The University Record

UNIVERSITY OF FLORIDA

Graduate Catalog 2005-2006

VOLUME C SERIES 1 NUMBER 2 APRIL 2005
The University Record (USPS 652-760) published four times a year in March, April, September, and September by the University of Florida, Office of the University Registrar, Academic Publications, Gainesville, FL 32611-4000. Periodical postage paid at Gainesville, Florida 32601.

POSTMASTER:
Send address changes to
OFFICE OF THE UNIVERSITY REGISTRAR, BOX 114000,
UNIVERSITY OF FLORIDA, GAINESVILLE, FL 32611- 4000.

TABLE OF CONTENTS

Table of Contents

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

OFFICERS OF ADMINISTRATION

BOARD OF EDUCATION OF FLORIDA

F. PHILIP HANDY
Chair, Winter Park

DONNA CALLAWAY
Tallahassee

LINDA EADS
Miami

T. WILLARD FAIR
Miami

JULIA JOHNSON
Clermont

ROBERTO MARTINEZ
Coral Gables

PHOEBE RAULERSON
Okeechobee

LINDA TAYLOR
Fort Myers

JOHN WINN
Commissioner

FLORIDA BOARD OF GOVERNORS

CAROLYN K. ROBERTS
Chair, Ocala

JOHN DASHBERT
Vice Chair, Miami

RENE ALBORS
Orlando

AKSHAY DESAI
Saint Petersburg

ANN W. DUNCAN
Tarpon Springs

JARRETT R. EADY
Fort Meyers

J. STANLEY MARSHALL
Tallahassee

WILLIAM MCCOLLUM
Longwood

SHEILA M. MCDEVITT
Tampa

GERRI MOLL
Naples

LYNN PAPPAS
Jacksonville

AVA L. PARKER
Jacksonville

PETER S. RUMMELL
Jacksonville

JOHN W. TEMPLE
Boca Raton

JOHN WINN
Commissioner

H. DREMAL I. WORTHEN
Tallahassee

ZACHARIAH P. ZACHARIAH
Sea Ranch Lakes

UNIVERSITY OF FLORIDA BOARD OF TRUSTEES

MANNY A. FERNANDEZ
Chair, Fort Myers

CARLOS ALFONSO
Tampa

C. DAVID BROWN II
Orlando

COURTNEY CUNNINGHAM
Pinecrest

ROLAND DANIELS
Gainesville

JOE GOLDBERG
Student Body President

W. A. MCGRIFF III
Jacksonville

JOELEN MERKEL
Boca Raton

DIANA F. MORGAN
Windermere

CYNTHIA O'CONNELL
Tallahassee

EARL POWELL
Miami

KIM TANZER
Chair, Faculty Senate

ALFRED C. WARRINGTON, IV
Houston, Texas

UNIVERSITY OF FLORIDA

ADMINISTRATION

J. BERNARD MACHEN, Ph.D., President of the University

JOSEPH GLOVER, Ph.D., Interim Provost and Senior Vice President for Academic Affairs

JANE ADAMS, B.S., Vice President for University Relations

LARRY R. ARRINGTON, Ph.D., Dean for Extension, Institute of Food and Agricultural Sciences

PAMELA BERNARD, J.D., Vice President, General Counsel

DOUGLAS J. BARRETT, M.D., Senior Vice President for Health Affairs

DALE CANELAS, M.A., Director, University Libraries

KYLE CAVANAUGH, M.B.A., Vice President for Human Resources

JIMMY GEARY CHEEK, Ph.D., Senior Vice President for Agriculture and Natural Resources

CANDACE DIANA DEERE, Ph.D., Director of Center for Latin American Studies

JOSEPH ANTHONY DIPIETRO, D.V.M., Ph.D., Dean, College of Veterinary Medicine

TERESA A. DOLAN, D.D.S., M.P.H., Dean, College of Dentistry

CATHERINE EMIHOVICH, Ph.D., Dean, College of Education

ROBERT G. FRANK, Ph.D., Dean, College of Public Health and Health Professions

KENNETH J. GERHARDT, Ph.D., Interim Dean, Graduate School

TERRY HYNES, Ph.D., Dean, College of Journalism and Communications

ROBERT JERRY II, J.D., Dean, Levin College of Law

DENNIS C. JETT, Ph.D., Dean, International Center

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

RICHARD L. JONES, Ph.D., Dean for Research, Institute of Food and Agricultural Sciences

PRAMOD P. KHARGONEKAR, Ph.D., Dean, College of Engineering

JAMES W. KNIGHT, Ed.D., Dean, Continuing Education

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

ANGEL KWOLEK-FOLLAND, Ph.D., Director, Center for Women's Studies and Gender Research

KATHLEEN LONG, Ph.D., Dean, College of Nursing

DONALD E. MCGLOTHLIN, Ph.D., Dean, College of Fine Arts

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

WINFRED M. PHILLIPS, D.Sc., Vice President for Research

EDWARD J. POPPELL, M.Ed., Vice President for Finance and Administration

STEPHEN J. PRITZ, JR., B.S., University Registrar

WILLIAM RIFFEE, Ph.D., Dean, College of Pharmacy, and Associate Provost for Distance/Executive/Continuing Education

PAUL A. ROBELL, M.A., Vice President for Development and Alumni Affairs

WAYNE H. SMITH, Ph.D., Interim Dean, College of Agricultural and Life Sciences

JAY M. STEIN, Ph.D., Dean, College of Design, Construction, and Planning

NEIL SULLIVAN, Ph.D., Dean, College of Liberal Arts and Sciences

PATRICIA TELLES-IRVIN, Ph.D., Vice President for Student Affairs

C. CRAIG TISHER, M.D., Dean, College of Medicine

JILL W. VARNES, Ph.D., Interim Dean, College of Health and Human Performance

LEONARD A. VILLALON, Ph.D., Director, Center for African Studies

EUGENE L. ZDZIARSKI II, Ph.D., Dean of Students

GRADUATE SCHOOL

KENNETH J. GERHARDT, Ph.D. (Ohio State University), Interim Dean of the Graduate School and Professor of Communication Sciences and Disorders

VIVIAN CORREA, Ph.D. (Vanderbilt University), Associate Dean of the Graduate School and Professor of Special Education

GRADUATE COUNCIL

KENNETH J. GERHARDT (Chair), Ph.D. (Ohio State University), Interim Dean of the Graduate School

JEFFREY S. ADLER, Ph.D. (Harvard University), Professor of History

RUSSELL BAUER, Ph.D. (Pennsylvania State University), Professor of Clinical and Health Psychology

KENNETH H. CAMPBELL, Ph.D. (Iowa State University), Professor of Agricultural and Biological Engineering

THOMAS L. CRISMAN, Ph.D. (Indiana University), Professor of Environmental Engineering Sciences

ROBERT D. HOLT, Ph.D. (Harvard University), Eminent Scholar in Ecological Sciences

ANN L. HORGAS-MARSISKE, Ph.D. (Pennsylvania State University), Associate Professor of Nursing

JAMES W. JONES, Ph.D. (North Carolina State University), Distinguished Professor of Agricultural and Biological Engineering

CHRISTIANA M. LEONARD, Ph.D. (Massachusetts Institute of Technology), Professor of Neuroscience

JOSE C. PRINCIPE, Ph.D. (University of Florida), Distinguished Professor of Electrical and Computer Engineering

RICHARD E. ROMANO, Ph.D. (University of Pittsburgh), Professor of Economics

DIETMAR W. SIEMANN, Ph.D. (University of Toronto), Professor of Pharmacology and Therapeutics

COLIN SUMNERS, Ph.D. (University of Southampton), Professor of Physiology and Functional Genomics

DAVID B. TANNER, Ph.D. (Cornell University), Professor of Physics

BARCLAY KEY, Doctoral Student in History, Graduate Student Council Representative

CRITICAL DATES FOR GRADUATE STUDENTS

Fall Semester 2005

University Dates

Registration . . . . . August 22-23
Classes Begin . . . . . August 24
Degree Application . . . . . September 16
Midpoint of Semester . . . . . October 20
Classes End . . . . . December 7
Commencement . . . . . December 16-18+

Graduate School Dates

First Submission of Dissertation . . . . . October 17
Submit Signed Original Thesis and Final Exam Report . . . . . November 7
Submit PDF Thesis or Dissertation File for Review of Links . . . . . December 5
Submit Signed Dissertation and Final Exam Report . . . . . December 12
Submit Final Thesis . . . . . December 12
Submit Nonthesis Final Exam Report . . . . . December 12

Spring Semester 2006

University Dates

Registration . . . . . January 6
Classes Begin . . . . . January 9
Degree Application . . . . . February 3
Midpoint of Semester . . . . . March 8
Classes End . . . . . April 26
Commencement . . . . . May 5-7+

Graduate School Dates

First Submission of Dissertation . . . . . March 6
Submit Signed Original Thesis and Final Exam Report . . . . . April 3
Submit PDF Thesis or Dissertation File for Review of Links . . . . . April 24
Submit Signed Dissertation and Final Exam Report . . . . . May 1
Submit Final Thesis . . . . . May 1
Submit Nonthesis Final Exam Report . . . . . May 1

Summer Term A & C 2006

University Dates

Terms A & C Registration . . . . . May 12
Terms A & C Classes Begin . . . . . May 15
Term C Degree Application . . . . . May 17
Term A Classes End . . . . . June 23

Summer Term B & C 2006

University Dates

Term B Registration . . . . . June 30
Term B Classes Begin . . . . . July 3
Midpoint of Summer C . . . . . July 3
Terms B & C Classes End . . . . . August 11
Commencement . . . . . August 12th+

Graduate School Dates

First Submission of Dissertation (A, B & C) . . . . . July 3
Submit Signed Original Thesis and Final Exam Report (A, B & C) . . . . . July 19
Submit PDF Thesis or Dissertation File for Review of Links . . . . . August 2
Submit Signed Dissertation and Final Exam Report (A, B & C) . . . . . August 7
Submit Final Thesis . . . . . August 7
Submit Nonthesis Final Exam Report . . . . . August 7

+Tentative date. 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.

Note: Prospective students should contact the appropriate academic department for admission application deadlines.

UNIVERSITY OF FLORIDA CALENDAR

Fall Semester 2005

2005

August 5, Friday, 5:00 p.m.

Last day to request transfer of credit for fall candidates for degrees.

August 22-23, Monday-Tuesday, 5:00 p.m.

Registration according to appointments.

August 24, Wednesday

Classes begin.

Drop/Add begins.

Late registration begins. Students subject to late registration fee.

August 29, Monday, 5:00 p.m.

Last day to drop a course or to change sections without fee liability.

Last day to withdraw from the University with full refund of fees.

Last day to complete late registration.

September 2, Friday, 3:30 p.m.

Fee payments are due in full. All waivers must be established. Students who have not paid fees or arranged to pay fees with University Financial Services will be subject to a late payment fee.

Deadline for receipt of request for residency reclassification and all appropriate documents.

September 5, Monday, Labor Day

All classes suspended.

September 16, Friday, 5:00 p.m.

Last day student may withdraw from the University and receive 25% refund of course fees.

Last day to apply at Office of the University Registrar for degree to be conferred at end of Fall Semester.

October 17, Monday, 5:00 p.m.

Last day for candidates for doctoral degrees to file dissertation, transmittal letter, fee receipts for library processing and microfilming, and all doctoral forms with the Graduate School Editorial Office, 160 Grinter Hall. All Ph.D. and Ed.D. students who plan to receive degrees this semester must file a paper copy of the dissertation with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.

October 20, Thursday
Midpoint of term for completing doctoral qualifying examination.
Last day to submit late degree application.

November 7, Monday, 5:00 p.m.
Last day to submit signed master's theses, Final Examination Reports, and library processing fee receipts to Graduate School Editorial Office, 160 Grinter Hall. All thesis students who plan to receive degrees this semester must file a paper copy of the thesis signed by the supervisory committee with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.
Last day for Fine Arts' performance and project option students to submit abstracts to Graduate School Editorial Office, 160 Grinter Hall.

November 11, Friday, Veterans Day
All classes suspended.

November 11-12, Friday-Saturday, Homecoming*
All classes suspended. *Tentative date.

November 24-25, Thursday-Friday, Thanksgiving
All classes suspended.

December 5, Monday
Last day to submit electronic thesis or dissertation to Graduate School Editorial Office <https://apps.rgp.ufl.edu/edm_app/etd_login.cfm > for review of links and corrections.

December 7, Wednesday
All classes end.

December 8-9, Thursday-Friday
Examination reading days–no classes.

December 10-16, Saturday-Friday
Final examinations.

December 12, Monday, 5:00 p.m.
Last day to submit electronic or paper (20-pound, 100% cotton bond) dissertations, fully signed signature pages, abstracts, and Final Examination Reports to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit electronic or paper (20-pound, 100% cotton bond) theses, fully signed signature pages, and abstracts to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit Final Examination Reports for nonthesis degrees to Graduate Student Records Office, 106 Grinter Hall.

December 16, Friday
Last day to drop a course and receive W on transcript.

December 16-18, Friday-Sunday
Commencement.

December 19, Monday, 9:00 a.m.
All grades for Fall Semester due in Office of the University Registrar.

December 20, Tuesday
Degree certification.

Spring Semester 2006

2005

December 7, Wednesday
Last day to request transfer of credit for spring candidates for degrees.

2006

January 6, Friday, 5:00 p.m.
Registration according to appointments.

January 9, Monday
Classes begin.
Drop/Add begins.
Late registration begins. Students subject to late registration fee.

January 12, Thursday, 5:00 p.m.
Last day to drop a course or to change sections without fee liability.
Last day to withdraw from the University with full refund of fees.
Last day to complete late registration.

January 16, Monday, Martin Luther King Jr. Day
All classes suspended.

January 20, Friday, 3:30 p.m.
Fee payments are due in full. All waivers must be established. Students who have not paid fees or arranged to pay fees with University Financial Services will be subject to a late payment fee.
Deadline for receipt of residency reclassification and all appropriate documentation.

February 3, Friday, 5:00 p.m.
Last day to apply to Office of the University Registrar for degree to be conferred at end of Spring Semester.
Last day student may withdraw from the University and receive 25% refund of course fees.

March 6, Monday, 5:00 p.m.
Last day for candidates for doctoral degrees to file dissertations, letters of transmittal, fee receipts for library processing and microfilming, and all doctoral forms with the Graduate School Editorial Office, 160 Grinter Hall. All Ph.D. and Ed.D. students who plan to receive degrees this semester must file a paper copy of the dissertation with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.

March 8, Wednesday
Midpoint of term for completing doctoral qualifying examinations.
Last day to submit late degree application.

March 11-18, Saturday-Saturday, Spring Break
All classes suspended

April 3, Monday, 5:00 p.m.
Last day to submit signed master's theses, Final Examination Reports, and library processing fee receipts to Graduate School Editorial Office, 160 Grinter Hall. All thesis students who plan to receive degrees this semester must file a paper copy of the thesis signed by the supervisory committee with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.
Last day for Fine Arts' performance and project option students to submit abstracts to Graduate School Editorial Office, 160 Grinter Hall.

April 24, Monday
Last day to submit electronic thesis or dissertation to Graduate School Editorial Office <https://apps.rgp.ufl.edu/edm_app/etd_login.cfm > for review of links and corrections.

April 26, Wednesday
All classes end.

April 27-28, Thursday-Friday
Examination reading days–no classes.

April 29-May5, Saturday-Friday
Final examinations.

May 1, Monday, 5:00 p.m.
Last day to submit electronic or paper (20-pound, 100% cotton bond) dissertations, fully signed signature pages, abstracts, and Final Examination Reports to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit electronic or paper (20-pound, 100% cotton bond) theses, fully signed signature pages, and abstracts to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit Final Examination Reports for nonthesis degrees to Graduate Student Records Office, 106 Grinter Hall.

May 5, Friday
Last day to drop a course and receive W on transcript.

May 5-7, Friday-Sunday
Commencement.+

May 8, Monday, 9:00 a.m.
All grades for Spring Semester due in Office of the University Registrar.

May 9, Tuesday
Degree certification.

Summer Terms A, B, and C 2006

Terms A & C

2006

April 26, Wednesday, 5:00 p.m.
Last day to request transfer of credit for summer candidates for degrees.

May 12, Friday, 5:00 p.m.
Registration according to appointments.

May 15, Monday
Classes begin.
Drop/Add begins.
Late registration begins. Students subject to late registration fee.

May 16, Tuesday, 5:00 p.m.
Last day to complete late registration for Summer Terms A and C.
Last day to drop or add a course or to change sections without fee liability.
Last day to withdraw from the University with full refund of fees.

May 17, Wednesday, 5:00 p.m.
Last day to apply at Office of the University Registrar for degree to be conferred at end of Term C.

May 24, Wednesday
Last day student may withdraw from the University for Term A or C and receive 25% refund of course fees.

May 26, Friday, 3:30 p.m.
Fee payments are due in full. All waivers must be established. Students who have not paid fees or arranged to pay fees with University Financial Services by this date will be subject to a late payment fee.
Deadline for receipt of request for residency reclassification and all appropriate documentation.

May 29, Monday, Memorial Day Observed
All classes suspended.

June 23, Friday
Term A classes end.
Term A final examinations will be held in regular class periods.
Last day to drop a course for Term A and receive W on transcript.

June 26, Monday, 9:00 a.m.
All grades for Term A due in Office of the University Registrar.

Terms B & C

2006

June 30, Friday, 5:00 p.m.
Registration according to appointments.

July 3, Monday, 5:00 p.m.
Classes begin.
Drop/Add begins. Late registration begins. Students subject to a late registration fee.
Midpoint of Summer Term C.
Last day to submit late degree application for Summer C.
Last day for candidates for doctoral degrees to file dissertations, transmittal letters, fee receipts for library processing and microfilming, and all doctoral forms with the Graduate School Editorial Office, 160 Grinter Hall. All Ph.D. and Ed.D. students who plan to receive degrees this semester must file a paper copy of the dissertation with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.

July 4, Tuesday, Independence Day
All classes suspended.

July 5, Wednesday, 5:00 p.m.
Last day to complete late registration for Term B.
Last day to drop or add a course or to change sections without fee liability.
Last day to withdraw from the University with full refund of fees for Term B.

July 12, Wednesday, 5:00 p.m.
Last day student may withdraw from the University and receive 25% refund of course fee for Term B.

July 14, Friday, 3:30 p.m.
Fee payments are due in full. All waivers must be established. Students who have not paid fees or arranged to pay fees with University Financial Services by this date will be subject to a late payment fee.
Deadline for receipt of request for residency reclassification and all appropriate documentation.

July 19, Wednesday, 5:00 p.m.
Last day to submit signed master's theses, Final Examination Reports, and library processing fee receipts to Graduate School Editorial Office. All thesis students who plan to receive degrees this semester must file a paper copy of the thesis signed by the supervisory committee with the Graduate School by this date, regardless of whether the final copy will be paper or electronic.
Last day for Fine Arts' performance and project option students to submit abstracts to Graduate School Editorial Office, 160 Grinter Hall.

August 2, Wednesday
Last day to submit electronic thesis or dissertation to Graduate School Editorial Office <https://apps.rgp.ufl.edu/edm_app/etd_login.cfm> for review of links and corrections.

August 7, Monday, 5:00 p.m.
Last day to submit electronic or paper (20-pound, 100% cotton bond) dissertations, fully signed signature pages, abstracts, and Final Examination Reports to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit electronic or paper (20-pound, 100% cotton bond) theses, fully signed signature pages, and abstracts to Graduate School Editorial Office, 160 Grinter Hall.
Last day to submit Final Examination Reports for nonthesis degrees to Graduate Student Records Office, 106 Grinter Hall.

August 11, Friday
All classes end.
Final examinations will be held in regular class periods.
Last day to drop course for Terms B and C and receive W on transcript.

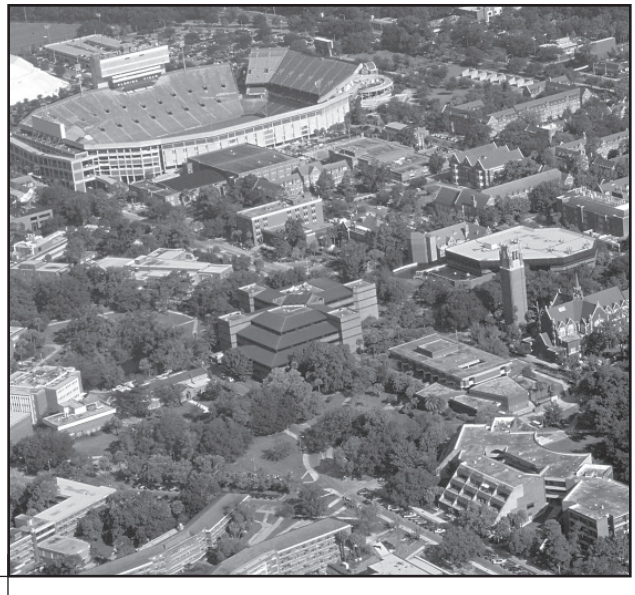
August 12, Saturday
Commencement.+

August 14, Monday, 9:00 a.m.
All grades for Terms B and C due in Registrar's Office.

August 15, Tuesday
Degree certification.

NOTE: Prospective students should contact the appropriate academic department for admission application deadlines.
Students who must take a foreign language reading knowledge examination (GSFLT) should contact the Office of Academic Technology for test dates.
+ 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.

General Information



Rules, policies, fees, and courses described in this catalog are subject to change without notice.

UNIVERSITY OF FLORIDA

Institutional Purpose

The University of Florida is a public land-grant, sea-grant, and space-grant research university, one of the most comprehensive in the United States. The university encompasses virtually all academic and professional disciplines. It is the largest and oldest of Florida's eleven universities and a member of the Association of American Universities. Its faculty and staff are dedicated to the common pursuit of the university's threefold mission: teaching, research, and service.

Mission

The University of Florida belongs to a tradition of great universities. Together with our undergraduate and graduate students, UF faculty participate in an educational process that links the history of Western Europe with the traditions and cultures of all societies, explores the physical and biological universes, and nurtures generations of young people from diverse backgrounds to address the needs of our societies. 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 education 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.

These three interlocking elements span all of 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 of Florida aspires to advance by strengthening the human condition and improving the quality of life.

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 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 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.

Government of the University

A 13-member Board of Trustees governs the University of Florida. The governor appoints six of the trustees, and five are appointed by the 17-member Florida Board of Governors, which governs the State University System as a whole. The University's student body president and faculty senate chair also serve on the Board of Trustees as ex officio members. Trustees are appointed for staggered five-year terms.

The University of Florida Board of Trustees is a public body corporate with all the powers and duties set forth by law and by the Board of Governors. The University of Florida President serves as the executive officer and corporate secretary of the Board of Trustees and is responsible to the Board for all operations of the University. University affairs are administered by the President through the University administration, with the advice and assistance of the Faculty Senate, various committees appointed by the President, and other groups or individuals as requested by the President.

Graduate Deans and Years of Service

February 2004 to Present
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

Graduate School

Mission

Graduate education is an integral component of a major research university that impacts education at all levels. The mission of graduate education at the University of Florida is to produce individuals with advanced knowledge in their fields, who appreciate learning and are constant learners, and who are prepared to address creatively issues of significance to the local and global community for improving the quality of life. Essential to this mission is an environment that fosters

- Effective transmission of knowledge for future generations.
- Inquiry and critical analysis.
- Acquisition of skills contributing to success and leadership in academic and creative arenas and in the world of practice.
- Application of that knowledge in service to Florida, the nation, and the international community.

Vision

The vision is a university internationally recognized for its graduates, Graduate Faculty, and scholarly achievements. This university produces intellectually energized individuals who excel at future careers in diverse settings, and who can provide bold leadership in new directions. Important signs of this recognition include

- Graduates recognized for strength of preparation in their chosen discipline, for abilities to solve problems in new environments, and for high standards of excellence in scholarly activity and professional practice.
- Significant scholarly, creative achievements and service that contribute to improvement of human society and the natural environment.
- A highly qualified, diverse student population.
- Strong disciplinary and interdisciplinary programs that prepare graduates to assume their roles in a changing world.
- Evidence of service in their disciplines by students and faculty at state, national, and international levels.

