health-science-center/overview).

## Quantum Theory Project (QTP)

QTP is an interdisciplinary group of 12 faculty plus graduate students, postdoctoral associates, and staff in the Departments of Physics and Chemistry in the College of Engineering and in the Department of Materials Science and Engineering in the College of Engineering. The computationally oriented theoretical research investigates electronic structure, conformation, properties, and dynamics of molecules and materials. The work covers large areas of modern chemistry, condensed matter and materials physics and engineering, and molecular biology. Essentially all the effort is supported by substantial extramural funding, both individual and collaborative. Since 1960, the Institute

has organized a major international meeting, the annual Sanibel Symposium. Visit <http://www.qtp.ufl.edu/sanibel> for details on the next symposium.

Graduate students in chemistry and in physics are eligible for this specialization and follow a special curriculum. For more information, contact the Director, Quantum Theory Project, email [director@qtp.ufl.edu](mailto:director@qtp.ufl.edu), P.O. Box 118435 (New Physics Building); or visit the QTP website <http://www.qtp.ufl.edu>.

## Toxicology

**The Center for Environmental and Human Toxicology** serves as the focal point for activities concerning the effects of chemicals on human and animal health. The Center's affiliated faculty includes 20 to 30 scientists and clinicians interested in elucidating the mechanisms of chemical-induced toxicity, and is drawn from the Colleges of Medicine, Veterinary Medicine, Pharmacy, Public Health and Health Professions, Engineering, and the Institute of Food and Agricultural Sciences. The broadly based, interdisciplinary expertise provided by this faculty is also used to address complex issues related to protecting public health and the environment.

Students who wish to receive graduate training in interdisciplinary toxicology leading to a Ph.D. enroll through one of the participating graduate programs. The number of graduate programs involved in interdisciplinary toxicology, and the variety of perspectives provided by their disciplines, allows a great deal of flexibility in providing a plan of graduate study to meet an individual student's interests and goals in toxicology. Student course work and dissertation research are guided by the Center's researchers and affiliated faculty who are also Graduate Faculty members in the student's major academic unit. Dissertation research may be conducted either in the student's academic unit, or at the Toxicology Laboratory facilities, at the Center. For more information, please write to the Director, Center for Environmental and Human Toxicology, P.O. Box 110885, University of Florida, Gainesville, FL 32611; or visit their website (<http://toxicology.ufl.edu>).

## Tropical Agriculture

The Center for Tropical Agriculture, in the Institute of Food and Agricultural Sciences, seeks to stimulate interest in research and curriculum related to the tropical environment and its development. Website: <http://cta.ufl.edu>.

**Research:** International agricultural development assistance contracts frequently have research components. The Center helps coordinate this research.

**Minor in tropical agriculture:** An interdisciplinary minor in tropical agriculture is available for both master's and doctoral students majoring in agriculture, forestry, and other fields where knowledge of the tropics is relevant. The minor may include courses treating specific aspects of the tropics such as natural resource management (e.g., soils, water, biodiversity), climate, agricultural production, and the languages and cultures of those who live in tropical countries.

Requirements for the minor at the master's level include a minimum of 7 letter-graded credit hours. Six letter-graded credit hours are chosen from the list of approved courses with the guidance of the supervisory committee. Selected courses must be from outside the student's major and may not include courses from other academic units which qualify for graduate credit within the home department. One letter-graded credit hour must be a "hands-on" experience in the student's selected focus in tropical agriculture. This experience may take the form of a study abroad, internship, field trip, or special project and must have a time equivalent at least equivalent to a 1-credit graded course.

Requirements for the minor at the Ph.D. level include a minimum of 12 letter-graded credits. Selected courses must be from outside the student's major and may not include courses from academic units which qualify for graduate credit within the home department. One letter-graded credit hour must be a "hands-on" experience in the student's selected focus in tropical agriculture. This experience may take the form of a study abroad, internship, field trip or special project that must have a time equivalent to a 1 credit letter-graded course. An intent of the minor at the Ph.D.

level is to insure each student has an appreciation of the social context within which tropical agriculture is often practiced. To that end, at the discretion of the CTA faculty member on the supervisory committee, if the student does not have a background that addresses the social context, 3 letter-graded credits may be selected from the social science section of the approved list.