Organization

The Graduate School consists of the Dean, Associate Dean, Graduate Council, and the Graduate Faculty. General policies and standards of the Graduate School are established by the Graduate Faculty. Any policy change must be approved by the graduate deans and the Graduate Council. The Graduate School is responsible for the enforcement of minimum general standards of graduate work in the University and for the coordination of the graduate programs of the various colleges and divisions of the University. The responsibility for the detailed operations of graduate programs is vested in the individual colleges, schools, divisions, and academic units. In most of the colleges an assistant dean or other administrator is directly responsible for graduate study in that college.

The Graduate Council assists the Dean in being the agent of the Graduate Faculty for execution of policy related to graduate study and associated research. The Council, which is chaired by the graduate dean, considers petitions and policy changes. Members of the Graduate Faculty are appointed by the academic unit in which the graduate program is located with the approval of the graduate dean.

All faculty members who serve on supervisory committees or direct master's theses and doctoral dissertations must first be appointed to the Graduate Faculty. The level of duties for each Graduate Faculty member is determined by the academic unit.

History

Graduate study at the University of Florida 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 initiated 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 had a phenomenal growth at the University of Florida. In 1930, 33 degrees were awarded in 12 fields. In 1940, 66 degrees were awarded in 16 fields. In 2003-04, the total number of graduate degrees awarded was 3,616 in more than 100 fields. The proportion of Ph.D. degrees, after the initial rapid growth, remained relatively static during the early 1980s but increased significantly between 1987-88 and 1993-94, growing from 304 to 424. In 2003-04, the University of Florida awarded 563 Ph.D. degrees.

Definitions

Academic Degree—Degree is the title to be conferred by the University upon completion of 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. Degree names are listed in boldface.

Graduate Program—The program is the primary field of study of a graduate student. This is the student's major. Programs offered at the University of Florida 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. Programs are enumerated under the degree name in the list of graduate degrees and programs.

Concentration—At the graduate level, the concentration is a subprogram offered within a graduate major. Each concentration is approved by the Graduate Council. The concentration, as well as the degree and program, may appear on the student transcript. Concentrations are listed in italics below their corresponding programs.

Minor—A minor is a block of course work completed in any academic unit, other than the major academic unit, approved for master's or doctoral programs as listed in this catalog. If a minor is chosen, the supervisory committee must include a representative from the minor field. The minimum amount of credit required for a minor varies from 6 to 15 credits according to the program. The minor appears on the student's transcript along with the program name and the degree awarded.

Specialization—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.

Graduate Certificate—An academic unit may offer a graduate certificate along with a graduate degree. The certificate indicates that the student took a required number of courses in a special area. It requires Graduate Council approval but is not listed on the student transcript.

Multi-College Programs—When one degree program is offered through more than one college, it is referred to as a multi-college program.

Combined Degree Program—This is a combined bachelor's and master's degree program of study which allows an undergraduate student to take graduate-level courses prior to completion of the bachelor's degree and to count 12 graduate credits toward both degrees. Students admitted into a combined program normally have at least a 3.2 grade point average and a score of at least 1100 on the verbal and quantitative portions of the GRE. Academic units may establish higher admission standards. Individual academic units will determine whether or not a combined degree program is appropriate. Combined degree programs established prior to January 1, 2003, may have other requirements.

Cooperative Degree Program—This is course of study leading to a graduate degree with more than one institution authorized to provide course work.

Catalog Year—The set of academic requirements a student must fulfill is based on the rules in force in the academic year of initial enrollment in a degree seeking status or, if the student takes time off, the academic year of readmission. This is known as the catalog year.

Joint Degree Program—A course of study, pursued simultaneously, leading to a graduate degree and a professional degree is called a joint degree program. 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 will determine whether or not a joint degree program is appropriate. Joint programs established prior to January 1, 2003, may have other requirements.

Concurrent Degree Program—Simultaneous study on an individualized basis leading to two master's degrees in two graduate programs or two master's degrees in the same major is called a concurrent degree program. Such a program is initiated by the student and requires prior approval of each academic unit and the Graduate School. 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 meeting the requirements for the second master's degree.

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

Graduate Degrees and Programs

Refer to the section of this catalog entitled *Fields of Instruction* for specializations in the approved programs.

T—thesis or dissertation N—nonthesis or no dissertation
Concentrations are listed under the major in *italics*

Master of Accounting (M.Acc.) [N]
Master of Advertising (M.Adv.) [T]
Master of Agribusiness (M.AB.) [N] with a major in Food and Resource Economics
Master of Agriculture (M.Ag.) [N] with a major in one of the following:
- Agriculture Education and Communication
- Animal Sciences
- Botany
- Food and Resource Economics
- Soil and Water Science

Master of Architecture (M.Arch.) [T]
Master of Arts (M.A.) with a major in one of the following:
- Anthropology [T/N]
- Art Education [T]
- Art History [T]
- Business Administration
  - *Insurance* [T]
  - *International Business* [T]
  - *Marketing* [T/N]
- Classical Studies [T]
- Communication Sciences and Disorders [T/N]
- Criminology and Law [T/N]
- Digital Arts and Sciences [T]
- Economics [T/N]
- English [T/N]
- French [T/N]
- Geography [T]
  - *Applications of Geographic Technologies*
- German [T/N]
- History [T/N]

Latin [T]
Latin American Studies [T]
Linguistics [T/N]
Mathematics [T/N]
Museology [Museum Studies] [T]
Philosophy [T/N]
Political Science [T/N]
Political Science–International Relations [T/N]
Psychology [T/N]
Religion [T]
Sociology [T/N]
Spanish [T/N]
Women's Studies [T]

Master of Arts in Education [T] –for a list of majors, see those listed for the Master of Education degree
Master of Arts in Mass Communication (M.A.M.C.) [T/N]
Master of Arts in Teaching (M.A.T.) [N] with a major in one of the following:

Anthropology
French
Geography
Latin
Latin American Studies
Linguistics
Mathematics
Philosophy
Political Science
Political Science–International Relations
Psychology
Spanish

Master of Arts in Urban and Regional Planning (M.A.U.R.P.) [T]
Master of Building Construction (M.B.C.) [N] with a major in Building Construction and a possible concentration in

Sustainable Construction

Master of Business Administration (M.B.A.) [N] with a major in Business Administration and a concentration in one of the following:

Arts Administration
Business Strategy and Public Policy
Competitive Strategy
Decision and Information Sciences
Electronic Commerce
Entrepreneurship
Finance
Global Management
Graham-Buffett Security Analysis
Human Resource Management
International Studies
Latin American Business
Management
Marketing
Real Estate
Sports Administration

Master of Civil Engineering (M.C.E.) [T/N]
Master of Education (M.Ed.) [N] with a major in one of the following:

Curriculum and Instruction
Early Childhood Education
Educational Leadership
Educational Psychology
Elementary Education
English Education
Foundations of Education
Marriage and Family Counseling
Mathematics Education
Mental Health Counseling
Reading Education
Research and Evaluation Methodology
School Counseling and Guidance
School Psychology
Science Education
Social Studies Education
Special Education
Student Personnel in Higher Education

Master of Engineering (M.E.) [T/N] with a major in one of the following:

Aerospace Engineering
Agricultural and Biological Engineering
Biomedical Engineering
Chemical Engineering
Coastal and Oceanographic Engineering
Computer Engineering
Electrical and Computer Engineering
Environmental Engineering Sciences
Industrial and Systems Engineering
Materials Science and Engineering
Mechanical Engineering
Nuclear Engineering Sciences

Master of Family, Youth, and Community Sciences (M.F.Y.C.S.) [N]
Master of Fine Arts (M.F.A.) [T] with major in one of the following:

Art
Creative Writing
Theatre

Master of Fisheries and Aquatic Sciences (M.F.A.S.) [N]
Master of Forest Resources and Conservation (M.F.R.C.) [N] with a major in Forest Resources and Conservation and a possible concentration in

Geomatics

Master of Health Administration (M.H.A.) [N]
Master of Health Science (M.H.S.) [T/N] with a major in one of the following:

Occupational Therapy
Rehabilitation Counseling

Master of Interior Design (M.I.D.) [T]
Master of International Construction Management (M.I.C.M.) [N]

Master of Landscape Architecture (M.L.A.) [T]
Master of Latin (M.L.) [N]
Master of Laws in Comparative Law (LL.M.Comp.Law) [N]
Master of Laws in Taxation (LL.M.Tax.) [N]
Master of Music (M.M.) with major in one of the following:
- Music [T]
  - *Choral Conducting*
  - *Composition*
  - *Instrumental Conducting*
  - *Music History and Literature*
  - *Music Theory*
  - *Performance*
  - *Sacred Music*
- Music Education [T]

Master of Occupational Therapy (M.O.T.) [N]
Master of Physical Therapy (M.P.T.) [N]
Master of Public Health (M.P.H.) [N] with a major in Public Health and a concentration in one of the following:
- *Biostatistics*
- *Environmental Health*
- *Epidemiology*
- *Public Health Management and Policy*
- *Social and Behavioral Sciences*

Master of Science (M.S.) with a major in one of the following
- Aerospace Engineering [T/N]
- Agricultural and Biological Engineering [T/N]
- Agricultural Education and Communication [T/N]
  - *Farming Systems*
- Agronomy [T/N]
- Animal Sciences [T]
- Applied Physiology and Kinesiology [T/N]
  - *Athletic Training/Sport Medicine*
  - *Biomechanics*
  - *Clinical Exercise Physiology*
  - *Exercise Physiology*
  - *Human Performance*
  - *Motor Learning/Control*
  - *Sport and Exercise Psychology*
- Astronomy [T/N]
- Biochemistry and Molecular Biology [T]
- Biomedical Engineering [T/N]
- Botany [T]
- Business Administration [T/N]
  - *Entrepreneurship*
  - *Insurance*
  - *Marketing*
  - *Real Estate and Urban Analysis*
  - *Retailing*
- Chemical Engineering [T/N]
- Chemistry [T/N]
- Civil Engineering [T/N]
- Coastal and Oceanographic Engineering [T/N]
- Computer Engineering [T//N]
- Computer Science [T/N]
- Decision and Information Sciences [T/N]
- Dental Sciences [T]
  - *Endodontics*
  - *Orthodontics*
  - *Periodontics*
  - *Prosthodontics*
- Digital Arts and Sciences [T]
- Electrical and Computer Engineering [T/N]
- Entomology and Nematology [T/N]
- Environmental Engineering Sciences [T/N]
- Epidemiology [T]
  - *Biostatistics*
  - *Health Policy*
- Family, Youth, and Community Sciences [T]
- Finance [T/N]
- Fisheries and Aquatic Sciences [T]
- Food and Resource Economics [T/N]
- Food Science and Human Nutrition [T/N]
  - *Nutritional Sciences*
- Forest Resources and Conservation [T]
  - *Geomatics*
- Geography [T]
- Geology [T]
- Health Education and Behavior [T/N]
- Horticultural Science [T/N]
  - *Environmental Horticulture*
  - *Horticultural Sciences*
- Industrial and Systems Engineering [T/N]
- Interdisciplinary Ecology [T/N]
- Management [T/N]
- Materials Science and Engineering [T/N]
- Mathematics [T/N]
- Mechanical Engineering [T/N]
- Medical Sciences [T]
  - *Clinical Investigation*
- Microbiology and Cell Science [T/N]
- Nuclear Engineering Sciences [T/N]
- Physics [T/N]
- Plant Molecular and Cellular Biology [T]
- Plant Pathology [T/N]
- Psychology [T/N]
- Recreation, Parks, and Tourism [T/N]
- Soil and Water Science [T/N]
- Sport Management [T/N]
- Veterinary Medical Sciences [T/N]
  - *Forensic Toxicology*
- Wildlife Ecology and Conservation [T/N]
- Zoology [T/N]

Master of Science in Architectural Studies (M.S.A.S.) [T]
Master of Science in Building Construction (M.S.B.C.) [T] with a major in Building Construction and a possible concentration in
- *Sustainable Construction*

Master of Science in Nursing (M.S.Nsg.) [T/N]

Master of Science in Pharmacy (M.S.P.) [T/N] with a major in Pharmaceutical Sciences and a concentration in one of the following:

Forensic Drug Chemistry
Forensic Serology and DNA
Medicinal Chemistry
Pharmacodynamics
Pharmacy
Pharmacy Health Care Administration

Master of Science in Statistics (M.S.Stat.) [T]

Master of Science in Teaching (M.S.T.) [N] with a major in one of the following:

Astronomy
Botany
Chemistry
Geography
Geology
Mathematics
Physics
Psychology
Zoology

Master of Statistics (M.Stat.) [N]

Master of Women's Studies (M.W.S.) [N]

Engineer (Engr.)[T/N]–A special degree requiring one year of graduate work beyond the master's degree. For a list of the approved majors, see those listed for the Master of Engineering degree, except Biomedical Engineering.

Specialist in Education (Ed.S.) [N]–A special degree requiring one year of graduate work beyond the master's degree. For a list of the approved programs, see those listed for the Doctor of Education degree.

Doctor of Audiology (Au.D.) [N]

Doctor of Education (Ed.D.) [T] with a major in one of the following:

Curriculum and Instruction
Educational Leadership
Educational Psychology
Foundations of Education
Higher Education Administration
Marriage and Family Counseling
Mental Health Counseling
Research and Evaluation Methodology
School Counseling and Guidance
School Psychology
Special Education
Student Personnel in Higher Education

Doctor of Philosophy (Ph.D.) [T] with a major in one of the following:

Aerospace Engineering
Agricultural and Biological Engineering
Agricultural Education and Communication
Agronomy
Animal Sciences
Anthropology
Art History
Astronomy
Biochemistry and Molecular Biology
Biomedical Engineering
Botany
Business Administration
Accounting
Decision and Information Sciences
Finance
Insurance
Management
Marketing
Real Estate and Urban Analysis
Chemical Engineering
Chemistry
Civil Engineering
Classical Studies
Coastal and Oceanographic Engineering
Communication Sciences and Disorders
Computer Engineering
Counseling Psychology
Criminology and Law
Curriculum and Instruction
Design, Construction, and Planning
Economics
Educational Leadership
Educational Psychology
Electrical and Computer Engineering
English
Entomology and Nematology
Environmental Engineering Sciences
Fisheries and Aquatic Sciences
Food and Resource Economics
Food Science and Human Nutrition
Food Science
Nutritional Sciences
Forest Resources and Conservation
Geomatics
Foundations of Education
Geography
Geology
German
Health and Human Performance
Athletic Training/Sport Medicine
Biomechanics
Exercise Physiology
Health Behavior
Motor Learning/Control
Natural Resource Recreation
Sport and Exercise Psychology
Sport Management
Therapeutic Recreation
Tourism
Health Services Research
Higher Education Administration
History

Horticultural Science
Environmental Horticulture
Horticulture Sciences
Industrial and Systems Engineering
Interdisciplinary Ecology
Linguistics
Marriage and Family Counseling
Mass Communication
Materials Science and Engineering
Mathematics
Mechanical Engineering
Medical Sciences
Biochemistry and Molecular Biology
Genetics
Immunology and Microbiology
Molecular Cell Biology
Neuroscience
Physiology and Pharmacology
Mental Health Counseling
Microbiology and Cell Science
Music
Composition
Music History and Literature
Music Education
Nuclear Engineering Sciences
Nursing Sciences
Pharmaceutical Sciences
Medicinal Chemistry
Pharmacodynamics
Pharmacy
Pharmacy Health Care Administration
Philosophy
Physics
Plant Molecular and Cellular Biology
Plant Pathology
Political Science
Political Science–International Relations
Psychology
Clinical Psychology
Psychology
Rehabilitation Science
Religious Studies
Research and Evaluation Methodology
Romance Languages
French
Spanish
School Counseling and Guidance
School Psychology
Sociology
Soil and Water Science
Special Education
Statistics
Student Personnel in Higher Education
Veterinary Medical Sciences
Wildlife Ecology and Conservation
Zoology

Doctor of Plant Medicine (D.P.M.) [N]

Nontraditional Programs

Concurrent Graduate Programs

A graduate student who wishes to pursue two master's degrees in two different programs or two master's degrees within the same program concurrently must have the written approval of the representative of each academic unit involved and the Dean of the Graduate School. Any student interested in pursuing concurrent degrees should discuss the proposed study with the Graduate School's Student Records staff prior to applying for the programs. If the request is approved, the student must be officially admitted to both programs through regular procedures. If the student is approved to pursue two master's programs, no more than nine credits of course work from one degree program may be applied toward meeting the requirements for the second master's degree. These nine credits must be by petition to the Dean of the Graduate School.

Joint Degree Programs

A course of study leading to a graduate degree and a professional degree is called a joint degree program. 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 will determine whether a joint degree program is appropriate. Joint programs established prior to January 1, 2003, may have other requirements.

Any graduate student wishing to participate in a joint program must be admitted to both programs. Enrollment in one program may precede enrollment in the other according to timelines set by the program. A minimum of three credits registration in fall or spring or two credits in summer is required in the term in which a student intends to graduate. This course work must be credit that will apply toward the graduate degree requirements. See graduate coordinator for details.

Combined Bachelor's/Master's Degree Programs

The University of Florida offers a number of bachelor's/master's programs for superior students in which 12 credits of graduate-level courses are counted for both degrees. Courses that dual count must satisfy the requirements listed under the Transfer of Credit section of this catalog. Interested students should consult with their graduate coordinators about the availability of programs in that area and admissions requirements.

State University System Programs

Traveling Scholar Program—A traveling scholar is a graduate student who, by mutual agreement of the appropriate academic authorities in both the sponsoring and

hosting institutions, receives a waiver of admission requirements and a guarantee of acceptance of earned resident credits by the sponsoring institutions. The program will enable a graduate student to take advantage of the special resources available on another campus but not available on his/her own campus. The student must obtain prior approval by the graduate coordinator from the supervisory committee chair and the Dean of the Graduate School. Traveling scholars are normally limited to one term on the campus of the host university. Participation cannot be scheduled for the final term. Interested students should contact the Graduate Student Records Office, 106 Grinter Hall.

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

Interdisciplinary Graduate Certificates and Concentrations

A number of graduate programs offer interdisciplinary enhancements in the form of concentrations, field research, or graduate certificates. Those approved by the Graduate Council are summarized on the following pages.

African Studies

The Center for African Studies, a National Resource Center on Africa, funded, in part, under 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 at both the master's and doctoral levels. The curriculum provides a broad foundation for students preparing for teaching or other professional careers in which a knowledge of Africa is essential.

Graduate Fellowships and Assistantships—Students admitted to the Graduate School in pursuit of degrees offered by participating academic units are eligible to compete for graduate assistantships and Title VI Foreign Language and Area Studies fellowships.

Extracurricular Activities—The Center 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 brownbag discussions. Other conferences and lectures, as well as 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 provides direct support for African library acquisitions to meet the instructional and research needs of its faculty and students. The Africana Collection numbers over 120,000 volumes and 500 periodicals. The Map Library contains 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, in cooperation with participating academic units, offers a Certificate in African Studies in conjunction with the master's and doctoral degrees.

Inquiries about the various programs and activities of the Center should be addressed to the Director, Center for African Studies, 427 Grinter Hall, or visit the Center website at http://www.africa.ufl.edu.

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 should have a degree in one of the relevant fields 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 will be awarded through the academic units in which the candidates are enrolled.

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 who fulfill the applicable requirements can have their transcripts inscribed, upon request, with the citation **Concentration in Agroforestry or Minor in Agroforestry.**

Requirements for either option include completion of FNR 5335–Agroforestry and an appropriate number of approved supporting courses. These courses should be distributed over at least two academic units other than the candidate's major academic unit to provide the student with the background necessary to function in multidisciplinary teams and in association with professionals from other disciplines. Individuals with a strong biological background are encouraged to take courses in the social sciences, and vice versa.

Candidates for the concentration or minor in agroforestry should include on the graduate committees at least one faculty member representing the agroforestry interest. This faculty member, as designated by the Agroforestry Program Advisory Committee, will counsel the student on the selection of courses and the research topic.

Further information may be obtained from the Agroforestry Program Leader at 330 Newins-Ziegler Hall, (352) 846-0880, fax (352) 846-1322, and e-mail pknair@ufl.edu.

Animal Molecular and Cell Biology

The interdisciplinary concentration in Animal Molecular and Cell Biology (AMCB) provides graduate students in the animal and veterinary sciences with an understanding of principles of molecular and cell biology and their application to animal health and production. Emphasis is placed on participation in molecular and cell biology research and on providing an intellectual environment in which cross-fertilization among disciplines can flourish. Graduate Faculty from the Departments of Animal Sciences, Biochemistry and Molecular Biology, Chemistry, and the College of Veterinary Medicine participate in the program. The AMCB affords graduate students access to diverse research facilities required for studies in cellular and molecular biology, reproductive biology, virology, immunology, and endocrinology. Facilities include those for recombinant DNA research, experimental surgery, in vitro culture of cells, tissue and organ explants, manipulation of embryos, vaccine production, and recombinant protein engineering.

Ph.D. degrees are awarded through participating academic units with the interdisciplinary concentration in animal molecular and cell biology. Typical entering students will have a strong background in the animal or veterinary sciences. Graduate degree programs are designed by each student's faculty advisory committee, headed by the major adviser who is affiliated with the AMCB. All students are required to complete a core curriculum and have the opportunity to obtain cross-disciplinary training through rotations in laboratories of participating faculty and participate in the AMCB seminar series.

Requirements for admission into the AMCB are the same as for the faculty adviser's home academic unit and college. Financial assistance for graduate study is available through assistantships and fellowships from sources within individual academic units and the AMCB. Contact Dr. P. J. Hansen, Department of Animal Sciences for more information, at hansen@animal.ufl.edu.

Biological Sciences

The Archie Carr Center for Sea Turtle Research conducts research on all aspects of the biology of sea turtles. Researchers at the Center, in collaboration 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 primarily conducted at two research stations in the Bahamas and the Azores. For further information, contact the Director, Archie Carr Center for Sea Turtle Research, 223 Bartram.

The Whitney Laboratory for Marine Bioscience is a University of Florida research center for biomedical research and biotechnology. Since its 1974 founding, the Whitney Lab has been dedicated to the use of marine model animals for studying fundamental problems in biology and the application of that knowledge to issues of human health, natural resources, and the environment.

The academic staff of the Whitney Laboratory consists of eight tenure-track and three nontenure-track faculty members, together with 70 associates, students, and visiting scientists. Dr. Peter A. V. Anderson is the director.

Fields of research conducted at the Whitney Laboratory include chemosensory and visual physiology and biochemistry, ion channel structure and function, neurogenomics, synaptogenesis and synaptic physiology, protein-lipid interactions, physiology and evolution of neurotransmitter pathways, membrane pumps and transporters, and regulation of ciliary mechanisms. This research employs the techniques of modern cell and molecular biology, for which the Laboratory is particularly well equipped and recognized.

Research at Whitney Laboratory attracts graduate students 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 prior to 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 10-week periods.

The Laboratory is situated on a narrow barrier island with both the Atlantic Ocean and the Intracoastal Waterway within a few hundred feet of the facility. It is located in Marineland, about 18 miles south of St. Augustine and 80 miles from Gainesville.

For further information, write the Director, Whitney Laboratory for Marine Bioscience, 9505 Ocean Shore Blvd, St. Augustine, FL 32080-8610, telephone (904)461-4000; fax (904)461-4008; website http://www.whitney.ufl.edu.

The University of Florida Marine Laboratory at Seahorse Key is a field station committed to providing (a) support for research by students, faculty, and visiting scientists, (b) an outstanding teaching program in marine related subjects, and (c) support from public education 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 research vessel, several smaller outboard-powered boats for shallow water and inshore work, a 20 x 40 foot research and teaching building, and a 10-room residence, with two kitchens, a dining lounge, and dormitory accommodations for 24 persons.

Chemical Physics

The Center for Chemical Physics, with the participation of the faculty of the Departments of Chemistry, Physics, and Chemical Engineering, is concerned with graduate education and research in the theoretical, experimental, and computational aspects of problems in the borderline between chemistry and physics. Graduate students join one of the above academic units and follow a special curriculum. The student receives, in addition to the Ph.D. degree, a Certificate in Chemical Physics. For information, contact the Director, Prof. Valeria Kleiman, Chemistry Laboratory Building.

Ecological 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 additional undergraduate engineering articulation courses. This additional course work is required 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 credit may count toward the minimum requirements for the graduate degree. The student's terminal project, master's thesis, or an individual studies project may serve to satisfy the ecological engineering project requirement. For more information, contact the graduate coordinator in the Department of Environmental Engineering Sciences, P.O. Box 116450, University of Florida, Gainesville, FL 32611 or call (352)392-8450.

Geographic Information Sciences

Geographic Information Systems (GIS) have revolutionized the way that land features are located, measured, inventoried, managed, planned, and studied. GIS provides the theories and methods for original measurements of 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 for different objectives, setting cadastral boundaries for the purpose of property recognition and taxation and regulation, analyzing land and land-cover properties for both resource inventories and scientific studies, and siting commercial enterprises.

Users and producers of GIS include engineers, geographers, urban and regional planners, biologists and ecologists, land resource managers, anthropologists and archaeologists, sociologists, public health professionals and medical researchers, county land-management and property tax assessors, law enforcement officers, land-development companies, utility companies, retail stores, and others. 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 has developed the **Interdisciplinary Concentration for Geographic Information Sciences (ICGIS).**

The **ICGIS** is designed to integrate existing GIS resources on campus, for graduate students, as a response to changing regulatory environments in institutions and governments at all levels. This concentration has established a standard set of courses and activities that would allow graduate students to become experts in the creation, study, and use of geographic information. Such graduates would be in strong positions to meet future regulatory requirements for certification as professionals. Structurally, the **ICGIS** has established a five-category curriculum that would add several courses to the standard M.S., M.A., M.E., or Ph.D. requirements and would result in official recognition of having completed the GIS concentration by statements on transcripts and a certificate

For more information, contact Dr. Scot E. Smith, University of Florida, P.O. Box 116580, Gainesville, FL 32611, telephone (352)392-4652, e-mail ses@ce.ufl.edu.

Gerontological Studies

The Center for Gerontological Studies offers the minor in gerontology, the Graduate Certificate in Gerontology, and a college certificate in Geriatric Care Management. These programs are completed in conjunction with the student's graduate degree, for master's, specialist, and doctoral students. Graduate students may complete one or all of these programs. All programs require GEY 6646, an interdisciplinary core course, that provides a broad introduction to the critical issues and growing academic knowledge about aging, covering biomedical and health, psychosocial, and applied issues. Advanced courses at the graduate and professional level provide an opportunity for all students to expand their interdisciplinary knowledge and research background in aging. Students interested in aging major in graduate programs all over campus but their degrees are predominantly in the fields of nursing, psychology, occupational or physical therapy, rehabilitation, sociology, exercise and sport sciences, communication sciences and disorders or audiology, and recreational studies.

For the minor in gerontology, students complete 6 credits (master's level) or 12 credits (doctoral level) of approved aging courses outside of their major academic units. This program is most appropriate for students who desire course work in aging that will complement their future career interests. The Graduate Certificate in Gerontology requires completion of a major research project (typically, the student's thesis or dissertation), plus 12 credits of approved aging courses. This certificate is most appropriate for students planning to do substantive research in the field of aging as part of their graduate work.

Details for the Geriatric Care Management Certificate may be found at http://geriatriccaremanagement.dce. Details for other all programs may be found at http://www.geron.ufl.edu. Questions should be addressed to info@geron.ufl.edu or contact the Center for Gerontological Studies, P.O. Box 117335, 2326 Turlington Hall, University of Florida, Gainesville, FL 32611-7335 or call (352)392-2116.

Historic Preservation

Historic Preservation addresses sites, landscapes, structures, districts, and intangible heritage as a means to safeguard, celebrate, and adapt valuable resources that

range from decades to centuries old. While the professionalization of the field occurred during the latter half of the twentieth century, spurred on by passage of the National Historic Preservation Act in 1966, the twenty-first century will witness significant expansion of the field to address smart growth, sustainability, and economic development initiatives. Career opportunities include preservation and redevelopment work within architecture, building construction, interior design, landscape architecture, and urban and regional planning, as well as preservation consultant, preservation contractor, preservation researcher, Main Street program director, site manager, lawyer, archeologist, cultural resource manager, historian, real estate professional, and policy administrator among others

The Interdisciplinary Concentration and Certificate in Historic Preservation (ICCHP) integrates resources from throughout the campus 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 research and application of historic preservation in the United States and abroad. Depending upon the student's career goals and background, this can include recognizing, documenting, and protecting historic structures and sites; rehabilitation and restoration technologies; and/or exploring emerging and related specializations such as community development and sustainable development.

The interdisciplinary curriculum structure draws upon course work providing 12 graduate credit hours for the master's and 15 graduate credit hours for the Ph.D. of specialized study in historic preservation. Completion of these credits would result in official recognition of having completed the concentration by statements on participating students' transcripts 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, telephone (352)392-0205, ext. 233, e-mail regraham@ufl.edu.

Hydrologic Sciences

Interdisciplinary graduate studies in hydrologic sciences are designed for science and engineering students who are seeking advanced training in diverse aspects of water quantity, water quality, and water use issues. The emphasis is on providing (1) a thorough understanding of the physical, chemical, and biological processes occurring over broad spatial and temporal scales; and (2) the skills in hydrologic policy and management based on a strong background in natural and social sciences and engineering.

Graduate Faculty from nine departments in three colleges contribute to this interdisciplinary concentration. Depending on academic background and research interests, students may opt to receive the graduate 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, Horticultural Sciences, and Soil and Water Science.

M.S. (thesis and nonthesis option) and Ph.D. studies are available. The interdisciplinary graduate requirements were developed recognizing the 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 five topics: hydrologic systems, hydrologic chemistry, hydrologic biology, hydrologic techniques and analysis, and hydrologic policy and management. Additional elective courses (11 to 14 credits for M.S.; 30 credits for Ph.D.) allow specialization in one or more of these topics. Research projects involving faculty from several academic units can provide the basis for thesis and dissertation research topics.

Assistantships supported by extramural grants are available. Tuition waivers may be available to students who qualify. Students with B.S. or M.S. degrees in any of the following disciplines are encouraged to consider this specialization within their graduate programs: 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 see the Hydrologic Sciences Academic Cluster website: http://www.hydrology.ufl.edu or contact Professor Michael Annable P.O. Box 116450, telephone (352)392-3294.

Latin American Studies

The Center for Latin American Studies offers interdisciplinary teaching and research focused on Latin America and the Caribbean.

Master of Arts Degree in Latin American Studies— The master's degree offered through the Center requires 30 credits and completion of a thesis. It is available with either a disciplinary or a topical track. Both require a 15-credit major specialization.

Disciplinary specializations emphasize training and research in area and language studies within a specific academic unit, such as Anthropology, Economics, Food and Resource Economics, Geography, History, Political Science, Romance Languages and Literatures (Spanish), or Sociology, to develop a greater under-standing of Latin America's cultures and societies. This option is especially suited for students who wish to obtain a well-rounded background in Latin American studies before pursuing the Ph.D. in a specialized 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, international communications, religion and society, and tropical conservation and development. This option builds on prior professional or administrative experiences and prepares students for technical and professional work related to Latin America and the Caribbean.

Additional requirements for both options are (1) 15 credits of Latin American area and language courses in two other academic units outside the specialization, including one seminar LAS 6938; (2) reading, writing, and speaking knowledge of one Latin American language (Spanish, Portuguese, or Haitian Creole); and (3) an interdisciplinary thesis on a Latin American topic.

Although the M.A. degree in Latin American studies is terminal, many past recipients have entered the Ph.D. programs in related disciplines preparing for university teaching and research careers. Other graduates have found employment 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 (1) a baccalaureate degree from an accredited college or university; (2) a grade-point average of at least 3.2 for all upper-division undergraduate work; (3) a combined verbal-quantitative score of at least 1000 on the Graduate Record Examination; (4) a TOEFL score of 550 for nonnative speakers of English; (5) a 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. Participating students can earn both degrees in approximately one year less than if the degrees were pursued consecutively. The joint program provides an opportunity for students to develop their area and topical expertise in Latin America in combination with the study of law.

Candidates for the joint program must meet entrance requirements for and be admitted to both academic units. Admission criteria for the M.A. program are detailed in the *Requirements for Master's Degrees* section of this catalog. For the J.D requirements, see the College of Law Catalog.

General features of the joint program are as follows: (1) selection of a disciplinary or topic major specialization as described above, (2) submission of a thesis on a topic relating to law and Latin America, (3) completion of the College of Law's advanced writing requirement (the thesis will satisfy this requirement if certified by a member of the law faculty), and (4) a reciprocal arrangement between the College of Law and the Center for Latin American Studies that enables participating students, with approval, to count up to 12 credits toward both programs. For more information on this joint degree, please contact Dr. Terry McCoy, Center for Latin American Studies (tlmccoy@latam.ufl.edu).

Graduate Certificates in Latin American Studies—Master's 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; or Liberal Arts and Sciences.

Thesis degree candidates must have at least 12 credits of Latin American course work distributed as follows: (1) Latin American specialization within the major academic unit (to extent possible); (2) at least 3 credits of Latin American course work in one academic unit outside the major; (3) 3 credits of LAS 6938; (4) intermediate-mid proficiency in a Latin American language (language courses at the 3000 level or higher will count toward the certificate); and (5) a thesis on a Latin American topic.

Nonthesis master's degree candidates must have at least 15 credits of Latin American course work distributed as follows: (1) Latin American specialization within the major academic unit (to extent possible); (2) at least 6 credits of Latin American courses in two other academic units; (3) 3 credits of LAS 6938; and (4) intermediate-mid proficiency in a Latin American language (language courses at the 3000 level or higher will count toward the certificate).

Advanced Graduate Certificate in Latin American Studies—The Center offers the Certificate in Latin American Studies to Ph.D. candidates in the Colleges of Agricultural and Life Sciences, Business Administration, Design, Construction, and Planning, Education, Fine Arts, Journalism and Communications, and Liberal Arts and Sciences. Candidates for the Advanced Graduate Certificate must have at least 18 credits of Latin American course work distributed as follows: (1) Latin American specialization within the major academic unit (to extent possible), (2) 9 credits of Latin American courses in two other academic units; (3) 3 credits of LAS 6938; (4) intermediate-plus proficiency in one Latin American language (language courses at the 3000 level or higher will count toward the certificate); (5) research experience in Latin America; and (6) a dissertation on a Latin American topic.

Certificate for J.D. Students—Law students may earn the Certificate in Latin American Studies in conjunction with the J.D. degree. The curriculum consists of participation in the College of Law's summer program in Mexico or a similar program; 6 credits of Latin American courses outside the College of Law (including LAS 6938); a major research paper on a Latin American topic; and intermediate-mid proficiency in a Latin American language.

Graduate Fellowships and Assistantships—In addition to University fellowships and assistantships, the Center for Latin American Studies administers financial assistance from outside sources, including Title VI fellowships and private endowments.

Research—The Center supports several research and training programs that provide research opportunities and financial support for graduate students, especially in the Amazonian, Andean, and Caribbean regions.

Library Resources—The University of Florida libraries contain more than 300,000 volumes of printed works as well as manuscripts, maps, and microforms dealing with Latin America. Approximately 80% of the Latin American collection is in Spanish, Portuguese, and French. Holdings represent all disciplines and areas of Latin America but are strongest in the social sciences, history, and literature, and in the Caribbean, circum-Caribbean, and Brazilian areas, with increasing strength in the Andean and Southern Cone regions.

Other Activities—The Center 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 further information on the Center's programs and activities, please contact the Associate Director of the Center for Latin American Studies for Academic Programs and Student Affairs, Dr. M. Cristina Espinosa, 319 Grinter Hall (espinosa@latam.ufl.edu or (352)392-0375, ext 807.

Medical Physics

Medical Physics is concerned with the applications of advanced physical energy concepts and methods to the diagnosis and treatment of human disease. Students enroll in the Department of Nuclear and Radiological Engineering and take courses taught by the medical physics faculty from Nuclear and Radiological Engineering, Radiology, and Radiation Oncology. Students interested in the radiation protection aspects of the application of radioactivity or radiation in the healing arts may enroll in the medical health physics option. Formal courses include academic unit core requirements, a radiation biology course, and a block of clinical medical physics courses taught by Nuclear and Radiological Engineering, Radiology, and Radiation Oncology faculty. In addition, the program includes clinical internships in the Departments of Radiology and Radiation Oncology. Research opportunities and financial support exist in the form of faculty research and projects related to patient care.

Quantitative Finance

The interdisciplinary concentration in quantitative finance trains students for academic and research positions in quantitative finance and risk management areas. 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 implementation of new financial and risk management products, processes, strategies, and systems to meet demands of various institutions, corporations, governments, and households. The emphasis is on an interdisciplinary approach requiring knowledge in finance, economics, mathematics, probability/statistics, operations research, engineering, and computer science.

The interdisciplinary concentration involves four academic units: 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 for the Ph.D. interdisciplinary concentration, a student must be admitted to the Ph.D. program in one of the participating academic units. Students seeking admission to the concentration should have 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. Applications should be submitted to the academic units involved in the program.

Each student takes basic courses and satisfies the requirements of the Ph.D. program in the home academic unit. The student also takes courses (from the approved list) in other academic units involved in the program to satisfy requirements of the concentration.

Dissertation research is conducted in quantitative finance, risk management, and relevant areas involving quantitative finance approaches. The student receives, in addition to the Ph.D. degree, the 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); see http://www.ise.ufl.edu/rmfe. The RMFE Lab facilitates research and applications in the area of risk management and financial mathematics/engineering, including organization of research meetings, seminars, and conferences. It provides a basis for the collaborative efforts of multidisciplinary teams of UF researchers, governmental institutions and industrial partners.

A more detailed description of the concentration including contact information can be found at http://www.ise.ufl.edu/rmfe/qf.

Quantum Theory Project (QTP)

QTP (officially the Institute for Theory and Computation in Molecular and Materials Sciences) is an interdisciplinary group of 12 faculty plus graduate students, postdoctoral associates, and staff in the Departments of Physics and Chemistry. 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 molecular biology. Essentially all the effort is supported by substantial extramural funding, both individual and collaborative. QTP operates the J. C. Slater Computation Laboratory to support large-scale computing for precise numerical solutions and simulations, plus graphics and visualization. The Institute also organizes a major international meeting, the annual Sanibel Symposium.

Graduate students in chemistry and in physics are eligible for this specialization and follow a special curriculum. For further information, contact the Director, Quantum Theory Project, 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 is composed of approximately 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, and Pharmacy, 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 the protection of 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, such as the IDP in the College of Medicine, Medicinal Chemistry, Pharmaceutics, Pharmacodynamics, Veterinary Medical Sciences, or Food Science and Human Nutrition. The number of graduate programs involved in interdisciplinary toxicology, as well as 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 members of the Graduate Faculty of the student's major academic unit. Dissertation research may be conducted either in the student's academic unit, or at the Toxicology Laboratory facilities located at the Center. For additional information, please write to the Director, Center for Environmental and Human Toxicology, P.O. Box 110885, University of Florida, Gainesville, FL 32606.

Translation Studies

This 15-credit certificate program in translation studies prepares the student for a career in translation in government, business, law, health care, and other fields. The certificate can be combined with any M.A. or Ph.D. program or taken by itself. Course work includes translation theory and practice, terminology, computer-assisted translation, translation for the professions, literary translation, special seminars, and a practicum.

A study-abroad elective conducted in partnership with the UF Paris Research Center to examine translation in the European Union is available for variable credit. To enter the program, students have intermediate to native speaker proficiency in the source language and advanced to native speaker proficiency in the target language. The program is open to translators who work in any language pair, pending the availability of faculty mentors in less commonly taught languages (LCTLs). The program is housed in the Center for Latin American Studies and has faculty support from the Departments of Romance Languages and Literatures, Germanic and Slavic Studies, and African and Asian Languages and Literatures. Students must complete 15 credits for the certificate, including a practicum and instruction on the use of state-of-the-art technologies that assist the practice of translation. For further information on the Translation Studies Certificate, please contact Dr. Elizabeth Lowe, Director, 368 Grinter Hall, (352)392-0375 ext 809, elowe@ufl.edu. Also please consult the certificate program website at http://www.translationstudies.ufl.edu.

Tropical Agriculture

The Center for Tropical Agriculture, within the Institute of Food and Agricultural Sciences, seeks to stimulate interest in research and curriculum related to the tropical environment and its development.

Research—International agricultural development assistance contracts frequently have research components. The Center assists in the coordination of this research.

Minor in Tropical Agriculture—An interdisciplinary minor in tropical agriculture is available at both the master's and doctoral levels for 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.

Certificate in Tropical Agriculture (CTA)—A program emphasizing breadth in topics relevant to tropical agriculture (with certificate) for graduate students is available through the College of Agricultural and Life Sciences. The CTA is designed to prepare students for work in situations requiring knowledge of both the biological and social aspects of tropical agriculture. Students entering the program will receive guidance from members of the CTA Steering Committee regarding course work appropriate for careers in international agricultural development.

The CTA requires a *minimum* of 12 credits. The "typical" certificate program will consist of 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.

Application brochures are available from the Office of the Dean for Academic Programs (College of Agricultural and Life Sciences), 2014 McCarty Hall.

Other Activities—The Center seeks a broad dissemination of knowledge about tropical agriculture through the sponsoring of conferences, short courses, and seminars featuring leading authorities on the tropics; publication of books, monographs, and proceedings; and through acquisition of materials for the library and the data bank.

Tropical Conservation and Development

The Tropical Conservation and Development Program (TCD), located 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 enrolled in master's and Ph.D. programs in TCD's affiliate academic units at the University of Florida who are interested in acquiring interdisciplinary knowledge and technical skills to pursue a career in conservation and development research and practice.

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.

Upon completion of 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—two interdisciplinary core courses and one course each in tropical ecology and social science. Ph.D. students can earn a certificate by completing 15 credits of approved course work—three interdisciplinary core courses and one course each in tropical ecology and social science. Students from natural science academic units must take the social science credits outside of their major academic units. Otherwise, courses from the student's major can count toward program requirements. Substitutions may only be made with prior approval from the TCD Associate Director.

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 has the responsibility to judge 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 his/her research fits within 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 further information on the TCD certificate and concentration program and to see a list of approved courses, consult the TCD web page at http://www.latam.ufl. edu/tcd/ or contact Hannah Covert, Associate Director, 358 Grinter Hall, (352)392-6548, ext. 825, or e-mail hcovert@latam.ufl.edu.

Tropical Studies

The Organization for Tropical Studies (OTS) is a consortium of 50 major educational and research institutions in the United States and abroad, created to promote understanding of tropical environments and their intelligent use by people. The University of Florida is a charter member. Graduate field courses in tropical biology and ecology, agricultural ecology, population biology, and forestry are offered in Costa Rica and Brazil during the spring and summer terms. Students are selected on a competitive basis from all OTS member institutions.

A University of Florida graduate student may register for eight credits in an appropriate course cross-listed with OTS, e.g., PCB 6357C or AGG 6933. The University of Florida does not require tuition for OTS courses. Registration is on the host campus. However, students on Graduate Assistantships must be registered at the University of Florida as well. Research grants are available through OTS. Further information may be obtained from University of Florida representatives to the OTS board of directors, Dr. Robert Holt and Dr. Hugh Popenoe, located in 111 Bartram Hall and 2169 McCarty Hall.

Vision Sciences

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 regeneration. Further information may be obtained from the program director, Dr. William W. Hauswirth, P.O. Box 100266, College of Medicine, Gainesville, FL 32610 or call (352)392-0679.

Wetland Sciences

The interdisciplinary concentration in wetland sciences (ICWS) is a unified interdisciplinary program in wetland science and policy for students at the master's and doctoral levels.

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 within 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 found in many academic programs across campus. The ICWS is designed

both to expose students to perspectives outside their disciplines and to provide 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: (1) wetlands science (1 course each in wetlands ecology, wetland hydrology, and wetlands biogeochemistry), (2) wetlands systems, (3)wetlands organisms, and (4) wetlands policy/law. Additional course work within a student's disciplinary focus may strengthen his/her knowledge base or allow for specialization in one or more of the areas.

For more information contact the Howard T. Odum Center for Wetlands, Phelps Lab, P.O. Box 116350, telephone (352)392-2424, or visit the web site http://www.cfw.ufl.edu.

Women's and Gender Studies

Two certificates, two master's degrees, and a doctoral concentration are offered in women's and gender studies. Graduate Faculty from several academic units, campus-wide, participate. Among the academic units represented are 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 designed to give students a thorough grounding 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 is designed for students who wish to focus on issues related to gender, economic development, and globalization.

The doctoral-level interdisciplinary concentration in women's and gender studies provides graduate students an opportunity to develop a thorough grounding in the new scholarship produced through the intersection of women's studies and other academic fields. The concentration facilitates the 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, economic, and civil status. Emphasis is on participating in women's and gender studies research and on providing an intellectual environment in which cross-fertilization between disciplines can flourish. Women's and gender studies critically explore the role and status of women and men, past and present.

Ph.D. degrees are awarded through participating academic units with the interdisciplinary concentration in women's and gender studies. Study plans are designed by each student's committee, headed by the supervisory chair who is affiliated with women's/gender studies.

Requirements for admission are the same as for the student's home academic unit and college. After admission to the degree-granting academic unit, the application is sent by the academic unit to the Graduate Coordinator of Women's and Gender Studies who chairs an admissions committee.

For further information on the master's degrees, see *Specialized Master's Degrees* and the *Fields of Instruction* sections of this catalog or contact the Director, Center for Women's Studies and Gender Research, 3324 Turlington Hall.

Admission to the Graduate School

How to Apply

Application for Admission—Applicants should contact the academic unit of interest for information about admissions procedures. A listing of websites for academic units is available at http://gradschool.rgp.ufl.edu/students/college-department-links.html. Applications that meet minimum standards are referred by Graduate Admissions in the Office of the University Registrar to the graduate selection committees of the various academic units for approval or disapproval.

To be admitted to graduate study in a given academic unit, the prospective student must satisfy the requirements of the unit as well as those of the Graduate School. Admission to some programs is limited by the resources available.

Minimum Requirements—The Graduate School, University of Florida, requires both a minimum grade average of B for all upper-division undergraduate work and a minimum verbal-quantitative total score of 1000 on the General Test of the Graduate Record Examination (or satisfactory scores on the Graduate Management Admission Test for students applying to the Warrington College of Business Administration) for students with an earned bachelor's degree only or its international equivalent based on a four-year curriculum. For some academic units, and in more advanced levels of graduate study, undergraduate averages or Graduate Record Examination scores above those stated for the Graduate School may be required. 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 is dependent upon presentation of a baccalaureate degree from an accredited college or university. Two copies of the official transcripts from all previously attended colleges or universities should accompany all applications–one for the academic unit and one for the Registrar. These transcripts must be received directly from the registrar of the institution in which the work was done. Official supplementary transcripts are required as soon as they are available for any work completed after application for admission has been made.

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.

The University of Florida 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. 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 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 will 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 that violate the rights of another. The University will embody, through policy and practice, a diverse community. Our collective efforts will lead to a University that is truly diverse and reflects the U.S. population.

The University encourages applications from qualified applicants of both sexes from all cultural, racial, religious, and ethnic groups. The University does not discriminate on the basis of marital status, disability, or age in admission or access to its programs and activities. The Title IX Coordinator is located in 145 Tigert Hall (352)392-6004.

Admissions Examinations

Graduate Record Examination—In addition to the General Test of the Graduate Record Examination which is required of all first-time graduate students, some academic units encourage the applicant to submit scores on one or more advanced subject tests of the Graduate Record Examination. The scores on all tests taken will be considered in regard to admission. Applicants with a previous graduate or professional degree or equivalent from a regionally accredited U.S. institution may be exempt from the Graduate Record Examination and undergraduate G.P.A. requirements. Inquiries about specific requirements should be addressed to the academic unit in question.

Graduate Study in Business Administration—Students applying for admission to the Graduate School for study in the Warrington College of Business Administration may substitute satisfactory scores on the Graduate Management Admission Test (GMAT) for the Graduate Record Examination. Students applying for admission to the Master of Business Administration (M.B.A.) program must submit satisfactory scores on the GMAT. University of Florida minimum requirements are 465. Applicants should contact the Educational Testing Service, Princeton, NJ 08540, for additional information.

Graduate Study in Law—Students applying to the graduate program leading to the degree Master of Laws in Taxation must hold the Juris Doctor or equivalent degree.

Medical Immunization

Prior to registration, each student accepted for admission must submit proof of immunization. When the application is approved for admission, a form to complete and return is forwarded to the student. **No student is allowed to register until the Health Care Center has received and approved the form.**

Computer Requirement

Access to and on-going use of a computer are required of all students to complete their degree programs successfully. The University expects each student entering the University and continuing students to acquire computer hardware and software appropriate to the degree program. 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 University correspondence is often sent via e-mail.