**Other activities:** The Center seeks broad dissemination of knowledge about tropical agriculture by sponsoring conferences, short courses, and seminars featuring leading authorities on the tropics; publishing books, monographs, and proceedings; and by acquiring materials for the library and the data bank.

## Tropical Conservation and Development

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For more information on the TCD certificate and concentration program, and for a list of approved courses, visit the TCD website (<http://www.tcd.ufl.edu>), or contact Bette Loiselle, TCD Director, 347 Grinter Hall, (352) 273-4706, E-mail [BLoiselle@latam.ufl.edu](mailto:BLoiselle@latam.ufl.edu), or Patricia Sampaio, TCD Program Coordinator, 343 Grinter Hall, (352) 273-4734, Email [PSampaio@latam.ufl.edu](mailto:PSampaio@latam.ufl.edu).

## UF Electronic Delivery of Graduate Engineering (UF EDGE)

UF EDGE offers online graduate engineering master's degrees, courses and certificates from the College of Engineering. The UF EDGE program allows engineers to obtain their master's degrees from any location without the need to travel to the UF campus. All course lectures and materials are delivered online and distance students submit homework via e-mail and have exams proctored at their places of work to be faxed in for grading. A master's degree is comprised of 10 courses totaling 30 credit hours. Students can take as many courses per semester as their work and life schedules permit, thus setting their own pace toward their degrees. Employers may provide financial support for these graduate courses. Students wishing to participate in the UF EDGE program should contact the UF EDGE office at (352) 392-9670 or visit the website at [www.ufedge.ufl.edu](http://www.ufedge.ufl.edu) for more detailed information. Students pursuing a degree through UF EDGE and the College of Engineering are governed by the College's requirements, the academic unit to which they have been admitted, and the Graduate School.

An interdisciplinary specialization in vision sciences is available through the College of Medicine. The Department of Ophthalmology serves as the administrative and logistical center. However, most of the faculty are from the IDP advanced concentrations. Current interests include retinal gene therapy, gene expression in the mammalian retina and lens, especially during fetal development, biochemistry of vision in vertebrates and invertebrates, biochemistry and neurobiology of wound healing and neural tissue degeneration, and molecular and cell biology of animal model retinal degeneration.

For more information, contact the Program Director, Dr. W. Clay Smith, P.O. Box 100284, College of Medicine, Gainesville FL 32610-0284, Phone (352) 273-8794, Email [wcsmith@ufl.edu](mailto:wcsmith@ufl.edu).

**Programs** are the students' primary fields of study; a program is the student's **major**. The degree and program name appear on the student's transcript. **Concentrations** are subprograms within a major. The concentration, degree, and program may appear on the student transcript. **Specializations** are informal designations, used by academic units, to indicate areas of research or scholarly strength, and have no formal significance. **Tracks** and **emphases** are similar unofficial terms. No tracks, emphases, or specializations appear in official lists in this catalog or on the student transcript.



## **Graduate Certificates**

For the list of available Graduate Certificates, please visit the Graduate School's website:  
<http://graduateschool.ufl.edu/academics/graduate-certificates-list>

For the Graduate Certificate Policy, please visit the Graduate School's website:  
<http://graduateschool.ufl.edu/files/certificate-policy.pdf>

For information about the policies governing certificates, please visit the Office of the Provost's website:  
<http://www.aa.ufl.edu/certificates>

## **Graduate School Academic Calendar 2015-2016**

### **Fall 2015 Calendar**

#### **August 2015**

**August 7, Friday, 5:00 p.m.**

Deadline for requesting transfer of credit (for fall degree candidates)

**August 21, Friday, 5:00 p.m.**

Registration deadline

Last day for thesis and dissertation students to clear prior to the fall semester with the Graduate School Editorial Office. See <http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf> for more information.