While the University offers limited access to computers through its computer labs, most students are expected to purchase or lease a computer that is capable of dial-up or network connection to the Internet, graphical access to the World Wide Web, and productivity functions such as word processing and spreadsheet calculations. Detailed information is provided on the following website: http://www.circa.ufl.edu/computers/. Most colleges have additional software requirements or recommendations. See their web pages for that information.

Conditional Admission

Students admitted as exceptions under the 10% waiver rule must present both an upper-division grade point average and Graduate Record Examination General Test score with their applications and meet other criteria required by the University, including excellent letters of recommendation from colleagues, satisfactory performance in a specified number of graduate courses taken as postbaccalaureate students, and/or practical experience in the discipline for a specified period of time.

In addition, students who are not eligible for direct admission may be granted conditional admission to the Graduate School to defer final admission decisions for one term until requisite examination scores or final grade records are available; to ascertain their abilities to pursue graduate work at the University of Florida if previous grade records or Graduate Record Examination scores are on the borderline of acceptability; or when specific prerequisite courses are required.

Students granted conditional admission should be notified by the academic unit of the conditions under which they are admitted. When these conditions have been satisfied, the academic unit must notify the student in writing, sending a copy to the Graduate School. Eligible course work taken while a student is in conditional status is applicable toward a graduate degree.

Students failing to meet any condition of admission will be barred from further registration.

Residency

Florida Administrative code

Classification of Students–Florida or Non-Florida (6A-10.044, Florida Administrative Code) Residency for Tuition Purposes.

The State Board of Community Colleges and the Board of Education shall maintain consistent policies and practices for the classification of students as residents for tuition purposes to facilitate the transfer of students among institutions. The policies and practices may vary to accommodate differences in governance, but the determinations of classification shall be consistent to assure students of being classified the same regardless of the institution determining the classification.

(1) The classification of a student as a Florida resident for tuition purposes by a public Florida community college or university shall be recognized by other public postsecondary institutions to which the student may later seek admission, unless the classification was erroneous or the student did not then qualify as a resident for tuition purposes.

(2) Once a student has been classified by a public institution, institutions to which the student may transfer are not required to reevaluate the classification unless inconsistent information suggests that an erroneous classification was made or the student's situation has changed.

(3) Changes the State Board of Community Colleges and the Board of Education intend to make in the policies and practices for the classification of students as residents for tuition purposes shall be filed with the Articulation Coordinating Committee.

(4) Non-U.S. citizens such as permanent residents, parolees, asylees, refugees, or other permanent status persons (e.g., conditional permanent residents and temporary residents), who have applied to and have been approved by the U.S. Citizenship and Immigration Service with no date certain for departure shall be considered eligible to establish Florida residency for tuition purposes. In addition, nonimmigrants holding one of the following visas shall be considered eligible to establish Florida residency for tuition purposes. Persons in visa categories not listed herein shall be considered ineligible to establish Florida residency for tuition purposes.

(a) Visa category A–Government official.

(b) Visa category E–Treaty trader or investor.

(c) Visa category G–Representative of international organization.

(d) Visa category H-1–Temporary worker performing nursing services or a specialty occupation.

(e) Visa category H-4–Only if spouse or child of alien classified H-1.

(f) Visa category I–Foreign information media representative.

(g) Visa category K–Fiance, fiancee, or a child of United States citizen(s).

(h) Visa category L–Intracompany transferee (including spouse or child).

(i) Visa category N–Parent or child of alien accorded special immigrant status.

(j) Visa category O-1–Workers of "extraordinary" ability in the sciences, arts, education, business, or athletics.

(k) Visa category O-3–Only if spouse or child of O-1 alien.

(l) Visa category R–Religious workers.

(m) Visa category NATO-1-7–Representatives and employees of NATO and their families.

(5) Non-U.S. citizens who fall within the following categories shall also be considered eligible to establish Florida residency for tuition purposes.

(a) Citizens of Micronesia.

(b) Citizens of the Marshall Islands.

(c) Beneficiaries of the Family Unity Program.

(d) Individuals granted temporary protected status.

(e) Individuals granted withholding of deportation status.

(f) Individuals granted suspension of deportation status or cancellation of removal.

(g) Individuals granted a stay of deportation status.

(h) Individuals granted deferred action status.

(i) Individuals granted deferred enforced departure status.

(j) Applicants for adjustment status.

(k) Asylum applicants with INS receipt or Immigration Court stamp.

Specific 229.053(1) 240.325 FS., Law Implemented 240.1201 FS. History-New 10-6-92, Amended 10-17-2000.

Student Residency, Section 6C-7.005 Florida Administrative Code.

(1) For the purpose of assessing tuition, residency and nonresidency status shall be determined as provided in Section 240.1201, Florida Statutes, and the Florida State University System Residency Policy and Procedure Manual (revised effective October 17, 2000), incorporated by reference herein.

(2) An individual shall not be classified as a resident for tuition purposes and, thus, shall not be eligible to receive the resident tuition rate, until the individual has provided satisfactory evidence as to his or her legal residence and domicile to appropriate university officials. In determining residency, the university shall require evidence such as a voter registration, driver's license, automobile registration, or any other relevant materials as evidence that the applicant has maintained 12 months residence immediately prior to qualification as a bona fide domicile, rather than for the purpose of maintaining a mere temporary residence or abode incident to enrollment in an institution of higher learning. To determine if the student is a dependent child, the university shall require evidence such as copies of the aforementioned documents. In addition, the university may require a notarized copy of the parent's IRS return.

"Resident student" for tuition purposes classification shall also be construed to include students to whom an Immigration Parolee card or a Form I-94 (Parole Edition) was issued at least one year prior to the first day of classes for which resident student status is sought, or who have had their resident alien status approved by the United States Immigration and Naturalization Service, or who hold an Immigration and Naturalization Form I-151, I-551 or a notice of an approved adjustment of status application, or Cuban Nationals or Vietnamese Refugees or other refugees or asylees so designated by the United States Immigration and Naturalization Service who are considered as Resident Aliens, or other legal aliens, provided such students meet the residency requirements stated above and comply with subsection (4) below. The burden of establishing facts which justify classification of a student as a resident and domiciliary entitled to "resident for tuition purposes" registration rates is on the applicant for such classification.

(3) In applying this policy:
(a) "Student" shall mean a person admitted to the institution, or a person allowed to register at the institution on a space available basis.
(b) "Domicile" shall denote a person's true, fixed, and permanent home, and to which whenever the person is absent the person has the intention of returning.

(4) In all applications for admission or registration at the institution on a space available basis a "resident for tuition purposes" applicant, or, if a dependent child, the parent of the applicant, shall make and file with such application a written statement, under oath, that the applicant is a bona fide resident and domiciliary of the State of Florida. All claims to "resident for tuition purposes" classification must be supported by evidence as stated in Rule 6C-7.005(1),(2) if requested by the registering authority.

(5) A "nonresident" or, if a dependent child, the individual's parent, after maintaining a legal residence and being a bonafide domiciliary of Florida for twelve (12) months, immediately prior to enrollment and qualification as a resident, rather than for the purpose of maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education, may apply for and be granted classification as a "resident for tuition purposes"; provided, however, that those students who are nonresident aliens or who are in the United States on a non-immigration visa will not be entitled to reclassification. An application for reclassification as a "resident for tuition purposes" shall comply with provisions of subsection (4) above. An applicant who has been classified as a "nonresident for tuition purposes" at time of original enrollment shall furnish evidence as stated in Rule 6C-7.005(1) to the satisfaction of the registering authority that the applicant has maintained residency in the state for the twelve months immediately prior to qualification required to establish residence for tuition purposes. In the absence of such evidence, the applicant shall not be reclassified as a "resident for tuition purposes." It is recommended that the application for reclassification be accompanied by a certified copy of a declaration of intent to establish legal domicile in the state, which intent must have been filed with the Clerk of the Circuit Court, as provided by Section 222.17, Florida Statutes. If the request for reclassification and the necessary documentation are not received by the registrar prior to the last day of registration for the term in which the student intends to be reclassified, the student will not be reclassified for that term.

(6) Appeal from a determination denying "resident for tuition purposes" status to applicant therefor may be initiated after appropriate administrative remedies are exhausted by the filing of a petition for review pursuant to Section 120.68 F.S.

(7) Any student granted status as a "resident for tuition purposes," which status is based on a sworn statement which is false, shall, upon determination of such falsity, be subject to such disciplinary sanctions as may be imposed by the president of the university.

Specific 240.209(1), (3)(r) FS. Law Implemented 120.53(1)(a), 240.209(1), (3)(e), 240.233, 240.235, 240.1201 FS. History–Formerly 6C-2.51, 11-18-70, Amended 8-20-71, 6-5-73, 3-4-74, Amended and Renumbered 12-17-74, Amended 1-13-76, 12-13-77, 8-11-81, 6-21-83, 12-13-83, 6-10-84, 10-7-85, 12-31-85, Formerly 6C-7.05, Amended 11-9-92, 4-16-96.

How to Apply for Residency

All U.S. citizens, permanent residents and others included in Section 4 of the Board of Education Rule 6a-10.044 above are eligible to apply for Florida residency.

Residency for tuition purposes is controlled exclusively by laws enacted by the Florida Legislature. For the purpose of assessing tuition, residency and nonresidency status shall be determined as provided in Classification of Students—Florida or Non-Florida (Section 6A-10.044, Florida Administrative Code), Section 240.1201, Florida Statutes, and the Florida State University System Residency Policy and Procedure Manual [revised effective October 17, 2000]. The law may be found in its entirety on line at http://www.leg.state.fl.us//statutes/. Staff members in the Office of the University Registrar review applications for Florida resident status, together with supportive documentation, and render a decision based on the documentation and the requirements of Florida law.

This law, the rules, and the implementation manual presume that students who are initially classified as nonresident will not be reclassified as residents merely by being enrolled for one year. It is the sole responsibility of the applicant to provide all appropriate documentation to merit a reclassification for tuition purposes.

A student wishing to establish residency 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.

International Students

All international students seeking admission to the Graduate School are required to submit satisfactory scores on the GRE General Test and a score of at least 550 on the paper-based and 213 on the computer-based TOEFL (Test of English as a Foreign Language) with the following exceptions:

1. International students whose native language is English or who have spent at least one academic year at a college or university prior to enrolling at the University of Florida in a country where English is the official language, excluding intensive English language programs, need not submit TOEFL scores but must submit satisfactory scores on the General Test of the Graduate Record Examination before their applications for admission can be considered.
2. All international students applying for admission for the Master of Business Administration program must submit satisfactory scores from the Graduate Management Admission Test before their applications for admission will be considered.

International students whose scores on the TOEFL or verbal portion of the GRE are not satisfactory are required to write a short essay for examination. If the skills demonstrated in the essay are not acceptable for pursuing graduate work, the examination will be used as a diagnostic tool for placement in appropriate courses which will not count toward a graduate degree.

Graduate students whose native language is not English must submit satisfactory scores on the Test of Spoken English (TSE) or the SPEAK Test to be eligible for teaching assignments. Students who score 55 or above are allowed to teach in the classroom, laboratory, or other appropriate instructional activity. Those who score 45 to 50 are allowed to teach on the condition that they enroll concurrently in EAP 5836, a course designed to help their interpersonal and public speaking communication skills. Students who fail to score 45 points may not be appointed to teach. To raise their scores on the TSE, they are advised to take EAP 5835, a course to improve general oral language skills. They must subsequently submit a TSE or SPEAK score of 45 or higher to be appointed to teach, and they come under the guidelines described above.

Applicants should write to the Educational Testing Service, Princeton, NJ 08540, for registration forms and other information concerning TOEFL, TSE, GMAT, and GRE. Students may register for the locally administered SPEAK test with the Academic Spoken English Office, 3340 Turlington Hall.

Students With Disabilities

The University of Florida does not discriminate on the basis of disability in the recruitment and admission of students, in the recruitment and employment of faculty and staff, or in the operation of any of its programs and activities, as specified by federal laws and regulations. The designated coordinator for compliance with Section 504 of the Rehabilitation Act of 1973, as amended, is John Denny, Assistant Dean of Students, 202 Peabody Hall (352)392-1261. The designated coordinator for the Americans with Disabilities Act (ADA) is Kenneth J. Osfield, ADA Office/Environmental Health and Safety (352)392-7056, (352)846-1046 (TDD).

The Dean of Students' Office Disability Resources Program provides assistance for students with disabilities. Services are varied depending on individual needs and include, but are not limited to, academic accommodations, learning strategies, help in securing auxiliary learning aids, and assistance in general University activities. Students with disabilities are encouraged to contact this office located in 202 Peabody Hall. For more information, visit the Dean of Students' Office website at http://www.dso.ufl.edu.

Veterans Administration and Social Security Administration Benefits Information

The University of Florida is approved for the education and training of veterans, spouses, or dependents of veterans (100% disabled or deceased service connected), by the Florida Department of Veterans Affairs.

Ten federal public laws currently provide education/job-training programs for Department of Veterans Affairs (DVA) eligible students. The four programs serving most students are Chapter 30 for U.S. Military Veterans, Chapter 31 for Disabled U.S. Military Veterans, Chapter 35 for Spouse and Children of Deceased or 100% Disabled Veterans (service connected), and Chapter 1606 for personnel in the National Guard or U.S. Military Reserves. Students can contact the Office of the University Registrar or the DVA counseling center for specific program information such as terms of payment, months of eligibility and an additional allowance under the DVA work-study program.

University of Florida students who may be eligible for a particular DVA educational program must obtain and submit a completed Application for Educational Benefits to the Office of the University Registrar. This office will then certify the student for full-time (undergraduate 12 credits, graduate 9 credits) or part-time educational benefits in accordance with DVA rules and regulations.

The Atlanta Regional Processing Office of the U.S. Department of Veterans Affairs will make a determination of eligibility based on official service records, evidence submitted by the student, and applicable laws for veterans. Students who have already established their DVA program eligibility at another college or university must submit a completed Change of Program or Place of Training form to the University Registrar, as well as a University of Florida Certification of Enrollment Request. All forms are available at the University of Florida Registrar Information Counter in 222 Criser Hall. This office also can provide confirmation of student status for DVA health care or other benefits.

Inquiries relating to Social Security benefits should be directed to the student's local Social Security Office. The Office of the University Registrar will submit enrollment certificates issued by the Social Security Administration for

students eligible to receive educational benefits under the Social Security Act, providing the graduate student registers for 9 credits or more during fall or spring semester or 8 credits during summer term C.

A full-time graduate load for DVA or Social Security benefits is 9 credits per semester.

Postbaccalaureate Students

Students who have received a bachelor's degree but have not been admitted to the Graduate School are classified as postbaccalaureate students. The admission requirements for postbaccalaureate enrollment are a 2.0 grade point average and a score of 550 on the Test of English as a Foreign Language if the applicant is from a non-English speaking country. Postbaccalaureate enrollment is offered for the following reasons: (1) to provide a means for students *not seeking a graduate degree* to enroll in courses–included in this category would be students who change their professional goals or wish to expand their academic backgrounds–and (2) to accommodate students who *do intend* to enter a graduate program at some future date, but need a substantial number of prerequisite undergraduate courses.

Postbaccalaureate students may enroll in graduate courses, but the work taken will not normally be transferred to the graduate record if the student is subsequently 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 semester credits of graduate course work earned with a grade of A, B+, or B.

For the College of Education, only students who have completed a baccalaureate program in the College 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 seeking teacher certification, with degrees in other fields, should apply for admission to a master's program in the College of Education. More information is available on the Registrar's 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 nondegree educational objectives at the University of Florida. Students who have been denied admission to UF for any term are not eligible for nondegree registration. Students must receive prior approval from the academic unit(s) to take courses in a nondegree status. Work taken will not normally be transferred to the graduate record if the student is subsequently 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 semester credits of graduate course work earned with the grade of A, B+, or B.

A student should not remain in this classification for more than one term before being admitted as a postbaccalaureate or graduate student.

Readmission

This information applies only to students who have been admitted to a graduate program and attended the University. Former graduate students who do not enroll at the University for two consecutive terms, including any summer term, must reapply for admission whether to the same or a different program. Readmission, however, is not guaranteed and is subject to the availability of space at the appropriate level, college or major. Therefore, it is strongly advised that students who wish to take a leave of absence for two or more consecutive terms obtain prior written approval from their academic units. Students who skip a single term will be scheduled automatically for a registration appointment for one additional term. Readmission applications are available from the Office of Admissions, P.O. Box 114000, University of Florida, Gainesville, FL 32611-4000 or online at www.reg.ufl.edu/regadmi.htm

Faculty Members as Graduate Students

University of Florida faculty in tenured or tenure-accruing lines, as designated by the Florida Administrative Code, 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, persons holding nontenure- or nonpermanent-status-accruing titles may pursue graduate degrees at the University of Florida. Any other exceptions to this policy must be approved by the Graduate Council. Such exceptions, if given, are rare and will only be approved when it is determined to be in the best interest of the University.

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 making application. Prospective students should write directly to their major academic units. *Early inquiry is essential in order 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. Clear evidence of superior ability and promise is required. Reappointment to assistantships requires evidence of continuation of good scholarship.

Unless otherwise specified, applications for these awards should be made to the appropriate academic unit chair, University of Florida, on or before February 15 of each year.

Fellows and graduate assistants must pay appropriate in-state and out-of-state tuition. Fellows receiving semester stipends of $3150.00 or greater and trainees are expected to devote full time to their studies. Graduate assistants who have part-time teaching or research duties register for reduced study loads according to the schedule required for their appointment. Students on appointment will be financially liable for excess credits over the required registration or dropped courses.

Tuition Payments

In-State Matriculation Fee 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 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.

Residency for Graduate Students on Appointment

Graduate research and teaching assistants and University Alumni or Named Presidential Fellows who are United States citizens or permanent residents are eligible for in-state residency for tuition purposes after the completion of three consecutive semesters over 12 consecutive months.

It is the policy of the University of Florida that all such students must take the appropriate actions to become in-state residents for tuition purposes at the beginning of their first semester of enrollment and no later than the end of the drop/add period. This includes (1) registering as a voter in Florida; (2) obtaining a Florida driver's license or Florida ID; (3) obtaining a Florida vehicle registration and insurance if appropriate; and (4) completing a declaration of domicile. Information to accomplish these tasks is available either from the graduate coordinator, academic unit office, or on line at http://gradschool.rgp.ufl.edu/students/faqs-introduction.html.

At the beginning of their second year of enrollment, students must file the appropriate documentation with the Office of the University Registrar before the end of the drop/add period.

University-Wide Fellowships

http://www.aa.ufl.edu/fellows/

Alumni Fellowship

http://www.aa.ufl.edu/fellows/alumni.html

Alumni Graduate Fellows represent the highest graduate student award available at the University. Funded at nationally competitive levels, these highly prestigious awards support students in all academic units of the University awarding a Ph.D. or M.F.A.

The Alumni Graduate Fellowships focus on identifying and supporting students who seek the Ph.D. degree or selected terminal master's degrees (the M.F.A. for example). To ensure that Alumni Fellows receive every opportunity to succeed, the Alumni Graduate Fellowships provide a full four years of support through a nationally competitive stipend and full tuition waiver for qualifying students.

Most Alumni Graduate Fellows will receive a minimum of two years of fully-funded fellowship, and they will receive another two years of research or teaching assistantship. The University expects Alumni Fellows to demonstrate high standards of academic achievement and participation in University life.

Applicants for Alumni Fellowships apply through the academic unit of their major field of study. Successful applicants will have outstanding undergraduate preparation, a strong commitment to their field of study, and demonstrated potential in research and creative activities.

Named Presidential Fellowship

http://www.aa.ufl.edu/fellows/presidential.html.

The Graduate School sponsors fellowships named for former University of Florida presidents. They represent a four-year commitment to the student, assuming satisfactory progress toward the degree.

The first and fourth years are funded by the Graduate School. The second and third years are funded by the student's academic unit or college as either an assistantship or a fellowship at the same stipend level as the Graduate School funding. Because nationally competitive stipend levels vary widely across disciplines, the academic units set the stipend level. The lower bound of the stipend is $10,000 annually.

The fellowships are limited to U.S. citizens or permanent residents who are pursuing a terminal degree (Ph.D., Ed.D., or M.F.A.). The program is intended primarily to attract outstanding students from across the nation. Applications for students from traditionally underrepresented groups are encouraged.

Potential applicants should contact their major academic units for complete application information.

Grinter Fellowship

http://www.aa.ufl.edu/fellows/grinter.html

Grinter Fellowships are named in honor of Dr. Linton E. Grinter, Dean of the Graduate School from 1952 to 1969.

The intent of this fellowship is to facilitate recruitment of truly exceptional graduate students. Currently enrolled graduate students are not eligible, except in the particular

case in which they are entering a Ph.D. (or other terminal degree) program.

Stipends are normally $4000. Continuation of the Grinter beyond the first year is contingent upon satisfactory student progress.

Interested students should contact their major academic units for complete information. Students in the Colleges of Agricultural and Life Sciences, Engineering, and Law are not eligible for Grinter Fellowships.

Title VI–Foreign Language and Area Studies Fellowship

Title VI fellowships are available to graduate students whose academic programs are either Latin America or Africa 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, Xhosa, Yoruba, or other African languages for which appropriate instruction can be arranged, for recipients through the Center for African Studies. Remuneration will consist of a $14,000 stipend for the academic year and $2,400 for the summer plus payment of all tuition and fees.

For further information, please contact the Director of either the Center for Latin American Studies (319 Grinter Hall) or the Center for African Studies (427 Grinter Hall), University of Florida.

Graduate Minority Programs

http://gradschool.rgp.ufl.edu/diversity/introduction.html

115 Grinter, PO Box 115500, Gainesville, Fl 32611, (352)392-6444

The Office of Graduate Minority Programs spearheads the Graduate School's contribution to campus diversity by working on the recruitment, retention, and graduation of minority and underrepresented students in master's and doctoral degree programs. Its mission is to

(1) Increase the application, enrollment, and graduation of graduate students who are first-generation college students, academically underrepresented students (women in engineering, men in nursing, etc.), and ethnic or racial minority groups (African-Americans, Hispanic-Americans, Native Alaskans [Aleuts and Eskimos], Native Americans, and Native Pacific Islanders).

(2) Provide prospective and enrolled graduate students in underrepresented demographic groups the resources and opportunities to pursue and complete graduate education successfully.

The following development and funding opportunities are available through the Office of Graduate Minority Programs:

Florida Board of Education Summer Program (BOE)—BOE is held during the summer B term and is an early admissions orientation and preparation program for ethnic/cultural minorities, first generation college students, and academically under-represented students who have not previously attended the University of Florida. This retention program is designed to prepare eligible, newly admitted students for the demands of graduate education such as research, writing, time management, etc. Participants receive a $1500 stipend and payment of 4 credits for the summer B semester. All participants are required to be registered as full-time students for the following academic year. U.S. citizens who have been admitted to a university graduate program and meet criteria for eligibility are invited to apply online at http://gradschool.rgp.ufl.edu/diversity/boe-summer.html

Florida A&M University Feeder Program—UF is one of 30 universities who are part of the FAMU Feeder program, aimed at increasing the number of FAMU students in graduate programs. FAMU nominates students with a minimum GPA of 3.0 to participating feeder institutions for admission into their graduate programs. The Office of Graduate Minority Programs is the University of Florida's main contact for the feeder program. The University offers five fellowships every year to qualified FAMU Feeder students who have been admitted to a graduate program. Each receives an $8,000 annual stipend, plus tuition for up to 12 credits for the fall and spring semesters. The application deadline is February 15th.

McKnight Doctoral Fellowship—The Florida Education Fund (FEF) awards McKnight Fellowships to African-American students newly admitted into selected doctoral degree programs at state universities. The Fellowship provides a $12,000 12-month stipend, along with tuition and fees for up to a five-year period provided there is satisfactory progress toward completion of the degree. African Americans who are U.S. citizens are eligible to receive the McKnight Fellowship and should contact FEF for applications and more information (201 East Kennedy Blvd., Suite 1525, Tampa, FL 33602, (813) 272-2772). The application deadline is January 15th.