**August 24, Monday**

Classes start.

Drop/add starts.

Late registration starts (late fee assessed after 5:00 p.m. on 8/21/15).

**August 28, Friday, 11:59 p.m.**

Drop/add ends.

Late Registration ends (late fee assessed).

Deadline to withdraw with no fee liability

#### **September 2015**

**September 4, Friday, 3:30 p.m.**

Fee payment deadline

Residency reclassification deadline for receiving the request and all documents

### **September 7, Monday, Labor Day**

No classes

### **September 11, Friday, 5:00 p.m.**

Deadline for Graduate Student Records to review/approve S/U Option Application for courses with this grading scheme

### **September 18, Friday, 5:00 p.m.**

Deadline to withdraw with 25% refund (W symbol assigned)  
<http://www.registrar.ufl.edu/pdf/withdrawal.pdf>

Degree application deadline for degree award this term  
[www.graduateschool.ufl.edu/files/graduation-checklist.pdf](http://www.graduateschool.ufl.edu/files/graduation-checklist.pdf)  
<http://www.isis.ufl.edu/>

## **October 2015**

### **October 2, Friday, 5:00 p.m.**

Last day to submit Transmittal Letter and dissertation for initial review by Graduate School Editorial Office  
[www.graduateschool.ufl.edu/files/checklist-dissertation.pdf](http://www.graduateschool.ufl.edu/files/checklist-dissertation.pdf)

### **October 9, Friday**

Midpoint of term

Deadline to finalize all data (except Final Exam) in GIMS for all degree applicants

Late degree application deadline for degree award this term  
<http://www.registrar.ufl.edu/currents/latedegreeinfo.html>

## **November 2015**

### **November 3, Tuesday, 5:00 p.m.**

Last day to submit successfully defended thesis for review by Graduate School Editorial Office  
[graduateschool.ufl.edu/files/checklist-thesis.pdf](http://graduateschool.ufl.edu/files/checklist-thesis.pdf)

Deadline for final exam forms to be posted to GIMS for thesis students

### **November 6-7, Friday-Saturday, Homecoming**

No classes

### **November 11, Wednesday, Veterans Day**

No classes

**November 23, Monday, 5:00 p.m.**

Last day to withdraw (all courses) without failing grades via ISIS  
<http://www.registrar.ufl.edu/currents/withdraw.html>

**November 25-28, Wednesday-Saturday, Thanksgiving**

No classes

**December 2015**

**December 2, Wednesday, 5:00 p.m.**

Deadline for final exam forms to be posted to GIMS for dissertation, non-thesis, project, and project-in-lieu of thesis students

Deadline for ETD Signature Pages to be posted to GIMS for thesis and dissertation students

Deadline for thesis and dissertation students to submit final pdf document for review by the Graduate School Editorial Office in order to qualify for degree award this term

No exceptions can be granted.

<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

[www.graduateschool.ufl.edu/graduation/checklists](http://www.graduateschool.ufl.edu/graduation/checklists)

**December 9, Wednesday**

Classes end.

Deadline for requesting transfer of credit (for spring degree candidates)

**December 9, Wednesday, 5:00 p.m.**

Deadline for thesis and dissertation students to receive confirmation of Final Clearance status with the Graduate School Editorial Office to remain eligible for a degree award this term

No exceptions can be granted.

<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

**December 10-11, Thursday-Friday**

Examination reading days (no classes)

**December 12, Saturday, and 14-18, Monday-Friday**

Final examinations

**December 18, Friday, 5:00 p.m.**

Last day to drop a course and receive W on transcript via College petition to the Registrar, Room 222 Criser

Last day to withdraw (all courses) without failing grades via College petition to the Registrar, Room 222 Criser

### **December 18-19, Friday-Saturday**

Commencement Ceremonies+

### **December 21, Monday, 12:00 noon**

Final term grades are due.