University of Florida/Santa Fe Community College Faculty Development Project—This partnership initiative is designed to give University of Florida graduate students the opportunity to teach as adjunct professors. Participants are required to teach 3 courses per year at SFCC as well as assist SFCC in the recruitment and retention of minority students. The program provides a $9,000 stipend for 10 months and payment of up to 12 credits of tuition and fees for the fall and spring semesters, for a maximum of 4 years. To be eligible for the Faculty Development Project, applicants must be US citizens from a minority/underrepresented group and hold a master's degree in one of the approved disciplines. The application deadline is March 15th.

National Consortium for Graduate Degrees for Minorities in Engineering and Sciences, Inc. (GEM) Fellowship—This fellowship program supports African

American, Native American, and Hispanic American students to pursue the Master of Science degree in engineering and the Doctor of Philosophy degree in engineering and science disciplines. The GEM Consortium pays both master's and doctoral fellowship recipients tuition, fees, and a stipend. The practical summer internship component brings the fellowship total value to between $20,000 and $60,000 for master's students and $60,000 and $100,000 for doctoral students. 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 more information about GEM Fellowship Programs, visit http://www.gemfellowship.org or call (574) 631-7771.

Supplemental Retention Award—This retention award is designed to assist students with the completion of their degrees by involving them in a structured program. It provides tuition payment for graduate students with an economic need due to expired funding from fellowships or assistantships who are within three semesters of finishing their degrees. It is limited to students who are U.S. citizens or permanent-resident aliens.

Campus Visitation Program—CVP provides an opportunity for prospective students who are underrepresented in graduate studies to visit the University of Florida campus. During the visitation, participants get to learn more about UF's graduate and professional programs, as well as meet with administrators, faculty members, and current graduate students. CVP is held over three days in the middle of every fall and spring semester. Housing and some meals are provided by the University, and participants receive a reimbursement toward a portion of their travel expenses. All participants are required to apply for graduate admission to a UF program during their visitation; therefore, they must have at least a 3.0 upper-division undergraduate grade point average and meet minimum UF requirements on GRE, GMAT, LSAT, MCAT, etc. in order to be accepted for the Campus Visitation Program.

Professional Development Workshops—Every semester the Office of Graduate Minority Programs plans multiple professional development workshops on topics related to graduate and professional success. Examples include getting your work published, financial management, choosing a mentor, etc. These workshops are free and open to all University of Florida students.

College/School Financial Aid Websites

In addition to the university-wide fellowship and assistantship opportunities, numerous awards specific to a particular field of study are available through the various academic units. The websites listed below will provide information about financial aid available in each discipline.

Fisher School of Accounting
http://www.cba.ufl.edu/fsoa/
College of Agricultural and Life Sciences
http://www.cals.ufl.edu/
M. E. Rinker School of Building Construction
http://www.bcn.ufl.edu/
College of Design, Construction, and Planning
http://www.arch.ufl.edu/
Warrington College of Business Administration
http://www.cba.ufl.edu/
College of Dentistry
http://www.dental.ufl.edu/
College of Education
http://www.coe.ufl.edu/
College of Engineering
http://www.eng.ufl.edu/
College of Fine Arts
http://www.arts.ufl.edu/
School of Forest Resources and Conservation
http://www.sfrc.ufl.edu
College of Health and Human Performance
http://www.hhp.ufl.edu/
College of Journalism and Communications
http://www.jou.ufl.edu/
Levin College of Law
http://www.law.ufl.edu/
College of Liberal Arts and Sciences
http://web.clas.ufl.edu/
College of Medicine
http://www.med.ufl.edu/
School of Natural Resources and Environment
http://snre.ufl.edu/
College of Nursing
http://con.ufl.edu/
College of Pharmacy
http://www.cop.ufl.edu/
College of Public Health and Health Professions
http://www.phhp.ufl.edu/
College of Veterinary Medicine
http://www.vetmed.ufl.edu/

External Fellowships for Graduate Students

Information on external fellowships, small grants, and other funding opportunities is available on the Research and Graduate Programs (RGP) website: http://rgp.ufl.edu/research/funding.html. The *Community of Science Funding Opportunities* database and the *Grants Database* are keyword searchable and highly recommended as information resources by RGP Program Information staff.

General Regulations

It is the responsibility of the graduate student to become informed and to observe all regulations and procedures required by the program s/he is pursuing. The student must be familiar with those sections of the Graduate Catalog that outline general regulations and requirements, specific degree program requirements, and the offerings and requirements of the major academic unit. **Ignorance of a rule does not constitute a basis for waiving that rule.** 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 concerning courses and degree requirements, deficiencies if any, and special regulations of the academic unit. The dean of the college in which the degree program is located or a representative must have oversight for all registrations. Once a supervisory committee has been appointed, registration approval should be the responsibility of the committee chair.

Catalog Year

Catalog year determines the set of academic requirements that must be fulfilled for graduation. Students graduate under the catalog in effect at the time of their initial enrollments as degree-seeking students at the University of Florida provided they maintain continuous enrollment. Students who do not maintain continuous enrollment (two or more consecutive terms) must reapply for admission and will be assigned the catalog in effect at the time enrollment is resumed. Students with the approval of their college dean's office 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 will sometimes be discontinued and requirements may change as a result of curricular review or actions by accrediting associations and other agencies.

Classification of Students

Classification	Explanation
6	Postbaccalaureate students: degree holding students who have been admitted to postbaccalaureate credits.
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, but who have not been admitted to doctoral candidacy.
9	Graduate students who have been admitted to doctoral candidacy.

Confidentiality of Student Records

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

Student directory information that can be released to the public is limited to name, class, college and major; dates of attendance; degree(s) earned; honors and awards received; local, permanent, and e-mail addresses; telephone number; most recent previous educational institution attended; participation in officially recognized activities and sports; and the weight and height of members of athletic teams.

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 Resident Education, and the Division of Human Resources routinely release directory information to the public. In addition to requesting this restriction from the Office of the University Registrar, students who live on campus must also request this restriction from the Department of Housing and Resident Education (next to Beaty Towers). Students who are University employees also must request this restriction from the Division of Human Resources.

Student educational records may be released without a student's consent to school officials who have a legitimate educational interest to access 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 or 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 may also disclose information from a student's educational records without a student's consent to either individuals or entities permitted such access under applicable federal and state law.

Students have the right to review their own educational records for information and to determine accuracy. A photo I.D. or 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 the student's dependent status.

If a student believes the educational record contains information that is inaccurate, misleading, or in violation of his or her rights, the student may 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.

Academic Honesty

In the fall of 1995 the UF student body enacted a new 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 the students.

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. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Code—We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the University, the following pledge is either required or implied:

"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Information on procedures is in the Student Guide at http://www.dso.ufl.edu/stg/ and is set forth in Florida Administrative Code.

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. In order to have 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 are available to all students on the Internet at http://www.dso.ufl. edu/judicial and are set forth in Florida Administrative Code. Questions should be directed to the Dean of Students Office in 202 Peabody Hall (352)392-1261.

Registration Requirements

The University of Florida operates on a semester system consisting of two 16-week semesters and two 6-week summer terms. A credit under the semester system is equal to 1.5 quarter credits.

Required Full-Time Registration

	Fall and Spring	Summer A	Summer B	Summer C
Full-Time Graduate Students Not on Appointments	9-12	4	4	8
Assistants on .01-.24 FTE and/or Fellows Receiving $3150 or More Per Semester, and Trainees	12	4	4	8
Assistants on .25-.74 FTE	9	3	3	6
Assistants on .75-.99 FTE	6	2	2	4
Full-Time Assistants:				
1.00 Fall & Spring	3			
1.00 Summer A		2	or	2
1.00 Summer B		2	or	2
1.00 Summer C		1 & 1 or 2		

Graduate Students on Appointment—Required registration for fellows and trainees with stipends of $3,150 or greater per semester is 12 credits. Fellows whose stipends are less than $3,150 must register for at least 3 credits during fall and spring semesters and 2 credits for summer. Any additional credits are at the expense of the student. The full-time registration requirement is reduced for those students who are graduate assistants. For students on appointment for the full summer, registration must total that specified for C term. Registration may be in any combination of A, B, or C terms. However, courses must be distributed so that the student is registered during each term that s/he is on appointment. Students on appointment will be financially liable for excess credits over the required registration or dropped courses. Students who do not register properly will not be permitted to remain on appointment.

Full-Time Registration—Students may be considered full-time with a registration of 9-12 credits. However, most fellows and assistants on .01-.24 FTE must be registered for 12 credits in fall/spring and 8 credits in summer. Students not on an appointment may want to enroll full time to finish their degrees in the minimum timeframe or may be required to enroll full time by external funding agencies or their academic units.

Full-Time Equivalent—Full-time equivalent status refers to a required or prescribed registration requirement, which is fewer than 9-12 credits but considered appropriate in specific circumstances. This includes students on a .25-1.00 FTE assistantship and other limited circumstances found in the Graduate Council Policy Manual at http://gradschool.rgp.ufl.edu/archived-files/policy-manual-archived-copy.html.

Lockstep programs such as M.B.A. 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. Upon academic unit request, the Graduate School will certify specified students as full-time equivalent under the circumstances stated in the Graduate Council Policy Manual.

Part-Time Registration—Students not on an appointment and without a specific registration requirement by

the government, external funding agency, or academic unit may register as a part-time student. The minimum registration requirement is 3 credits in fall/spring and 2 credits in the summer.

Employee Registration—UF staff employed on a permanent, full-time basis may be permitted to waive fees up to a maximum of six 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.

Undergraduate Registration in Graduate Courses—Upper-division undergraduate students may enroll in 5000-level courses with the permission of the instructor. Normally, a student must have a grade point average of at least 3.00. To enroll in 6000-level courses, a student must have senior standing, permission of the instructor, and an upper-division grade point average of at least 3.00.

After a student has been accepted in the Graduate School, up to 15 credits of graduate-level courses earned with a grade of A, B+, or B taken under this provision may be applied toward a graduate degree at the University of Florida provided credit for the course has not been used for an undergraduate degree and provided 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 in which the final examination is given and during the term the degree is received, a student must be registered for at least three credits in fall or spring and 2 credits in the summer that count toward his/her graduate degree. Students on a fellowship, traineeship, or assistantship must be registered appropriately for their appointment. Thesis students must be registered in 6971 and doctoral students in 7980 for at least the minimum required registration.

Cleared Prior—Students exempt from final term registration must meet all of the following conditions before the start of the first day of classes:

1. Correctly registered in the preceding term.
2. Completed all degree requirements, including final submission of the dissertation, thesis, or project and the final examination report.
3. Submitted the final examination form for the nonthesis degrees
4. Cleared all incompletes or other unresolved grades.
5. Filed degree application with Office of the University Registrar.

Add/Drop—Courses may be dropped or added during the drop/add period without penalty. This period lasts four UF calendar days, or three days for summer sessions, beginning with the first day of the semester. Classes that meet for the first time after the drop/add period 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 will appear on the transcript. Any course added or dropped after the deadline will result in a registration fee liability, even for students with fee waivers.

Retaking Courses—Graduate students may repeat courses in which they earn failing grades. The grade points from the first and subsequent attempts are included in the computation of the grade point average, but the student receives credit for the satisfactory attempt only.

Attendance Policies

Students are responsible for satisfying 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. Following 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 two 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 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 subsequently assign a failing grade for excessive absences.

Change of Graduate Degree Program

A graduate student who wishes to change majors, whether in the same or a different college, must submit a completed Change of Degree Program for Graduate Students form to the Graduate School. The form must be signed by an authorized representative of the new academic unit and college and then submitted to the Graduate School for processing < https://gradschool.rgp.ufl.edu/GIMS2/forms/forms.asp>.

Courses and Credits

Undergraduate courses (1000-2999) may not be used as any part of the graduate degree requirements. All 1000- and 2000-level courses may be taken on a satisfactory/unsatisfactory basis (S/U).

Six credits of undergraduate courses (3000-4999), outside the major academic unit, may be used for support course work when taken as part of an approved graduate program.

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 designed primarily for advanced graduate students.

No more than five credits each of 6910 (Supervised Research) and 6940 (Supervised Teaching) may be taken by a graduate student at the University of Florida. Students who have taken five credits of 6910 cannot take 7910; the rule also applies to 6940 and 7940.

A complete list of approved graduate courses appears in the section of this catalog entitled *Fields of Instruction.* Academic units reserve the right to decide which of these graduate courses will be offered in a given semester and the academic units should be consulted concerning available courses.

Generally graduate courses may not be repeated for credit. However, there is no limit on courses numbered 6971, 6972, 6979, 7979, and 7980. Other courses that may be repeated for credit are designated by **max:** immediately following the semester credit designation.

Professional 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. A list of such courses for each student must be filed with the Graduate School Records Office and is limited to a maximum of 9 credits toward the master's degree and 30 credits toward the doctorate.

Grades

The only passing grades for graduate students are A, B+, B, C+, C, and S. C+ and C grades count toward a graduate degree if an equal number of credits in courses numbered 5000 or higher have been earned with grades of B+ and A, respectively. Grade points are not designated for S and U grades; these grades are not used in calculating the grade-point average. All letter-graded courses taken as a graduate student, except 1000- and 2000-level courses, are used in calculating the cumulative grade-point average.

Satisfactory/Unsatisfactory—Grades of S and U are the only grades awarded in courses numbered 6910 (Supervised Research), 6940 (Supervised Teaching), 6971 (Master's Research), 6972 (Engineer's Research), 7979 (Advanced Research), and 7980 (Doctoral Research). Additional courses for which S and U grades apply are noted in the academic unit offerings.

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. Approval is required from the student's supervisory committee chair and the instructor of the course. S/U approval should be made by the date stipulated in the Schedule of Courses. 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.

Incomplete Grades—Grades of I (incomplete) received during the preceding semester should be removed as soon as possible. Grades of I carry no quality points and become punitive after one term.

All grades of H and I must be removed prior to the award of a graduate degree.

Unsatisfactory Scholarship

Any graduate student may be denied further registration in the University or in a graduate program should scholastic performance or progress toward completion of the planned program become unsatisfactory to the academic unit, college, or Dean of the Graduate School. Failure to maintain a B average (3.00) in all work attempted is, by definition, unsatisfactory scholarship. In addition to an overall GPA of 3.00, a graduate student must also have a 3.00 GPA in his/her major (as well as in a minor if a minor is declared) at the time of 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 and the student should contact the graduate coordinator in the appropriate academic unit for specific information regarding any requirement of a foreign language.

If an academic unit requires that a student meet the foreign language requirement by satisfactory performance on the Graduate School Foreign Language Tests (GSFLT) in French, Spanish, or German, the student should contact the Office of Academic Technology, 1012 Turlington Hall, for an application and payment of fees. The examination times and dates are listed in the *University Calendar*. Educational Testing Service (ETS) no longer administers this examination and does not accept application fees or issue tickets of admission for these tests.

Examinations

The student must be registered for sufficient credits that count toward the graduate degree program during the semester in which any examination is taken. The student's supervisory committee is responsible for the administration of the written and oral qualifying examinations as well as the final oral examination for the defense of the thesis, project,

or dissertation. *All* members of the supervisory committee must sign the appropriate forms, including the signature pages of the thesis or dissertation, in order for the student to satisfy the requirements of the examination.

The written comprehensive examination for the nonthesis master's degree may be taken at a remote site. All other qualifying and final examinations for graduate students are to be held on the University of Florida campus. Exceptions to this policy are made only for certain graduate students whose examinations are administered at the Agricultural Research and Educational Centers or on the campuses of the universities in the State University System.

With the approval of all members of the supervisory committee, one committee member (excluding the committee chair and external member of doctoral committee) may be off-site at a qualifying oral examination or at the final oral defense of the dissertation or thesis, using modern communication technology to participate rather than being physically present.

Preparation for Final Semester

It is the student's responsibility to ascertain that all requirements have been met and that every deadline is observed. Deadline dates are set forth in the *University Calendar* and by the college or academic unit. These dates are included in the front of this catalog and in the *Graduate Student Handbook.*

When the dissertation or thesis is ready to be put in final form, the student should obtain the *Guide for Preparing Theses and Dissertations* from the Graduate School Editorial Office (available on the web at http://gradschool.rgp.ufl.edu/editorial/introduction.html, click Thesis and Dissertation Guide).

Students must also file a degree application with the Office of the University Registrar (222 Criser Hall) at the beginning of the final term and must meet minimum registration requirements. See *Cleared Prior* in this catalog.

Verification of Degree Candidate Status

Degree candidates who have completed all requirements for the degree, including the final examination or satisfactory defense and final acceptance of the thesis or dissertation, may request verification to that effect prior to receipt of the degree. Verification of Degree Candidate Status request forms, available on the web at http://gradschool.rgp.ufl.edu/students/student-forms.html http://gradschool.rgp.ufl.edu/education/currentstudents.html, should be filled out by the candidate, signed by the adviser or supervisory chair and college dean, and returned to the Graduate School 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 applied to graduate. Some employers and licensure boards require the degree statement on the transcript, which is available about three days after certification in December, May, and August.

Awarding of Degrees

The Graduate School will authorize a candidate to be awarded the degree appropriate to the course of study under the following conditions (the details of which can be found under the descriptions of the several degrees):

1. The candidate must have completed all course requirements, including an internship or practicum if required, in the major and minor fields, observing time limits, limitations on transfer credit, on nonresident work, and on level of course work.
2. The candidate must have a minimum grade average of B (3.00, truncated) in the major and in all work attempted in the graduate program, including a minor where appropriate. All grades of I, H, and X must be resolved. Grades of I, X, D, E, and U require a written petition to the Dean of the Graduate School.
3. 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.
4. The dissertation or, if required, thesis or equivalent project must have been approved by the supervisory committee and accepted by the Graduate School.
5. Recommendations for the awarding of a degree include meeting all academic and professional qualifications as judged by the faculty of the appropriate academic unit.
6. All requirements for the degree must be met while the candidate is a registered graduate student.

Degrees are certified three times per year in December, May, and August.

Attendance at Commencement

Graduates who are to receive advanced degrees are urged to attend Commencement in order to accept in person the honor indicated by the appropriate hood. The student may arrange to rent or buy through the University Bookstore the proper academic attire to be worn at Commencement.

Requirements for Master's Degrees

The master's degree is conferred only upon completion of a coherent and focused program of advanced study. Each academic unit has set its own minimum degree requirements beyond the minimum required by the Graduate School.

General Regulations

The following regulations represent those of the Graduate School. Colleges and academic units may have additional regulations beyond those stated below. **Unless otherwise indicated in the following sections concerning 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 nine credits from a previous master's degree program may be applied toward a second master's degree. These credits are applied only with the written approval of the Dean of the Graduate School.

Major—The work in the major field must be in courses numbered 5000 or above. For work outside the major, six credits of courses numbered 3000 or above may be taken provided they are part of an approved plan of study.

Minor—Minor work must be in an academic unit other than the major. If a minor is chosen, at least six credits of work are required in the minor field. Two six-credit minors may be taken with the major academic unit's permission. A GPA of 3.00 is required for minor credit.

Degree Requirements—Unless otherwise specified, for any master's degree, the student must earn a minimum of 30 credits as a graduate student at the University of Florida. 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. At least half of the required credits, exclusive of 6971, must be in the field of study designated the major.

Transfer of Credit—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 the University of Florida. 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 a master's degree must be made during the student's first term of enrollment in the Graduate School.

The responsibility rests with the supervisory committee to base acceptance of graduate transfer credits on established criteria for ensuring the academic integrity of course work.

Supervisory Committee—The student's supervisory committee should be appointed as soon as possible after the student has been admitted to the Graduate School but in no case later than the second semester 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 those members of the faculty who have been appointed to the Graduate Faculty may serve as members of a supervisory committee. If a student takes fewer than 12 credits in the first term, the deadline date to appoint a supervisory committee is at the end of the term in which s/he has accumulated 12 or more credits or at the end of the second semester. If a minor is designated for any degree, the committee must include one member as the representative for that proposed minor. If two minors are designated, two representatives must be appointed to the committee.

The supervisory committee for a master's degree with a thesis must consist of at least two members selected from the Graduate Faculty. The supervisory committee for a master's degree without a thesis may consist of one member of the Graduate Faculty who advises the student and oversees the program. If a minor is designated, the committee for both thesis and nonthesis programs must include one Graduate Faculty member from the minor academic unit.

Language Requirements—(1) The requirement of a reading knowledge of a foreign language is at the discretion of the academic unit. The foreign language requirement varies from one academic unit to another, and the student should check with the appropriate academic unit for specific information. (2) The ability to use the English language correctly and effectively, as judged by the supervisory committee, is required of all candidates.

Examination—Each candidate must pass a final comprehensive examination. This examination must cover at least the candidate's field of concentration. In no case, may it be scheduled earlier than the term preceding the semester in which the degree is to be awarded. The comprehensive examination for the nonthesis master's degree may be taken at a remote site. All other examinations must be held on campus.

Time Limitation—All work, including transferred credit, counted toward the master's degree must be completed during the seven years immediately preceding the date on which the degree is awarded.

Leave of Absence—A master's student who will not be registered at the University of Florida for a period of two or more semesters should obtain prior written approval from his/her faculty adviser for a leave of absence for a designated period of time. The student will be required to reapply for admission upon his/her return. See *Readmission* and *Catalog Year.*

Master of Arts and Master of Science

The requirements for the Master of Arts and the Master of Science degrees also apply to the following degrees, except as they are individually described hereafter: Master of Arts in Education, Master of Arts in Mass Communication, Master of Science in Building Construction, Master of Science in Pharmacy, and Master of Science in Statistics.

Course Requirements—The minimum course work required for a master's degree with thesis is 30 credits including up to 6 credits of the research course numbered 6971.

All students seeking a master's degree with thesis must register for an appropriate number of credits in 6971.

The Graduate School requirement for a Master of Arts or Master of Science degree taken with a nonthesis option is at least 30 credits. No more than 6 credits of S/U-graded courses may be counted in meeting the minimum requirements for a nonthesis option. Students pursuing the nonthesis option may not use the course numbered 6971.

For both nonthesis option and thesis programs, at least half the required credits, exclusive of 6971, must be in a field of study designated the major. One or two minors of at least six 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.

Engineering students, working at off-campus centers, who are pursuing a nonthesis option Master of Science degree, must take half the course work from full-time University of Florida faculty members and are required to pass a comprehensive written examination by an examining committee recommended by the Dean of the College of Engineering and appointed by the Dean of the Graduate School. This written comprehensive examination may be taken at an off-campus site.

Theses—Candidates for the master's degree with thesis must prepare and present theses (or equivalent in creative work) acceptable to their supervisory committees and the Graduate School. The candidate should consult the Graduate School Editorial Office for instructions concerning the form of the thesis. The University Calendar specifies final dates for submitting the original copy of the thesis to the Graduate School.

Electronic Theses—Students who entered in Fall 2001 and after are required to submit their final theses electronically. Exceptions are considered on a case-by-case basis when submitted in writing by the academic unit to the Graduate School. More information is available at http://etd.circa.ufl.edu/calendar.html, http://gradschool.rgp.ufl.edu/editorial/introduction.html, or from the Graduate School Editorial Office.

Change from Thesis to Nonthesis Option—A student who wishes to change from the thesis to the nonthesis option for the master's degree must obtain the permission of the supervisory committee to make such a change. This permission must be forwarded to the Graduate School by midpoint of the final term. The candidate must meet all the requirements of the nonthesis option as specified above. A maximum of three credits earned with a grade of S in 6971 (Master's Research) can be counted toward the degree requirements only if converted to credit as A, B+, or B in Individual Work. The supervisory committee must indicate that the work was productive in and by itself and 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 has been admitted to the Graduate School but in no case later than the end of the second semester of study. The duties of the supervisory committee are to advise the student, to check on the student's qualifications and progress, to supervise the preparation of the thesis, and to conduct the final examination.

Final Examination—When the student's course work is substantially completed, and the thesis is in final form, the supervisory committee is required to 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.

All supervisory committee members and the candidate must be present at the final examination. At the time of the examination, all committee members should sign the signature pages and the Final Examination Report. These may be retained by the supervisory chair until acceptable completion of corrections. This examination may not be scheduled earlier than the semester preceding the term the degree is to be conferred.

Final Comprehensive Examination—The student who elects the nonthesis option must pass a comprehensive written or oral examination on the major field of study and on the minor if a minor is designated. This comprehensive examination must be taken within six months of the date the degree is to be awarded.

Requirements for the Ph.D.

The Doctor of Philosophy 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 will be required for the Doctor of Philosophy degree. The general requirement is that the program should be unified in relation to a clear objective, that it should have the considered approval of the student's entire supervisory committee, and that it should include an appropriate number of credits of doctoral research.

Course Requirements

The course requirements for doctoral degrees vary from field to field and from student to student. A minimum of 90 credits beyond the bachelor's degree is required for the Ph.D. degree in all fields. All master's degrees counted in the minimum must have been earned in the last seven years.

Transfer of Credit—No more than 30 semester 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 semester 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-level credits earned at the University of Florida (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. In such cases, it is essential that the petition demonstrate the relevance of the prior course work to the degree presently being sought.

Major—The student working for the Ph.D. must elect to do the major work in an academic unit specifically approved for the offering of doctoral courses and the supervision of dissertations. These fields are listed under *Graduate Programs.* The cumulative grade for courses included in a major must be B (3.00) or higher.

Minor—With the approval of the supervisory committee, the student may choose one or more minor fields. Minor work may be completed in any academic unit, other than the major academic unit, approved for master's or doctoral degree programs as 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 representative of the minor academic unit on the supervisory committee shall suggest from 12 to 24 credits of courses numbered 5000 or higher as preparation for a qualifying examination. A part of this background may have been acquired in the master's program. If two minors are chosen, each must include at least 8 credits. Competence in the minor area may be demonstrated through a written examination conducted by the minor academic unit or through the oral qualifying examination.

Course work in the minor at the doctoral level need not be restricted to the courses of one academic unit, provided that the minor has a clearly stated objective and that the combination of courses representing the minor shall be approved by the Graduate School. This procedure is not required for a minor within a single academic unit.

Leave of Absence

A doctoral student who will not be registered at the University of Florida for a period of more than one semester should obtain prior written approval from his/her faculty adviser for a leave of absence for a designated period of time. The student will be required to reapply for admission upon his/her return. 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 has begun doctoral work and in general no later than the end of the second semester of equivalent full-time study. The Dean of the Graduate School is an ex-officio member of all supervisory committees.

Duties and Responsibilities—Duties of the supervisory committee follow:

1. To inform the student of all regulations governing the degree sought. **It should be noted, however, that this does not absolve the student from the responsibility of informing himself/herself concerning these regulations.** (See *Student Responsibility.*)
2. To meet immediately after appointment to review the qualifications of the student and to discuss and approve a program of study.
3. To meet to discuss and approve the proposed dissertation project and the plans for carrying it out.
4. To give the student a yearly letter of evaluation in addition to the S/U grades awarded for the research courses 7979 and 7980. The chair should write this letter after consultation with the supervisory committee.
5. To conduct the qualifying examination or, in those cases where the examination is administered by the academic unit, to take part in it. In either event, the entire committee must be present with the student for the oral portion of the examination. This examination must be given on campus. (See *Examinations* in the *General Regulations* section of this catalog for variation in procedure.)
6. To meet when the work on the dissertation is at least one-half completed to review procedure, progress, and expected results and to make suggestions for completion.
7. To meet on campus 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. No fewer than four faculty members, including all members of the supervisory committee, shall be present with the candidate for this examination. Only members of the official supervisory committee may sign the dissertation and they must approve the dissertation unanimously. (See *Examinations* in the *General Regulations* section of this catalog for variation in procedure.)

Membership—The supervisory committee for a candidate for the doctoral degree shall consist of no fewer than four members selected from the Graduate Faculty. At least two members, including the chair, will be from the academic unit recommending the degree, and at least one member will be drawn from a different educational discipline with no ties to the home academic unit to serve as external member. One regular member may be from the home academic unit or another unit.

If a minor is chosen, the supervisory committee will include at least one person selected from the Graduate Faculty from outside the discipline of the major for the purpose of representing the student's minor. In the event that the student elects more than one minor, each minor area must be represented on the supervisory committee.

Special Appointments—People without Graduate Faculty status may be made official members of a student's supervisory committee through the special appointment process. The chair of the student's supervisory committee requests the special appointment including a brief explanation of what the proposed member will contribute 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. Appropriate candidates for special appointments include individuals from outside of the University of Florida with specific expertise which will contribute to a graduate student's program of study; tenure-track faculty who have not yet qualified for Graduate Faculty status; and nontenure-track faculty or staff at the University of Florida who do not qualify for Graduate Faculty status.

Special appointments have several limitations because they are not members of the Graduate Faculty. **A special appointment may not serve as a supervisory committee chair, cochair, or external member. A special appointment may not be the minor representative for a student with a minor.**

External Member—The external member's responsibilities are to represent the interests of the Graduate School and the University of Florida; be knowledgeable about Graduate Council policies; and, serve as an advocate for the student at doctoral committee activities. In the event that 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. The external member is therefore 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 faculty member who represents a minor on a student's committee may be appointed as the external member if s/he does not have a courtesy graduate appointment in the student's major academic unit.

Cochair—To substitute for the chair of the committee at any examinations, the cochair 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 one year. Retired faculty who wish to continue serving on existing or new committees beyond this period may do so with approval of the academic unit.

Substitution of Members at Qualifying and Final Examinations—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.

In addition, the student's major academic unit chair must indicate on the form (or by accompanying correspondence) the reason for the missing member's absence and that the missing original committee member has agreed to this substitution at the final examination.

The substitute committee member should not sign the signature page of the thesis or dissertation. The original committee member must sign. This would be an exception to the rule that the signature page and the Final Examination form are signed simultaneously at the conclusion of the defense.

With the approval of all members of the supervisory committee, one committee member—except for the chair or external member—may be off-site at a qualifying oral examination or at the final oral defense of the dissertation or thesis, using modern communication technology to be present rather than being physically present.

No substitutions may be made for the committee chair or the external member of the committee. Changes to the supervisory committee may be entered online prior to the qualifying examination.

The Graduate Council desires each supervisory committee to function as a University committee, as contrasted with a departmental committee, in order to bring University-wide standards to bear upon the various doctoral degrees. Complete information regarding the appointment process is found in the Graduate Council Policy Manual online at http://gradschool.rgp.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 special classes for graduate students who are beginning the study of a language. See the current *Schedule of Courses* for the languages in which this assistance is available.

The ability to use the English language correctly and effectively, as judged by the supervisory committee, is required of all candidates.

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. A department or college may establish and monitor its own more stringent requirement as desired.

Qualifying Examination

The qualifying examination, which is required of all candidates for the degree of Doctor of Philosophy, may be

taken during the third semester of graduate study beyond the bachelor's degree.

The student must be registered in the term in which 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. With the exception of the allowed substitutions, all members of the supervisory committee must be present with the student at the oral portion. The supervisory committee has the responsibility at this time of deciding whether the student is qualified to continue work toward a Ph.D. degree.

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

Time Lapse—Between the oral portion of the qualifying examination and the date of the degree there must be a minimum of two semesters. The semester in which the qualifying examination is passed is counted, provided that the examination occurs before the midpoint of the term.

Registration in Research Courses

Advanced Research (7979) is open to doctoral students who have not yet been admitted into candidacy (7 and 8 classifications). 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).

Research for Doctoral Dissertation (7980) is reserved for doctoral students who have been admitted to candidacy (9 classification).

Admission To Candidacy

A graduate student does not become a candidate for the Ph.D. degree until 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 (1) the academic record of the student, (2) the opinion of the supervisory committee concerning overall fitness for candidacy, (3) an approved dissertation topic, and (4) a qualifying examination as described above. **Application for admission to candidacy should be made as soon as the qualifying examination has been passed and a dissertation topic has been approved by the student's supervisory committee.**

Dissertation

Electronic Dissertation–Students who entered in Fall 2001 and after are required to submit their final dissertations electronically. Exceptions are considered on a case-by-case basis when submitted in writing by the academic unit to the Graduate School. More information is available at http://etd.circa.ufl.edu, http://gradschool.rgp.ufl.edu/editorial/editorial-faqs.html, or from the Graduate School Editorial Office.

Every candidate for a doctoral degree is required to prepare and present a dissertation that shows independent investigation and is acceptable in form and content to the supervisory committee and to the Graduate School. 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.

Since all doctoral dissertations are published by microfilm, it is necessary that the work be of publishable quality and that it be in a form suitable for publication.

The original copy of the dissertation must be presented to the Editorial Office of the Graduate School on or before the date specified in the *University Calendar.* It must contain an abstract and be accompanied by a letter of transmittal from the supervisory chairperson, and all doctoral forms.

After corrections have been made (and no later than the specified formal submission date) the fully signed dissertation (either electronic or printed on 100% cotton, 20-pound bond paper), together with the signed Final Examination Report and five copies of the abstract, should be returned to the Graduate School. The original dissertation is sent by the Graduate School to the Library for microfilming and archiving. If the manuscript is on paper, a second copy, reproduced on 100% cotton paper, must be delivered to the Library or college for hardbinding.

Electronic dissertations may be viewed at http://www.uflib.ufl.edu/etd.html.

Publication of Dissertation—All candidates for the Ph.D. and Ed.D. degrees are required to pay the sum of $55 to University Financial Services, S113 Criser Hall, for microfilming their dissertations, and to sign an agreement authorizing publication by microfilm.

Copyright—The candidate may choose to register the copyright of the microfilmed dissertation for a charge of $45 payable by a certified or cashier's check or money order to PQIL attached to the signed microfilm agreement form. To assure receipt of the valuable Copyright Registration Certificate, candidates must give permanent addresses through which they can always be reached.

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. The AAU guidelines contained herein were adopted by the University of Florida Graduate Council on January 19, 1989.

1. The recommendations of sponsors, which result from prepublication reviews of research results and which affect subsequent publication of these results, should be considered advisory rather than mandatory.
2. The maximum delay in publication allowed for pre-reviews should not exceed three months.
3. There should be no additional delays in publication beyond the pre-review. Timely submission of any patent or copyright applications should be the result of effective communication between investigators and sponsors throughout the course of the project.
4. There should be no restriction on participation in nonclassified sponsored research programs on the basis of citizenship.
5. Students should not be delayed in the final defense of their dissertations by agreements involving publication delays.

Final Examination

After submission of the dissertation and the completion of all other prescribed work for the degree (but no earlier than the term preceding the semester in which the degree is conferred), the candidate will be given a final examination, oral or written or both, by the supervisory committee meeting on campus. All supervisory committee members must be present with the candidate at the oral portion of this examination. At the time of the defense, all committee members should sign the signature page and all committee and attending faculty members should sign the Final Examination Report. These forms may be retained by the supervisory chair until acceptable completion of corrections.

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 five calendar years after the qualifying examination, or this examination must be repeated.

Specialized Graduate Degrees

The Graduate School monitors the degree criteria stipulated below. See program descriptions in the *Fields of Instruction* section of this catalog for additional requirements.

Master of Accounting

The Master of Accounting (M.Acc.) is the professional degree for students seeking careers in public accounting, business organizations, and government. The M.Acc. program offers specializations in auditing/financial accounting, accounting systems, and taxation.

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 upon satisfactory completion of the 150-credit program. The entry point into the 3/2 is the beginning of the senior year.

Students who have already completed an undergraduate degree in accounting may enter the one-year M.Acc. program which requires satisfactory completion of 34 credits of course work. A minimum of 18 semester credits must be in graduate-level accounting, excluding preparatory courses. A final comprehensive examination is required of all students. Additional requirements are listed under the *General Regulations* section for all master's degrees.

M.Acc./J.D. Program—This joint program culminates in both the Juris Doctor degree awarded by the College of Law and the Master of Accounting degree awarded by the Graduate School. The program is designed for students who have an undergraduate degree in accounting and who are interested in advanced studies in both accounting and law. The joint program requires 20 fewer credits than would be required if the two degrees were earned separately. The two degrees are awarded after completion of the curriculum requirements for both degrees. Students must take both the GMAT (or the GRE) and the LSAT prior to 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 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, international and cross-cultural advertising, new technology, special market advertising, new technology, and advertising sales management.

Students without a basic course or substantial professional experience in marketing or advertising are required to complete articulation courses before entering the program. All students are required to complete a basic statistics course before entering. A minimum of 33 graduate-level credits, including a thesis, is required. In some areas of specialization, with permission from the academic unit's Graduate Faculty, a terminal project may be elected in lieu of a thesis.

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

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.

Master of Agribusiness

The Master of Agribusiness (M.AB.) degree program provides an opportunity for advanced study for students seeking careers in sales, marketing, and management with

organizations that operate primarily in the food industry and agribusiness sector. Through rigorous practical course work, students are able to capitalize on the broad-based resources the program provides, as students look forward to careers as food marketers, commodity merchandisers, and agribusiness managers. Students may elect to focus their studies in specialized areas such as strategic sales, international marketing, human resource management, and the futures market. This program is not recommended for those who seek careers in research and university teaching.

The program consists of a minimum 30 credits comprised of core and elective courses in finance, marketing, management, decision-making, and quantitative methods relevant to agribusiness. These courses prepare students to analyze current situations, anticipate opportunities, and develop effective action plans. Prior to beginning the program, students are required to have taken and successfully passed prerequisite courses in marketing, management, statistics, and finance. Students should consult the Academic unit for information on additional prerequisite courses and program requirements.

Master of Agriculture

The degree of Master of Agriculture is designed for those students whose primary interests are other than research.

The general requirements are the same as those for the Master of Science degree without thesis except that 12 credits of graduate courses in an academic unit constitute a major. The student's supervisory committee must consist of at least one member of the Graduate Faculty. A comprehensive written or oral examination is required in the final term of study.

Master of Architecture

The degree of Master of Architecture is an accredited professional degree meeting the requirements of the National Architectural Accrediting Board, for those 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 minimum registration required is 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 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.

The requirements for the degrees are as follows:

1. A reading knowledge of one foreign language if required by the student's major academic unit.
2. Satisfactory completion of at least 36 credits while registered as a graduate student, with work distributed as follows:
   a. At least 18 credits in the major and 6 credits in the minor.
   b. 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.
   c. 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.
3. **Off-campus work—**A minimum of 8-16 credits (at the academic unit's discretion), including registration for at least 6 credits in a single semester, must be earned on the Gainesville campus. Beyond that, credits earned in courses offered off-campus by the University of Florida which have been approved by the Graduate School shall be accepted, provided they are appropriate to the student's degree program as determined by the supervisory committee.
4. At the completion of this degree, the student, for certification purposes, must present from the undergraduate and graduate degree programs no fewer than 36 semester credits in the major field.
5. A final comprehensive examination(either written, oral, or both) must be passed by the candidate. This examination will cover 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 is a professional degree for students who wish to practice urban and regional planning and meet the educational requirements for the American Institute of Certified Planners. The program is accredited by the Planning Accreditation Board.

The general requirements are the same as those 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. In all study areas, with permission from the academic unit's Graduate Faculty, a terminal project requiring 6 credits may be elected in lieu of a thesis.

M.A.U.R.P./J.D. Joint Program—A four-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. The program provides students interested in the legal problems of urban and regional planning with an opportunity to blend law studies with relevant course work in the planning curriculum. The students receive both degrees at the end of a four-year course of study whereas separate programs would require five years. Students must take the GRE and the LSAT prior to 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 upon completion of 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. Further information on the program is available from the Holland Law Center and from the Department of Urban and Regional Planning.

Master of Building Construction

The degree of Master of Building Construction is designed for those students who wish to pursue advanced work in management of construction, construction techniques, and research problems in the construction field.

The general requirements are the same as those for Master of Science degree except that a minimum of 33 graduate-level credits is required. At least 18 credits must be in the School of Building Construction in graduate-level courses. Nine credits must be earned at the 6000 level in building construction courses. The remaining 15 credits may be earned in other academic units. A thesis is not required, but an independent research study (BCN 6934) of at least 3 credits is required.

When the student's course work is completed,(or practically so), and the independent research report is complete, the supervisory committee is required to examine the student orally on (1) the independent research report, (2) the major subjects, (3) the minor or minors, and (4) matters of a general nature pertaining to the field of study.

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

Master of Business Administration

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

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

Admission—Applicants for admission must submit recent official scores from the Graduate Management Admission Test (GMAT) as well as official transcripts for all previous academic work. For all program options, a minimum of two years of full-time professional work experience performed after receiving an acceptable bachelor's degree is required, along with written essays and personal recommendations from employers. Some applicants are asked to interview. Applicants whose native, first language is not English are required to submit scores for the Test of English as a Foreign Language (TOEFL). Admission is competitive; thus, meeting minimum requirements is unlikely, in itself, to result in admission.

A heterogeneous student body is seen as an important asset of the program. Accordingly, the backgrounds of students include a wide range of disciplines and cultures. Although the curriculum assumes no previous academic work in business administration, 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, Florida M.B.A. Program, 134 Bryan Hall, P.O. Box 117152, Gainesville, FL 32611-7152, or the website, http://www.floridamba.ufl.edu.

Course Work Required—A minimum of 48 acceptable credits of course work is required for the executive option, two-year option, and one-year option A; 32 credits are required for the other one-year options. Credits cannot be transferred from another institution or program.

Options

Traditional M.B.A. Two-Year Option—The traditional M.B.A. program requires four semesters of continuous full-time study. Entering in the fall only, many students spend the summer on internships. A minimum of two years of full-time, post-undergraduate work experience is required.

One-Year M.B.A., Option A—Students with an acceptable bachelor's degree, which need not be in business, may complete this option in 12 months. The program starts in the summer and requires 48 acceptable credits. Two years of post-undergraduate work experience is required.

One-Year M.B.A., Option B—Designed for students with recent, acceptable undergraduate degrees in business (completed within seven years prior to the start of the program), this option begins in July. Students take primarily electives during the summer B, fall, and spring semesters and graduate in May. Two years of post-undergraduate work experience is required.

Executive M.B.A.Option—A 20-month program designed for working professionals, students attend classes one extended weekend per month (Friday-Sunday). The program is divided into five terms and begins in August. Eight years of post-undergraduate work experience is required,

and students are expected to have people or project management responsibilities in their current positions.

M.B.A. for Professionals Two-Year Option—This 27-month program begins in August and is designed for professionals who wish to continue working full time while pursuing their degrees on a part-time basis. Students attend classes one weekend per month (Saturday-Sunday). Two years of post-undergraduate work experience is required.

M.B.A. for Professionals One-Year Option—Designed for students with acceptable undergraduate degrees in business (completed within seven years prior to the start of the program), this 15-month option begins in August. Students attend classes one weekend per month (Saturday-Sunday). The first meeting includes a one-week, on-campus foundations review of basic course work. Two years of post-undergraduate work experience is required.

Internet M.B.A. Two-Year Option—This 27-month program begins in January and is designed to allow students with computer and Internet access to "attend" classes and interact with faculty and classmates via such technology as e-mail, DVD, streaming video, synchronous group discussion software, asynchronous class presentation software, and multimedia courseware. Students visit campus one weekend (Saturday-Sunday) every four months. Two years of post-undergraduate work experience is required.

Internet M.B.A. One-Year Option—Designed for students with acceptable undergraduate degrees in business (completed within seven years prior to the start of this program), this 15-month option begins in January and provides students and faculty with the same interactive technology as the Internet M.B.A. two-year option. 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. Two years of post-undergraduate work experience is required.

M.B.A. for Engineers and Scientists Option—This 27-month program begins in January and is designed for professionals with academic and work backgrounds in engineering and the hard sciences who wish to continue working full time while pursuing their degrees on a part-time basis. Students attend classes one weekend per month (Saturday-Sunday). Two years of post-undergraduate work experience is required.

M.B.A. for Professionals in South Florida Option—This 24 month program begins in October and is designed for professionals who wish to continue working full time while pursuing their degrees on a part-time basis. Students attend classes once every three weeks (Saturday-Sunday) in Fort Lauderdale. Two years of post-undergraduate work experience is required.

M.B.A./M.S. in Medical Sciences (Biotechnology) Program—A program of concurrent studies leading to the Master of Business Administration and Master of Science degrees is offered in cooperation with the College of Medicine. This program was established in response to the needs of businesses engaged in biotechnological sciences. Both degrees can be obtained in three years. The program requires one year of science courses, one 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. The requirements of the M.B.A. program are those in effect at the time 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. Students who for any reason no longer are in the other program will be dismissed from the M.B.A. program. Two years of post-undergraduate work experience is required.

M.B.A./Ph.D. in Medical Sciences Program—A program of concurrent studies leading to the Master of Business Administration and Doctor of Philosophy degrees offered in cooperation with the College of Medicine, this 120-credit program is designed to train research scientists to assume responsibilities as managers of biotechnical industries. The estimated time to complete both degrees is five to seven years. Students must meet the admission and curriculum requirements of both programs. The requirements of the M.B.A. program are those in effect at the time an applicant is admitted to the program. Two years of post-undergraduate work experience is required.

M.B.A./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 within their first year. Applications are then due according to admission schedules for that year. Both degrees are awarded after a four-year course of study. Students must take both the LSAT and the GMAT prior to admission and meet the admission and curriculum requirements of both degrees. The requirements of the M.B.A. program are those in effect at the time an applicant is admitted to the program. Two years of post-undergraduate work experience is required.

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, and admission to the two programs must be simultaneous. The degrees may be granted after five years of study. The requirements of the M.B.A. program are those in effect at the time 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. Two years of post-undergraduate work experience is required.

M.B.A./M.I.M. Program in International Management—A dual degree program between the University of Florida and the American Graduate School of International Management (Thunderbird) makes it possible to earn both degrees after three years of study. Students

begin the program at the University of Florida and apply to Thunderbird in their first year. The requirements of the M.B.A. program are those in effect at the time 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. Students who for any reason no longer are in the other program will be dismissed from the M.B.A. program. Two years of post-undergraduate work experience is required.

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, Finland, France, Germany, Italy, Japan, Korea, Liechtenstein, the Netherlands, Norway, Poland, Spain, Sweden, and the United Kingdom. A complete list of exchange partners may be found at http://www.cba.ufl.edu/global/opportunities/gradpartners.asp.

Master of Education

The degree of Master of Education is a professional degree designed to meet 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.

A minimum of 36 credits is required in all master's programs with at least half of these credits earned in courses in the College of Education. No more than 6 credits earned from 3000- and 4000-level courses taken outside the academic unit may be counted toward the minimum requirements for the degree. (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 semester.

Master of Engineering

Students may choose a thesis or nonthesis 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. 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 nonthesis 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 provided 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 which may include up to 6 semester credits of research numbered 6971 in all academic units. At least 12 credits, excluding 6971, must be in the student's major field of study. Courses in the major field must be at the 5000 level or higher. For work outside the major, courses numbered 3000 or above, not to exceed 6 credits, may be taken provided 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, optional 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 nonthesis 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 which must include a member representing a minor if one is chosen.

Master of Civil Engineering (M.C.E.)—The M.C.E. degree is a variant of the Master of Engineering degree. It is focused on design and professional practice in civil engineering. The degree requirements include prescribed graduate-level instruction in design and professional practice; six months (or its equivalent) of full-time experience related to civil engineering practice that occurred after the student achieved junior status; and completion of the Fundamentals of Engineering examination. If a thesis or report is required, it must be design related. Further details on this degree program may be obtained from the Chair, Department of Civil and Coastal Engineering.

Master of Fine Arts

The Master of Fine Arts degree is offered with majors in art, creative writing, and theatre. The requirements for this degree are the same as those for the Master of Arts with thesis except that a minimum of 60 credits (48 for creative writing) is required, including 6 to 10 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 as well as 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 found deficient in certain areas will be required to remove the deficiencies by successful completion of appropriate courses.

In addition, candidates in art or theatre are required to submit a portfolio of the creative work, or to audition, prior to being accepted into the program. In creative writing, the candidate must submit 2 short stories, 2 chapters of a novel, or 6 to 10 poems.

Three years of work in residence (two for creative writing) are usually necessary to complete degree requirements.

If deficiencies must be removed, the residency could be longer.

See additional information listed under the *Fields of Instruction* section of this catalog for Art, English, and Theatre.

Art—The M.F.A. degree with a major in art is designed for those who wish to prepare themselves as teachers of art in colleges and universities and for those who wish to attain a professional level of proficiency in studio work. Specialization is offered in the studio areas of ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and electronic intermedia. The M.F.A. is generally accepted as the terminal degree in the studio area.

In addition to the general requirements above, students are required to take a minimum of 60 credits. Requirements include 42 credits in studio courses (24 in specialization, 12 in electives, and 6 in ART 6971 or 6973C); 6 credits in art history; 3 credits in seminar; 3 credits in aesthetics, criticism, or art law; and 6 credits of electives.