### **December 22, Tuesday**

Degree certification

### **December 23, Wednesday**

Unofficial transcripts with grades and remarks available via ISIS

**NOTES: All dates and deadlines are subject to change and will be updated accordingly.  
Prospective students should contact the appropriate academic unit for admission application deadlines.**

**Projected dates. Notification of dates and times of ceremonies for colleges and schools will be sent to degree candidates as soon as plans are finalized. Please do not anticipate exact dates and times until notification is received.**

## **Spring 2016 Calendar**

### **December 2015**

#### **December 9, Wednesday, 5:00 p.m.**

Deadline for requesting transfer of credit (for spring degree candidates)

### **January 2016**

#### **January 4, Monday, 5:00 p.m.**

Registration deadline

Last day for thesis and dissertation students to clear prior to the spring semester with the Graduate School Editorial Office---visit <http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf> for more information.

#### **January 5, Tuesday**

Classes start.

Drop/add starts.

Late registration starts (late fee assessed, after 5:00 p.m. on 1/4/16).

**January 11, Monday, 11:59 p.m.**

Drop/add ends

Late Registration ends (late fee assessed).

Deadline to withdraw with no fee liability

**January 15, Friday, 3:30 p.m.**

Fee payment deadline

Residency reclassification deadline for receiving requests and all documents

**January 18, Monday, Martin Luther King Jr. Day**

No classes

**January 22, Friday, 5:00 p.m.**

Deadline for Graduate Student Records to review/approve S/U Option Application for courses with this grading scheme

**January 29, Friday, 5:00 p.m.**

Degree application deadline for degree award this term  
[graduateschool.ufl.edu/files/graduation-checklist.pdf](http://graduateschool.ufl.edu/files/graduation-checklist.pdf)  
<http://www.isis.ufl.edu/>

Deadline to withdraw with 25% refund (W symbol assigned)  
<http://www.registrar.ufl.edu/pdf/withdrawal.pdf>

**February 2016**

**February 10, Wednesday, 5:00 p.m.**

Last day to submit Transmittal Letter and dissertation for review by Graduate School Editorial Office  
[graduateschool.ufl.edu/files/checklist-dissertation.pdf](http://graduateschool.ufl.edu/files/checklist-dissertation.pdf)

**February 12, Friday**

Midpoint of term

Deadline to finalize all data (except Final Exam) in GIMS for all degree applicants

Late degree application deadline for degree award this term

**February 27-March 5, Saturday-Saturday, Spring Break**

No classes

## **March 2016**

### **March 9, Wednesday, 5:00 p.m.**

Last day to submit successfully defended thesis for review by Graduate School Editorial Office  
[graduateschool.ufl.edu/files/checklist-thesis.pdf](http://graduateschool.ufl.edu/files/checklist-thesis.pdf) Deadline for final exam forms to be posted to GIMS for thesis students

## **April 2016 Calendar**

### **April 8, Friday, 5:00 p.m.**

Last day to withdraw (all courses) via ISIS without failing grades  
<http://www.registrar.ufl.edu/currents/withdraw.html>

Deadline for final exam forms to be posted to GIMS for dissertation, non-thesis, project, and project-in-lieu of thesis students

Deadline for ETD Signature Pages to be posted to GIMS for thesis and dissertation students

Deadline for thesis and dissertation students to submit final pdf document for review by the Graduate School Editorial Office in order to qualify for degree award this term

No exceptions can be granted.

<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

[www.graduateschool.ufl.edu/graduation/checklists](http://www.graduateschool.ufl.edu/graduation/checklists)

### **April 20, Wednesday** Classes end

### **April 20, Wednesday, 5:00 p.m.**

Deadline for thesis and dissertation students to receive confirmation of Final Clearance status with the Graduate School Editorial Office to remain eligible for a degree award this term

No exceptions can be granted.

<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

Deadline for requesting transfer of credit (for summer degree candidates)

### **April 21-22, Thursday-Friday**

Examination reading days (no classes)

### **April 22-May 1, Friday-Sunday**

Commencement Ceremonies

See commencement schedule for specific dates: <http://www.registrar.ufl.edu/commencement/>+

### **April 23, Saturday; April 25-29, Monday-Friday**

Final examinations

## **April 29, Friday**

Last day to drop a course and receive W on transcript via College petition to the Registrar, Room 222 Criser

Last day to withdraw (all courses) without failing grades via College petition to the Registrar, Room 222 Criser

## **May 2016**

### **May 2, Monday, 12:00 noon**

Final term grades are due.