The College reserves the right to retain student work for purposes of record, exhibition, or instruction.

Creative Writing—The M.F.A. in creative writing seeks to develop writers of poetry and fiction by means of a series of workshops and literature seminars. Candidates are expected to produce a thesis (a manuscript of publishable poetry or fiction) at the end of the two-year program. The degree requires nine courses (four workshops, three literature courses, and two electives), three reading tutorials, and a thesis: 48 credits in all. Students take at least one workshop each semester. All of the literature courses cannot be in the same century. The electives may be literature seminars or workshops; one elective may be an approved graduate course outside the Department of English.

Theatre—The M.F.A. degree with a major in theatre is designed primarily for those interested in production-oriented theatrical careers and teaching. Specialization is offered in the areas of acting and design. The craft skills encompassed in the program are given subsequent application in public and studio productions.

Course work includes 18 credits of core classes, 17 credits of specialty training, an internship, and a project in lieu of thesis. The program totals 60 credits.

Master of Fisheries and Aquatic Sciences

The nonthesis M.F.A.S. program is designed to train students in the technical aspects of fisheries and aquatic sciences with emphasis on written and oral communication of scientific information. Requirements are the same as for the Master of Science degree with the nonthesis option plus a technical paper: A minimum of 32 graduate credits is required. At least 16 of the 32 credits must be in the major. A technical paper in an appropriate professional area is required. The final draft of this paper must be submitted to all supervisory committee members for approval at least three weeks prior to the scheduled date of the oral and written final examination.

Master of Forest Resources and Conservation

The Master of Forest Resources and Conservation program is designed for those students who wish additional professional preparation rather than for those interested primarily in research. The basic requirements, including those for admission, supervisory committee, and plan of study, are the same as those indicated under *General Regulations* for master's degrees in this catalog with the exception that a minimum GRE verbal score of 500 and a minimum GRE quantitative score of 500 is required.

Work Required—A minimum of 32 letter-graded credits of course work is required with at least 12 credits in graduate-level courses in the major. A thesis is not required, but the student must complete a technical project in an appropriate field. This project may take the form of a literature review, extension publication, video, training manual/curriculum, etc. A final examination covering the candidate's entire field of study is required. The student must present his/her work to the supervisory committee in an on-campus public forum prior to the final examination.

Master of Health Administration

The Master of Health Administration, offered through the College of Public Health and Health Professions, is designed to train 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, which admits students only in the fall semester, requires full-time study for two years, plus a summer internship between the first and second years. The program requires a total of 61 credits.

The executive M.H.A. is an option designed for working health professionals who wish to remain employed while pursuing graduate study. Because students may live and work at some distance from campus, this program option uses a combination of traditional classroom sessions and various distance learning techniques. The program consists of 12 courses of 3 credits each (36 credits). Students take 1 course at a time, with each course lasting approximately 8 weeks. On-campus classroom sessions are held Saturday-Sunday every month. Other course requirements are completed via distance learning.

Master of Health Science

The Master of Health Science degree, offered through the College of Public Health and Health Professions is designed to provide exposure to health research and to meet the need for leadership personnel in established and emerging health care programs. The College offers programs in occupational therapy and rehabilitation counseling.

There are three paths to enter occupational therapy and attain the Master of Health Science degree. The four-semester thesis option emphasizes research and is the appropriate

route for(but not limited to) those students seeking admission to the College of Public Health and Health Profession's Ph.D. program in rehabilitation science. The three-semester nonthesis option emphasizes research and advanced theories related to the practice of occupational therapy. Both options are designed to prepare leaders in the profession and require 36 semester credits. The third option, the distance learning program, is specifically designed for working professionals to increase knowledge in emerging practice areas and leadership.

The rehabilitation counseling program is designed to meet the need for professional personnel to serve in a variety of rehabilitation counseling areas. The Department requires a minimum of 52 academic credits for most students including a minimum of 49 credits in the major area. Some exceptionally well-qualified students may be required to take fewer credits with approval of the program chair. Work in the major area includes both practicum experiences and a full-time internship. Elective courses may be selected which complement the major courses and relate to the career plans of the student. All candidates must pass a comprehensive examination.

Additional requirements are listed under the *General Regulations* section for all master's degrees.

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 historic preservation and restoration of interior architecture; design for special populations (for example, the disabled, elderly, and children); investigation and application of design technology, materials, and lighting; design education; issues of indoor air quality and sustainability; environment and behavior research, theory, and applications in interior design.

Work Required—Candidates must complete a minimum of 36 credits, including no more than 6 credits of thesis. Required preparatory courses are in addition to the minimum credits for graduate work.

Master of International Construction Management

The Master of International Construction Management (M.I.C.M.) is a nonthesis, distance education, advanced degree program with a research report/project requirement offered through the Rinker School of Building Construction. The M.I.C.M. is designed to allow students with computer and Internet access to *attend classes* at any time, any place and to interact with faculty and classmates via such technology as e-mail, CD-ROM, streaming video, synchronous group discussion software, asynchronous class presentation software, and multimedia courseware. The program incorporates leading-edge interactive technology and proctored course final examinations.

Admissions—Applicants for admission must have (1) an undergraduate degree, (2) at least 5 years of meaningful, supervisory-level construction management experience, (3) cumulative verbal and quantitative GRE scores of 1000 or higher, (4) a grade point average of 3.00 on a 4.0 scale, (5) if an international student, a TOEFL score of 565 or higher, and 6) sponsorship by the employer.

Work Required—The M.I.C.M. has three major construction areas of core emphasis: (1) corporate/strategic management, (2) project management, and (3) construction management. The M.I.C.M. prepares students to assume upper-level construction management responsibilities in a multinational construction company. Other areas of specialization include sustainable construction, information systems, facilities management, construction safety, affordable housing, productivity and human resource management. In addition to 6 research-oriented graduate credits, the student selects one or two areas of emphasis and then takes the rest of the required 33 credits from the remaining courses and special electives. Students 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.

Master of Landscape Architecture

The degree of Master of Landscape Architecture is the advanced professional degree for graduates with baccalaureate credentials in landscape architecture and is a first professional degree for the graduate from a nonlandscape 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 a minimum of 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. For some study areas, candidates may select a terminal project requiring six credits in lieu of a thesis.

Master of Latin

The Classics Department of the University of Florida offers the nonthesis Master of Latin degree, a 30-credit program 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 degree can be attained by students in residence for fall/spring semesters or through a program of summer course work at the University of Florida as well as through directed independent study and/or distance learning courses during the regular academic year.

Students during the summer terms can complete the degree within four years by earning six graduate credits each summer (total = 24), plus just two three-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.

This program of study is different from the M.A. degree in Latin since it 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—Prospective students are advised to contact the Department's Graduate Coordinator or Distance Learning Coordinator before making application. Requirements for the admissions process are (1) an application form for entrance to the University of Florida Graduate School, (2) acceptable GRE scores, and (3) transcripts recording undergraduate courses (and graduate courses, if any; students must demonstrate the ability to take Latin course work at the graduate level).

Degree Requirements—This nonthesis degree requires a minimum of 30 credits as a graduate student at the University of Florida, of which no more than 8 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. The student will take at least half the required credits in the Latin language and literature courses (LAT or LNW courses at the 5000 level or above). UF courses taken at the graduate level prior to admission to the Graduate School (e.g., in the Latin Summer Institutes) may be applied to the 30 credits upon approval 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 an academic unit other than classics (e.g., history, philosophy, art history, religion), although there is no requirement to do so. If a minor is chosen, at least six credits are required in the minor field. Two six-credit minors may be taken with departmental permission. A GPA of 3.0 is required for minor credit as well as for all work counted toward the degree. A GPA of 3.0 is required for all work counted toward the degree, including minor credit. All work in a minor must be approved by the supervisory committee.

Examination—The supervisory committee will administer a final oral and written comprehensive examination at the completion of the course work. This examination will include (1) an oral component, a one hour examination on the general field of Latin literature, and (2) a written component, consisting of one hour each on (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 does not require, but strongly recommends, the acquisition of 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 to the classical lands, 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 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.

The program begins with Introduction to American Law, four-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 prior to the start of the academic year. During the fall and spring semesters, 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. A special curriculum for students in this program can result in the simultaneous award of the Certificate of Specialization in International Tax Studies. 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 Taxation

The instructional program leading to the degree Master of Laws in Taxation (LL.M.Tax.) offers advanced instruction with emphasis on federal taxation and particularly federal income taxation, for law graduates who plan to specialize in such matter in the practice of law.

Degree candidates must complete 26 credits, 22 of which must be in graduate-level tax courses, including a research and writing course.

Master of Music

The Master of Music degree is offered with programs in music and music education. The music program includes the following seven concentrations: choral conducting, composition, instrumental conducting, music history and literature, music theory, performance, and sacred music. The Master of Music is designed for those who wish to prepare 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 and must meet the admission requirements of the Graduate School and the College of Fine Arts. In cases where the undergraduate degree is not in the area chosen for graduate study, the student must demonstrate a level of achievement fully acceptable for master's level work. Applicants normally complete at least16 semester credits in music theory, 6 semester credits in music history, and 12 semester credits in performance. A candidate found deficient in certain undergraduate areas will be required to remove the deficiencies by successful completion of appropriate courses. If remedial work is required, the residency–usually two to three semesters of full-time study–may be longer. An audition is required for all students.

Work Required—A minimum of 32 credits of course work is required (exclusive of prerequisite or deficiency courses) including a core of 9 credits. The core in all emphases includes MUS 6716 (MUE 6785 in the music education program), MUT 6629, and one graduate course in the MUH or MUL category. A thesis or creative project in lieu of a written thesis is required.

The College of Fine Arts reserves the right to retain student work for purposes of record, exhibition, or instruction.

Additional information is given in the *Fields of Instruction* section.

Master of Occupational Therapy

This nonthesis degree program is designed for students who do not have a degree in occupational therapy and have as their goal entrance into the field of 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 intervention.

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

Master of Physical Therapy

This professional degree program is offered to students who do not have a physical therapy degree. The program is a two-year plan of graduate study which incorporates 5 semesters of classroom study and slightly more than 1.5 semesters (22 weeks) of clinical internship. Students enter the program after completing a bachelor's degree. The students are awarded the M.P.T. degree after completing 76 credits of graduate course work. A master's thesis is not required, but students must achieve a B average in all course work, receive a positive evaluation on the clinical internship, and successfully complete a final examination which involves preparing and defending a case study. The faculty adviser serves as the student's supervisory committee.

Master of Public Health

The Master of Public Health degree program prepares students to become effective public health scientists, practitioners, and educators. Graduates can contribute to the health of the local, national, and international communities through advancing public health knowledge and implementing collaborative approaches to service and policy development impacting disease prevention and health promotion. Students have the opportunity to develop skills in one or more public health concentration areas. These concentrations include (1) biostatistics–applying quantitative and analytical methods in public health research and evaluation; (2) environmental health–assessing risk levels and protecting environmental health; (3) epidemiology–applying the principles and methods of epidemiological investigation to prevent or lessen the spread of disease; (4) public health management and policy–providing leadership in public health administration and developing and applying policy to health promotion and disease prevention initiatives; and (5) social and behavioral sciences–applying social and behavioral science to the design and implementation of cutting edge community health education and intervention programs. Specific emphases in aging and disability and community/social health, including rural health, are possible. A combined degree program and a certificate program also are available. Additional information can be found at http://www.mph.ufl.edu.

Admission—Students with any undergraduate major are eligible for consideration for the program as long as they meet the graduate school admission requirements and their interests match the program's philosophy and curriculum offered.

Work Required—Two program tracks are offered: one for students without terminal health care degrees and one for working health care professionals. In the first track, which applies to most students, all students take a minimum of 48 graduate credits, including 15 credits of core public health course work, 3 credits of an integrative seminar, and 3 credits of a special project, which can include a research project or an internship, determined by the concentration area selected and the specific career goals of the student. The remaining 27 credits include required and elective course work in the concentration area chosen by the student. The specific course requirements vary by concentration area.

Students who have a relevant professional or doctoral degree may be eligible for the 36-credit working professional program, pending M.P.H. admissions committee approval. This program requires completion of 15 credits of core public health course work, 15 credits of concentration course work, and 6 credits of a special project and/or other course work accepted by the supervisory committee. Upon successful completion of all requirements, students in both tracks are awarded the Master of Public Health degree.

Master of Science in Architectural Studies

Admission—The Master of Science in Architectural Studies 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. Areas of specialization include environmental technology, architectural preservation, urban design, history, and theory.

Work Required—A minimum of 32 credits of course work is required, including up to 6 credits of ARC 6971 (Research for Master's Thesis). While a majority of the course work should be within the School of Architecture,

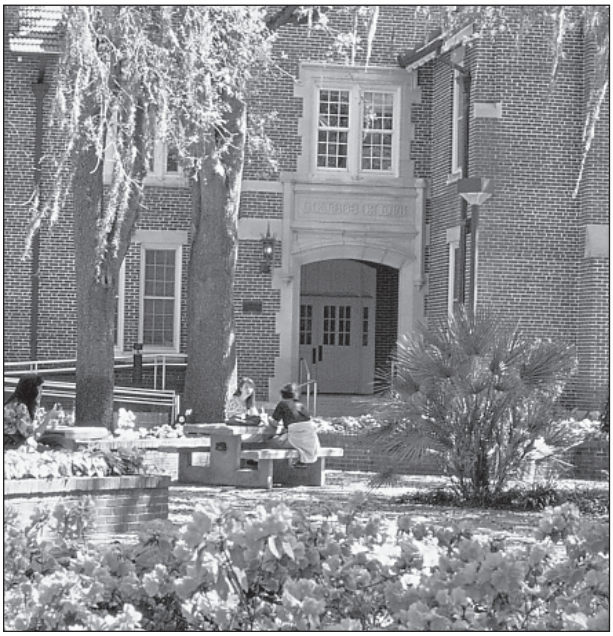
multidisciplinary electives in planning, history, law, engineering, art history, and real estate are encouraged. It is also anticipated that students will enroll in one or more of the School's off-campus programs, in Nantucket, in the Caribbean, or in Italy. A thesis is required.

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

Master of Science in Nursing

The College of Nursing offers the Master of Science in Nursing degree (thesis and nonthesis option) with advanced practice preparation for nurse midwifery and the roles of the nurse practitioner in adult, family, neonatal, pediatric, psychiatric/mental health, and midwifery nursing. Nurse practitioner roles in adult and family health include options in oncology and acute care. In addition to the advanced practice clinical tracks, the College also offers a track for the clinical nurse leader (CNL). The CNL is a generalist clinician who brings a high level of clinical competence and knowledge to the point of care and serves as a resource for the health care team.

Work Required–A minimum of 48 semester credits is required for graduation in the advanced practice clinical tracks. A minimum of 36 semester credits is required for graduation in the generalist CNL track. Candidates for the Master of Science in Nursing degree (thesis) must prepare and present theses acceptable to their supervisory committees and the Graduate School. An oral presentation of the thesis and a comprehensive examination in the major field of study are also required. Candidates who choose the nonthesis option are required to pass a comprehensive written examination in the major field of study.



Master of Statistics

The minimum credits required for the Master of Statistics degree are 36, including no fewer than 30 graduate credits in the major field. Courses in the degree program will be selected in consultation with the major adviser and approved by the student's supervisory committee. The student will be required to pass two examinations: (1) a comprehensive written 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 about the choice of a topic, and present a written report on the topic to the supervisory committee at least one week prior to the examination date. A typical report should be about 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 Women's Studies

The Master of Women's Studies (M.W.S.) is a nonthesis degree. A minimum of 33 credits is required, including the core curriculum of 4 courses (12 credits) and 7 elective courses (21 credits), and a written comprehensive final examination. At least half of the 33 credits must be in graduate-level courses in the major.

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.

This degree requires a minimum of 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—To be admitted 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—A total registration in an approved program of at least 30 graduate credits beyond the master's degree is required. This minimum requirement must be earned through the University of Florida. The last 30 semester credits must be completed within five calendar years.

Supervisory Committee—Each student admitted to the program will be advised by a supervisory committee consisting of at least three members of the Graduate Faculty. Two members are selected from the major academic unit and at least one 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 has been admitted to the Graduate School and no later than the end of the second semester of study.

This committee will inform the student of all regulations pertaining to the degree program. The committee is nominated by the academic unit chairperson, 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 a requirement in the plan of study, 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 from 6 to 12 semester credits of thesis research in a course numbered 6972.

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 has completed all work on the plan of study, the supervisory committee conducts a final comprehensive oral and/or written examination, which also involves a defense of the thesis if one is included in the program. This examination must be taken on campus with all participants present.

Doctor of Audiology

The Colleges of Public Health and Health Professions and Liberal Arts and Sciences offer a program leading to the degree of Doctor of Audiology. The Au.D. degree is awarded after a four-year program of graduate study. Foreign languages are not required. The program leading to the Au.D. degree is administered through the Departments of Communicative Disorders and Communication Sciences and Disorders, their respective colleges, and the Graduate School.

Admission—To be considered for the Au.D. program, students must meet the following minimum requirements: (1) achieved a 3.00 junior-senior undergraduate grade point average and a combined verbal and quantitative score of 1000 on the GRE General Test, (2) provided evidence of good potential for academic success in a minimum of three letters of recommendation, and (3) provided 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—The course requirements encompass 125 semester credits for students entering the program with a bachelor's degree awarded by an accredited institution. This includes a minimum of 70 credits of didactic instruction, 45 credits of applied practicum, and 3 credits of audiology research.

A 70-semester-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 a minimum of three years of full-time experience in audiology.

Supervisory Committees—Supervisory committees are nominated by the chairs of the Departments of Communication Sciences and Disorders and Communicative Disorders, approved by the deans of their respective colleges, and appointed by the Dean of the Graduate School.

The committee should be appointed as soon as possible after the student begins the program and, in general, no later than the end of the second semester of equivalent full-time study. The supervisory committee shall consist of no fewer than two members of the audiology Graduate Faculty.

Duties of the supervisory committee include curriculum planning for the student, annual evaluation of the student's progress in the program including administration of the oral and written comprehensive examination in the third year of study, and determination of successful completion of the audiology research project.

Comprehensive Examination—The comprehensive examination, which is required of all candidates for the degree of Doctor of Audiology, may be taken during the eighth semester of study beyond the bachelor's degree. The examination, prepared and evaluated by the supervisory committee, is both written and oral. The committee has the responsibility at this time of determining whether the student is qualified to continue work toward the degree through completion of the clinical residency.

Ed.S. and Ed.D.

The College of Education offers programs leading to the degrees Specialist in Education and Doctor of Education.

The Specialist in Education degree is awarded for a two-year program of graduate study. The Doctor of Education degree requires writing a doctoral dissertation. Foreign languages are not required. The Doctor of Philosophy degree in the College of Education is described under *Requirements for the Ph.D.*

In cooperation with the Office of Graduate Studies in the College of Education, programs leading to these degrees are administered through the individual departments and

school in the College of Education. It is the responsibility of a department's chair or the school's director to carry out the policies of the Graduate School and the Curriculum Committee of the College of Education. More specific information about the various programs and their requirements may be obtained from the individual departments and school. General information or assistance is available through the Office of Graduate Studies in Education, 125 Norman Hall.

Specialist in Education

Primary emphasis in an Ed.S. program is placed on the development of the competencies needed for a specific type of professional specialization. Programs are available in the various areas of specialization within the School of Teaching and Learning and the Departments of Counselor Education; Educational Leadership, Policy, and Foundations; Educational Psychology; and Special Education.

To study for this degree, the student must apply and be admitted to the Graduate School of the University of Florida. All work for the degree, including transferred credit, must be completed during the seven years immediately preceding the date on which the degree is awarded.

The Ed.S. degree is awarded at the completion of a planned program with a minimum of 72 credits beyond the bachelor's degree or a minimum of 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 (in no case earlier than six months prior to receipt of degree) in both a written and an oral examination. A thesis is not required; however, each program will include continuing attention to a research component relevant to the professional role for which the student is preparing.

With school/department approval course work taken as part of the specialist program may be counted toward a doctoral degree.

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

1. At least 30 credits in graduate-level courses.
2. 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, satisfy 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 the University of Florida. 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 responsibility rests with the supervisory committee to base acceptance of graduate transfer credits on established criteria for ensuring the academic integrity of course work.

Doctor of Education

The Doctor of Education (Ed.D.) degree is offered for students who desire advanced professional training and academic preparation for the highest levels of educational practice. Programs are available in the various areas of specialization within the School of Teaching and Learning and the Departments of Counselor Education; Educational Leadership, Policy, and Foundations; Educational Psychology; and Special Education.

A minimum of 90 credits beyond the bachelor's degree is required for the Ed.D. degree. All master's degrees counted in the minimum number of credits must have been earned in the last seven years. Specific course requirements vary with the academic unit and with the student's plan for research. With the approval of the supervisory committee, the student may choose one or more minor fields of study. The qualifying examination and a doctoral dissertation are required of all candidates for the Ed.D. degree.

See material presented under the heading *Requirements for the Ph.D.* for information relating to transfer of credit, minors, leave of absence, supervisory committee, language requirement, campus residence requirement, qualifying and final examinations, admission to candidacy, dissertation, guidelines for restriction on release of dissertations, and certification. These statements are applicable 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 three- to four-year program of graduate study. Foreign languages are not required. The program leading to the D.P.M. degree is administered through the College of Agricultural and Life Sciences and the Graduate School.

Admission—Students must meet the following minimum requirements:

1. Have a B.S. or B.A. degree, preferably in biological, agricultural, or health science.
2. Have achieved a 3.00 grade point average in upper-division courses.
3. Have achieved a combined verbal and quantitative score of 1000 on the GRE General Test. Applicants from countries where English is not the native language must also achieve a minimum TOEFL score of 550 on the paper test or 213 on the computer version.

4. Show evidence of good potential for academic success in at least three letters of recommendation.
5. Provide 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 120 semester credits. This includes a minimum of 90 credits of course work and 30 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 Plant Medicine program.

Supervisory Committee—The supervisory committee is selected by the student, nominated by the Director of the Plant Medicine Program, approved by the Dean of the College of Agricultural and Life Sciences, and appointed by the Dean of the Graduate School.

The committee should be appointed as soon as possible after beginning the program and before the start of the student's second academic year. Each supervisory committee must consist of three University of Florida Graduate Faculty members: one each from entomology/nematology, plant pathology, and plant/soil science. The duties of the supervisory committee include planning of elective courses and internships, assisting with the completion of the program of study form (Form 2), evaluation of elective internships, periodic evaluation of the student's progress in the program (a minimum of one supervisory committee meeting per year is required and meeting twice per year is recommended), and administration of the final oral comprehensive examination.

Comprehensive Examination—Both written and oral comprehensive examinations are required of all D.P.M. students and may be taken at the end of the fall, spring, or summer semester in which the student completes all of his/her course work and internships. The written examination consists of three sections: entomology/nematology, plant pathology, and plant/water science. Faculty from the appropriate disciplines are appointed by the Program Director to develop and grade the final written examination, working in concert with faculty who teach courses required for the D.P.M. degree. After a student passes all three sections of the final written examination (80% or higher is considered a passing grade), his/her 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 it within three months.

Financial Information and Requirements

Expenses

Application Fee

Each application for admission to the University must be accompanied by a nonrefundable application fee of $30.

Application fee waivers are provided for Florida A&M University (FAMU) Feeder Program participants, Institute for the Recruitment of Teachers (IRT) Program participants, and Ronald E. McNair scholars. The application fee is also waived for students who apply to the University through the Florida Fund for Education McKnight Doctoral Fellowship Program. For details contact the Office of Graduate Minority Programs (352)392-6444, 115 Grinter Hall, P.O. Box 115500, or e-mail ogmp@ufl.edu.

Enrollment and Student Fees

Pursuant to Section 6C1-3.037(1) University of Florida Rules, registration shall be defined as consisting of two components: a) formal selection of 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 the drop/add period.

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 fee liability.

A student must be registered during the terms of the qualifying examination and the final examination, and during the term in which the degree is awarded.

Fee Liability

Pursuant to Section 6C1-3.037(2) University of Florida Rules, a student is liable for all fees associated with all courses in which s/he is registered at the end of the drop/add period or which s/he attends after that deadline. The fee payment deadline is 3:30 p.m. at the end of the second week of classes.