### **May 3, Tuesday**

Degree certification

### **May 4, Wednesday**

Unofficial transcripts with grades and remarks available via ISIS

**NOTES: All dates and deadlines are subject to change and will be updated accordingly.**

**Prospective students should contact the appropriate academic unit for admission application deadlines.**

**+ Projected dates. Notification of dates and times of ceremonies for colleges and schools will be sent to degree candidates as soon as plans are finalized.**

**Please do not anticipate exact dates and times until notification is received.**

## **Summer 2016 Calendar**

**All Summer 2016 graduate-level degrees will be awarded at the end of Summer B/C (August 2016).**

**Applicants will select Summer B/C 2016 on the degree application menu in ISIS.**

**The Summer 2016 degree application will be available via ISIS in mid-March 2016.**

**Students enrolled only in Summer A courses must still apply for degree award during the Summer B/C term, since graduate-level degrees are only awarded at the end of the B/C term. No graduate-level degrees are awarded at the end of Summer A (June). No late degree applications will be approved after the B/C deadline (June 29).**

[graduateschool.ufl.edu/files/graduation-checklist.pdf](http://graduateschool.ufl.edu/files/graduation-checklist.pdf)

<http://www.isis.ufl.edu/>

## **April 2016**

### **April 20, Wednesday, 5:00 p.m.**

Deadline for requesting transfer of credit (for summer degree candidates)

## **May 2016**

**May 6, Friday, 5:00 p.m.**

Summer A & C registration

Last day for thesis and dissertation students to clear prior to the summer semester with the Graduate School Editorial Office

<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

**May 9, Monday**

Summer A & C classes start.

Summer A & C drop/add starts.

Summer A & C late registration starts (late fee assessed).

**May 10, Tuesday, 11:59 p.m.**

Summer A & C late registration ends (late fee assessed).

Summer A & C drop/add ends.

Summer A & C deadline to withdraw with no fee liability

**May 18, Wednesday, 5:00 p.m.**

Summer A deadline to withdraw with 25% refund (W symbol assigned)

<http://www.registrar.ufl.edu/pdf/withdrawal.pdf>

Summer A Deadline for Graduate Student Records to review/approve S/U Option Application for courses with this grading scheme

**May 20, Friday, 3:30 p.m.**

Summer A & C fee payment deadline

Summer A & C residency reclassification deadline for receiving the request and all documents

**May 27, Friday, 5:00 p.m.**

Summer C deadline to withdraw with 25% refund (W symbol assigned)

<http://www.registrar.ufl.edu/pdf/withdrawal.pdf>

Summer C Deadline for Graduate Student Records to review/approve S/U Option Application for courses with this grading scheme

**May 30, Monday, Memorial Day observed**

No classes

**June 2016**



**June 10, Friday, 5:00 p.m.**

Last day to withdraw (all courses) via ISIS for Summer A without failing grades  
<http://www.registrar.ufl.edu/currents/withdraw.html>

**June 13, Monday, 5:00 p.m.**

Last day to submit Transmittal Letters and dissertation for initial review by Graduate School Editorial Office  
[graduateschool.ufl.edu/files/checklist-dissertation.pdf](http://graduateschool.ufl.edu/files/checklist-dissertation.pdf)

**June 17, Friday**

Summer A classes end.

Summer A final examinations during regular class periods

**June 17, Friday, 5:00 p.m.**

Last day to drop a course and receive W on transcript for Summer A term via College petition to the Registrar, Room 222 Criser

Last day to withdraw (all courses) without failing grades for Summer A term via College petition to the Registrar, Room 222 Criser

**June 20, Monday, 12:00 p.m.**

Summer A final term grades are due.

**June 20-24, Monday-Friday, Summer Break**

No classes

**June 22, Wednesday**

Final grades viewable via ISIS for Summer A courses

**June 24, Friday, 5:00 p.m.**

Summer B Registration

**June 27, Monday**

Summer B classes start.

Summer B drop/add starts.

Summer B late registration starts (late fee assessed, after 5:00 p.m. on 6/24/16).

**June 28, Tuesday, 11:59 p.m.**

Summer B drop/add ends.

Summer B late registration ends (late fee assessed).

Summer B deadline to withdraw with no fee liability

### **June 29, Wednesday**

Summer B/C degree application deadline—no exceptions will be granted after this date.

<http://graduateschool.ufl.edu/files/graduation-checklist.pdf>

<http://www.isis.ufl.edu/>

Midpoint of summer term

Deadline to finalize all data (except Final Exam) in GIMS for all degree applicants

## **July 2016**

### **July 4, Monday, Independence Day, observed**

No classes

### **July 6, Wednesday, 5:00 p.m.**

Summer B deadline to withdraw with 25% refund (W symbol assigned):

<http://www.registrar.ufl.edu/pdf/withdrawal.pdf> or 222 Criser Hall

Summer B Deadline for Graduate Student Records to review/approve S/U Option Application for courses with this grading scheme

### **July 7, Thursday, 5:00 p.m.**

Last day to submit successfully defended thesis for review by Graduate School Editorial Office

[graduateschool.ufl.edu/files/checklist-thesis.pdf](http://graduateschool.ufl.edu/files/checklist-thesis.pdf)

Deadline for final exam forms to be posted to GIMS for thesis students

### **July 8, Friday, 3:30 p.m.**

Summer B fee payment deadline

Summer B residency reclassification deadline for receiving the request and all documents

### **July 26, Tuesday, 5:00 p.m.**

Deadline for final exam forms to be posted to GIMS for dissertation, non-thesis, project, and project-in-lieu of thesis students

Deadline for ETD Signature Pages to be posted to GIMS for thesis and dissertation students

Deadline for thesis and dissertation students to submit final pdf document for review by the Graduate School Editorial Office in order to qualify for degree award this term

No exceptions can be granted.  
[graduateschool.ufl.edu/files/editorial-deadlines.pdf](http://graduateschool.ufl.edu/files/editorial-deadlines.pdf)  
[www.graduateschool.ufl.edu/graduation/checklists](http://www.graduateschool.ufl.edu/graduation/checklists)

**July 29, Friday, 5:00 p.m.**

Last day to withdraw (all courses) for Summer B or Summer C via ISIS without failing grades  
<http://www.registrar.ufl.edu/currents/withdraw.html>

**August 2016**

**August 3, Wednesday, 5:00 p.m.**

Deadline for thesis and dissertation students to receive confirmation of Final Clearance status with the Graduate School Editorial Office to remain eligible for a degree award this term  
No exceptions can be granted.  
<http://www.graduateschool.ufl.edu/files/editorial-deadlines.pdf>

**August 5, Friday**

Summer B and C classes end

Final examinations are during regular class periods.

**August 5, Friday, 5:00 p.m.**

Last day to drop a course and receive W on transcript for Summer B or Summer C via College petition to the Registrar, Room 222 Criser

Last day to withdraw (all courses) without failing grades for Summer B or Summer C via College petition to the Registrar, Room 222 Criser

Deadline for requesting transfer of credit (for fall degree candidates)

**August 6, Saturday**

Commencement+

**August 8, Monday, 12:00 noon**

Summer B and C final term grades are due.

**August 9, Tuesday**

Degree certification

**August 10, Wednesday**

Unofficial transcripts with grades and remarks are available via ISIS.

**NOTES: All dates and deadlines are subject to change and will be updated accordingly.  
Prospective students should contact the appropriate academic unit for admission application deadlines.**

**+ Projected dates. Notification of dates and times of ceremonies for colleges and schools will be sent to degree candidates as soon as plans are finalized. Please do not anticipate exact dates and times until notification is received.**