Assessment of Fees

Pursuant to Section 6C1-3.0375(1) University of Florida Rules, resident and nonresident tuition shall be assessed on the basis of course classification: tuition for courses numbered through 4999 shall be assessed at the undergraduate level, and courses numbered 5000 and above shall be assessed at the graduate level.

Students must assess and pay their own fees. Lack of written notification of the tuition fee debt does not negate the student's responsibility to pay by the published deadline. **University personnel will not be held accountable for assessment or accuracy of calculations. Tuition fee rates are available from University Financial Services.**

Shown below is the tuition and fee schedule for the 2004-2005 academic year. The tuition and fees for the 2005-2006 academic year have not been established at the time of printing of this catalog, but some adjustments are likely. Generally tuition and fees are established some time in July for the next academic year. In some instances, tuition waivers accompanying assistantships or fellowships include only the matriculation fee and where applicable the nonresident fee. All other fees must be paid by the student.

Resident Rate:
- Matriculation Fee.....$191.95
- Building Fee.....2.32
- Capital Improvement Trust Fund Fee 2.44
- Student Financial Aid Fee 9.59
- Activity and Service Fee 8.26
- Athletic Fee.....1.90
- Health Fee 7.92
- Transportation Access Fee 4.10
- Resident Rate per Credit Hour $228.48

Nonresident Rate:
- Nonresident Fee.....625.18
- Nonresident Tuition.....4.79
- Nonresident Student Financial Aid Fee..... 31.49
- Nonresident Rate per Credit Hour $889.94

Health, Athletic, Activity and Service, and Material and Supply Fees

Health Fee (6C1-3.0372(1) University of Florida Rules)—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. The health fee maintains the University's Student Health Service and is not part of any health insurance a student may purchase.

Athletic Fee (6C1-3.0372(1) University of Florida Rules)—All students must pay an athletic fee per credit each term and is included in the basic rate per credit. Half-time graduate research and teaching assistants enrolled for 6 or more credits during the fall or spring semesters and all other students enrolled for 12 or more credits can purchase athletic tickets at the student rate.

Activity and Service Fee (6C1-3.0372(1) University of Florida Rules)—All students must pay an activity and service fee that is assessed per credit and is included in the hourly tuition rate.

Transportation Access Fee (6C1-3.009(2) University of Florida Rules)—All students must pay a transportation access fee that is assessed per credit and is included in the hourly tuition rate.

Material and Supply Fee (6C1-3.0374(1) University of Florida Rules)—Material and supply fees are assessed for certain courses to offset the cost of materials or supply items consumed in the course of instruction. Information may be obtained from the academic units or University Financial Services.

Late Registration/Payment Fees

Late Registration Fee (6C1-3.0376(2) University of Florida Rules)—Any student who fails to initiate registration during the regular registration period will be subject to the late registration fee of $100.

Late Payment Fee (6C1-3.037(4) University of Florida Rules)—Any student who fails to pay all fees or to make appropriate arrangements for fee payment (deferment or third party billing) by the fee payment deadline will be subject to a late payment fee of $100.

Waiver of Late Fees—A student who believes that a late charge 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: ... University Registrar

Late Payment Fee: ..... University Financial Services

The University reserves the right to require documentation to substantiate.

Special Fees and Charges

Audit Fee(6C1-3.0376(17) University of Florida Rules)—Fees for audited courses are assessed at the applicable resident or nonresident cost as set forth in rule 6C1-3.0375, F.A.C.

Diploma Replacement Fee (6C1-3.0376(13) University of Florida Rules)—Each diploma ordered after a student's initial degree application will result in a diploma replacement charge.

Transcript Fee (6C1-3.0376(12) University of Florida Rules)—Upon written request, a complete transcript for undergraduate, graduate, and professional students can be purchased for a fee not to exceed $10. The University releases only complete academic records.

Registration for Zero Credits (6C1-3.0376(16) University of Florida Rules)—The student is assessed the applicable resident or nonresident cost as set forth in Rule 6C1.0375, F.A.C., for one credit hour.

Off-Campus Educational Activities (6C1-3.0376(18)—The President of the University of Florida or 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. As used herein, "off campus" refers to locations other than regular main campus, branch campuses, and centers.

Graduate Record Examination—The General Test of the Graduate Record Examination (GRE) is required for admission to the Graduate School and is offered through a computer. Please consult the ETS website at http://www.gre.org for the nearest testing location. The website also provides information on the subject tests that are not offered through a computer.

Graduate School Foreign Language Test—All students wishing to be certified as proficient in reading French, German or Spanish must take the Educational Testing Service (ETS) Graduate School Foreign Language Tests. Each examination is $5. Register and pay for this examination in the Office of Academic Technology, 1012 Turlington Hall.

Library Processing Fee—Candidates for a graduate degree with thesis or dissertation pay $12.80 for the administrative costs of processing an electronic thesis or dissertation or for the permanent binding of the two copies deposited in the University Libraries; architecture students pay $20 for the project option. This charge is payable at University Financial Services by the date specified in this catalog. A copy of the receipt must be presented to the Graduate School Editorial Office or to the Architecture graduate office for the project.

Microfilm Fee—$55 is charged for the microfilm publication of the doctoral dissertation. This fee is payable at University Financial Services. A copy of the receipt must be presented to the Graduate School Editorial Office.

All charges may be subject to change without notice.

Payment of Fees

Fees are payable on the dates listed in the *University Calendar* appearing in the front of this catalog. Payments are processed by University Financial Services. Checks, cashier's checks, and money orders written in excess of the assessed fees will be processed and the difference refunded at a later date, according to University policy. Checks from foreign countries must be payable through a United States bank in U.S. dollars. The University can refuse three-party checks, altered checks, and checks that will not photocopy.

Electronic funds transfer (EFT) payments can be made directly from a student's checking account by enrolling for "EFT Sign Up" at http://www.isis.ufl.edu.

Payments can be made via debit cards at the University Cashier's office. A personal identification number (PIN) is required to access the student's bank account. Cash withdrawals against debit cards will not be processed.

Credit card payments by MasterCard, American Express, or Visa may be made over the Internet at http://www.isis.ufl.edu.

Returned checks and returned EFT payments must be paid in cash, money order, or cashier's check. A minimum $25 service fee will be charged; $30 will be charged if the check is $50.01-$299.99 and $40 will be charged for returned checks of $300 or more.

The University also may impose additional requirements, including advance payment or security deposit. All financial obligations to the University will be applied on the basis of age of the debt. The oldest debt will be paid first.

Deadlines

Deadlines are enforced. The University does not have the authority to waive late fees unless the University primarily is responsible for the delinquency or extraordinary circumstances warrant such waiver.

Cancellation and Reinstatement

The University shall cancel the registration of any student who has not paid any portion of his/her fee liability by the deadline and has not attended class after the drop/add deadline.

Reinstatement shall require the approval of the University and payment of all delinquent liabilities, including the late registration and late payment fees. Upon payment of fees, it is the student's responsibility to ensure that his or her registration is updated.

In the event a student has not paid the entire balance of his/her fee liability by the deadline, the University will suspend further academic progress by placing a financial hold on the student's record to prevent the release of grades, schedules, transcripts, registration, diplomas, loans, the use of UF facilities and/or services, and admission to UF functions and athletic events, until the debt has been satisfied.

Deferral of Registration and Tuition Fees

A fee deferment allows students to pay fees after the deadline without cancellation of registration or late payment fee. The University may award fee deferments in the following circumstances:

- Students whose state or federal financial assistance is delayed due to circumstances beyond the student's control.
- Students receiving veterans or other benefits under Chapter 32, Chapter 34, or Chapter 35 of Title 38 U.S.C., and whose benefits are delayed.
- Students for whom formal arrangements have been made with the University for payment by an acceptable third-party donor.

Deferment covers tuition fee payments only and must be established by the fee payment deadline. Fee deferments are granted based on information from the Office of Student Financial Affairs (financial aid deferments) or the Office of the University Registrar (veterans). Refer questions on eligibility to the appropriate office.

Waiver of Fees

The University may waive fees as follows:

- Participants in sponsored institutes and programs where direct costs are paid by the sponsoring agent.
- Intern supervisors for institutions within the State University System may be given one nontransferable certificate (fee waiver) for each full academic term during which the person serves as an intern supervisor. The certificate is valid for three years from the date of issuance. The maximum credits allowed during a single semester will be six credits of instruction (including credit through continuing education). The certificate will waive the matriculation

fee; the student must pay the balance of the fees by the deadline.

- Persons 60 years of age or older are entitled to a waiver of fees for audited courses (up to 6 credits), as provided by Section 240.235(3), Florida Statutes.

Certain members of the active Florida National Guard are entitled to a waiver of fees pursuant to Section 250.10(7), Florida Statutes.

A student enrolled through the Florida Linkage Institutes Program is entitled to a waiver of fees pursuant to Section 288.8175(6), Florida Statutes.

The non-Florida student financial aid fee may not be waived for students receiving an out-of-state fee waiver.

Refund of Fees

Tuition fees will be refunded in full in the circumstances noted below:

- Approved withdrawal from the University before the end of drop/add, with written documentation from the student.
- Credits dropped during drop/add.
- Courses canceled by the University.
- Involuntary 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(s).

A refund of 25% of the total fees paid (less late fees) is available if notice of withdrawal from the University with written documentation is received from the student and approved prior to the end of the fourth week of classes for full semesters or a proportionately shorter period of time for the summer terms.

Refunds must be requested at University Financial Services. Proper documentation must be presented when a refund is requested. A waiting period may be required. Refunds 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 a student is a recipient of federal financial aid (Pell Grant, Supplemental Educational Opportunity Grant [SEOG], Perkins Loan, Federal Direct Stafford Loans, or PLUS loans), federal rules require that any unearned portion of the student's 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 s/he attended classes as compared to the number of days in the entire term (first day of classes to end of final examination week). Any remaining refund then will be returned according to University policy.

General Fiscal Information

Students should bring sufficient funds, other than personal checks, to meet their immediate needs. Personal checks will be accepted at University Financial Services for the exact amount of fees and/or other amounts owed the University. 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 Financial Services does not cash checks or make cash refunds. Checks written in excess of assessed fees or other amounts paid the University will be accepted and processed, but the excess will be refunded to the student at a later date, according to University policy.

It is the student's responsibility to file a correct current address with the Office of the University Registrar by going to the ISIS website at http://www.isis.ufl.edu. Under Registrar Services, click on Address Change. This will update the UF Directory.

Photo ID—A valid Gator 1 card must be presented to transact business at University Financial Services, to pick up tickets for athletic events, to use Gator dining accounts, to use the CIRCA computer labs, to use the University Libraries, and to use all recreational facilities. The Gator 1 card can be obtained at the ID Card Services office. An official picture ID (passport or driver's license) and $10 are required. A student's spouse should go to the ID Card Services office with a photo ID (e.g., driver's license, military ID, or passport), the *student's* Gator 1 card, a copy of the marriage certificate, and $10.

Call 392-UFID for more information.

Local Address—It is the student's responsibility to file a correct local address with the Office of the University Registrar in 222 Criser Hall.

Past Due Student Accounts

All students' accounts are payable at University Financial Services 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 registration, graduation, granting of credit, release of transcript, diploma, grades and schedules, loans, the use of UF facilities and/or services, and admission to UF functions and athletic events for any student whose account with the University is delinquent until the debt has been satisfied. Delinquent accounts, including those debts for which the students' records have a financial hold, may require payment by cash, cashier's check, or money order.

Delinquent debts may be reported to a credit bureau and can result in placement with a collection agency without further notice, at which time additional collection costs will be assessed for the collection agency fees.

Transportation and Parking Services

All students with an ongoing need to park a motor vehicle on campus on weekdays between 7:30 a.m. and 4:30 p.m. must purchase a parking decal. Parking decals may be purchased at the Transportation and Parking Services Customer Service Office located at the corner of North-South Drive and Mowry Road (Building 112, phone 392-2241). A parking decal will allow the holder to park in specific areas, which vary depending on the decal. Decal eligibility is determined by the student's local address and the number of credits the student has earned. Everyone who parks on campus must obey UF's traffic and parking rules and regulations at all times. A complete listing of these rules and regulations may be obtained at the Transportation and Parking Services Customer Service Office and online at http://www.parking.ufl.edu. All students are encouraged to visit the Transportation and Parking Services website at http://www.parking.ufl.edu for complete parking information. All parkers are also encouraged to subscribe to the Transportation and Parking Listserv at http://www.parking.ufl.edu to receive e-mail updates of important parking and transportation information.

Financial Aid

Office for Student Financial Affairs

Financial aid is available to qualified graduate students through the Office for Student Financial Affairs (SFA) in S-107 Criser Hall, primarily through work or loan programs (see Loans and Part-Time Employment). Students who wish to apply for aid administered by SFA must follow the instructions in the Gator Aid Application Guide, completing a *Free Application for Federal Student Aid (FAFSA)* by the application deadline.

Graduate students who apply for assistance through SFA must be registered for at least five credits to receive aid from Federal Direct Stafford/Ford Loans (FDSL), Federal Direct Unsubsidized Stafford/Ford Loans (FDUSL), and Federal Work-Study. To receive FDSL, FDUSL, or Federal Work-Study during the summer, graduate students must register for at least four credits for the entire summer session (students who enroll for fewer than four credits during Summer A/C cannot be paid until Summer B).

SFA offers complete financial aid information, including instructions on how to apply, through its home page on the web, at http://www.sfa..ufl.edu/. After applying, students can use UF's ISIS system on the web at http://www.isis.ufl.edu/. To access ISIS, students must use their UF PIN and their UFID and GatorLink password.

Financial Aid Nexus Tapes

The Office for Student Financial Affairs has prepared a series of brief tapes for the NEXUS telephone tape series to provide current information on financial aid programs. To use this service, students should call (352) 392-1683 and request the tape they wish to hear: 402-A–Applying for Financial Aid; 402-B–Student Loans; 402-C–Federal Direct Loans; 402-D–Student Budgets; 402-E–Financial Aid for Graduate Students; 402-F–Student Employment; 402-G–Grants; 402-H–Scholarships; 402-I–Loans and Debt Management; 402-J–Financial Aid Phone Numbers; 402-K–How Financial Aid Is Disbursed; 402-L–Registration Period Update; and 402-M–Financial Aid for Students with Disabilities. These tapes are available on the web at http://www.sfa.ufl.edu/infoserv/nexus.html.

Loans

Graduate students may qualify for the following student loans: Federal Direct Stafford Loans, Federal Direct Unsubsidized Stafford Loans, University of Florida Institutional Loans, and Federal Perkins Loans. These programs offer long-term, low-interest loans that must be repaid when the borrower graduates, withdraws, or drops to less than half-time enrollment.

In general, students may borrow up to the cost of attendance minus any other financial aid per academic year at interest rates from 2.77% to 9% annually. Some loans are based on financial need; others are not. The actual amount of each loan is based on financial need and/or program limits.

To apply, students should obtain a *Gator Aid Application Guide* and a *Free Application for Federal Student Aid (FAFSA)* from the Office for Student Financial Affairs in S-107 Criser Hall. Or, students can apply on the Internet using the Federal Department of Education's *FAFSA on the Web* at http://www.fafsa.ed.gov. Students should not wait until they have been admitted to apply for aid. For fall 2005 loans, applications should be submitted as soon as possible after January 1, 2005. Although students may apply for Federal Direct Stafford Loans throughout the year, they must observe the deadlines set each semester for applying for loans for the following semester and should always apply as early as possible. The deadlines are available in the *Gator Aid Application Guide* and on SFA's website at http://www.sfa.ufl.edu.

Short-Term Loans–The University also has an emergency short-term loan program to help students meet temporary financial needs related to educational expenses. Graduate students may borrow up to $1,000 or the amount of in-state tuition if they have an acceptable repayment source. Interest is 1% per month and these loans must be repaid by the first day of the last month in the semester in which the money is borrowed. Processing takes about 48 hours. Applications are available at SFA in S-107 Criser Hall.

Part-time Employment

UF offers part-time student jobs through three employment programs: Federal Work-Study, including the Federal Community Service component; Other Personnel Services (OPS); and off-campus jobs. Federal Work-Study jobs are

based on financial need. To apply for Federal Work-Study, students must complete a *Free Application for Federal Student Aid (FAFSA)* available from the Office for Student Financial Affairs (SFA) in S-107 Criser Hall, or use *FAFSA on the Web* at http://www.fafsa.ed.gov. OPS jobs are not based on financial need. UF maintains online job boards for student work programs. For information on jobs and how to apply, go to http://www.sfa.ufl.edu/job.html.

Academic Progress Policy for Financial Aid Recipients

Students receiving financial aid must be in good standing at UF *and maintain* financial aid satisfactory academic progress requirements. UF's financial aid academic progress requirements are available on the Office for Student Financial Affairs (SFA) website at http://www.ufsa.ufl.edu/sfa/, in SFA's *Gator Aid Handbook*, in the brochure that accompanies all financial aid award letters issued by SFA, and as a handout at the SFA service counters in S-107 Criser Hall.

Research and Teaching Services

Libraries

The Libraries of the University of Florida form the largest information resource system in the state of Florida. While the collections are extensive, they are not comprehensive and graduate students will find it useful to supplement them through a variety of services and cooperative programs drawing upon the resources of many other libraries. The following entry describes the UF libraries, local collection strengths, the physical distribution of collections among campus libraries, and the services available to assist students and faculty in locating needed information.

The Libraries of the University of Florida consist of nine libraries. Seven are in the system known as the George A. Smathers Libraries of the University of Florida and two (Health Sciences and Law) are attached to their respective administrative units. All of the libraries serve all the University's faculty and students, 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 in another discipline. It most likely will be necessary to use more than one library to discover all of the resources pertinent to a particular research interest. All students and faculty are provided library service upon presentation of the University of Florida Gator One Card. This card is used to circulate books, to borrow reserves, and to establish identity for other library services such as **Interlibrary Loan** and remote access to databases.

The library home page (http://www.uflib.ufl.edu) provides a wealth of information about the Libraries as well as links to a vast array of resources. The Libraries are integrating electronic collections and services as well as digitizing materials from our Florida and other unique collections. Indexes, abstracts, and other reference resources–including hundreds of specialized databases–are increasingly available. From the home page it is possible to connect to the full text of articles in about 20,000 journals as well as thousands of books, documents, maps, and manuscripts.

The library home page provides a link to the **library catalog** that contains records for all the University of Florida collections in all formats (except for some special archival, map, and document collections that must be accessed through catalogs and finding aids at the collection location). It connects to lists of materials currently on course reserve and provides links to a growing number of these materials that are available in electronic form. The library home page also provides access to the catalogs of the other State University System libraries, the Center for Research Libraries, and libraries in other states and foreign nations.

Subject guide websites provide guides to subject literature and links to key resources and pertinent websites. The library home page provides links to the pages of individual campus libraries, lists library training opportunities, and provides a great deal of information on services and policies. It enables students to link to the libraries' chat reference service, RefeXpress, and to electronic forms which allow making suggestions, renewing materials, initiating interlibrary loan requests, and recalling materials charged to other borrowers.

Workstations in UF libraries provide access to this whole array of electronic resources and services. They may also be accessed readily from other campus workstations, from any workstation with a University of Florida IP address (campus location or off-campus GatorLink account), and by using a proxy and your library card number (please see http://www.uflib.ufl.edu/access.html for details on remote access).

Because of the disciplinary variation in research methods, the policies enforced and the services offered may differ from library to library. Most of the libraries have an advisory board consisting of faculty and students who advise on the policies and services relating to their library. Information on **local policies** is available at the circulation and reference desks in each library and on the specific library's home page. As is common in research libraries, library materials are housed in a variety of locations depending upon discipline.

Library West is closed for renovation until early 2006. Most of the humanities and social science collections, as well as professional collections in support of business, health and human performance, and journalism, are normally housed in this building. The Humanities and Social Sciences Reference services and staff, current periodicals collection, and video collection are temporarily located on the first floor of the Smathers Library. The general collections have been moved to an off-campus storage location. Material may be requested using an online form accessible from every page in the UF Libraries Catalog. Retrieved materials are delivered to the Marston Science Library where they may be consulted and borrowed.

Smathers Library (also known as Library East) holds the Latin American Collection and the Special Collections–rare books and manuscripts, P. K. Yonge Library of Florida History, and University Archives. While Library West is under renovation, current periodicals, the video collection, and Humanities & Social Sciences Reference are temporarily located in Smathers.

Marston Science Library holds most of the agriculture, science, and technology collections as well as the Map Library and Documents Department, which is a regional depository for U.S. federal government publications.

Architecture/Fine Arts Library (201 Fine Arts Building A) holds visual arts, architecture, and building construction materials.

Education Library (1500 Norman Hall) holds most of the education collections and temporarily houses the Isser and Ray Price Library of Judaica.

Music Library (231 Music Building) holds most music materials and a collection of recordings.

The Allen H. Neuharth Journalism Library holds a small collection of materials relating to journalism and mass communication.

Health Science Center Library holds major resources for the medical sciences, related life sciences, and veterinary medicine.

Legal Information Center holds major resources for law and related social sciences.

Together the Libraries hold over 4,000,000 cataloged volumes, 7,200,000 microforms, 1,300,000 documents, 766,000 maps and geographic images, and nearly 18,000 computer files. The Libraries have built a number of nationally significant research collections primarily in support of graduate research programs. Among them are the **Baldwin Library of Children's Literature**, which is among the world's greatest collections of literature for children (Special Collections, Smathers Library); the **Map and Imagery Library**, which is an extensive repository of maps, atlases, aerial photographs, and remote sensing imagery with particular collection strengths for the southeastern United States, Florida, Latin America, and Africa south of the Sahara (Marston Science Library, Level One); the **Isser and Ray Price Library of Judaica**, which is the largest collection of its kind in the Southeast (Education Library); and the **P.K. Yonge Library of Florida History**, which is the state's preeminent Floridiana collection and holds the largest North American collection of Spanish colonial documents concerning the southeastern United States as well as rich archives of prominent Florida politicians (Special Collections, Smathers Library).

The Libraries also have particularly strong holdings in architectural preservation and 18th-century American architecture (Architecture and Fine Arts), late 19th- and early-20th-century German state documents (Library West–request retrieval), Latin American art and architecture (Architecture and Fine Arts and Smathers Library), national bibliographies (Humanities & Social Science Reference, Smathers Library), U.S. Census information, especially in electronic format, and other U.S. documents (Documents Department, Marston Science Library), the rural sociology of Florida and tropical and subtropical agriculture collections (Marston Science Library), and English and American literature (Library West collection–request retrieval).

Reference service is provided to library users in each library and is also available via telephone, e-mail, and interactive chat. All of the libraries provide special services to assist students and faculty with disabilities in their use of the libraries; information is available at all circulation desks. At the beginning of each semester, the Libraries offer orientation programs designed to teach those new to campus what services are available and how to use them. Schedules are posted in each library at the beginning of each term and are available under the training session portion of the library home page. **Individual assistance** is available at the reference desk in each library. In addition, instructional librarians will work with faculty and teaching assistants to develop and present course-specific library instruction sessions. Instruction coordinators are available in Humanities and Social Science Reference in Smathers Library, in Marston Science Library, and in the branches.

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 what information resources are available locally and nationally to support specific research. A good time to consult the subject specialists is when beginning work on a major research project or developing a working knowledge of another discipline. A list of subject specialists is available at reference desks and via the library home page. Users may schedule a meeting with the appropriate specialist.

The Libraries memberships in the **Research Libraries Group** and the **Center for Research Libraries** give faculty and students access to many major scholarly collections. In addition, the libraries are linked to major national and international databases. Many materials that are not held on campus can be quickly located and borrowed through one of the cooperative programs to which the Libraries belong. Consult with a reference librarian to take advantage of these services. Publications describing specialized services are available at reference and circulation desks throughout the Libraries.

Current information regarding library hours may be obtained by selecting **Library Hours and Phone Numbers** from the home page (http://www.uflib.ufl.edu) or by calling the desired library.

Computer Facilities

Computing and Networking Services (CNS)

Computing and Networking Services, formerly the Northeast Regional Data Center (NERDC), is a unit of the UF Office of Information Technology. CNS's facilities are used for instructional, administrative, and research computing. It is located in the Bryant Space Sciences Research Building (SSRB).

Additional Information—More information is available at the CNS home page <ttp://cns.ufl.edu>.

Center for Instructional and Research Computing Activities (CIRCA), Office of Academic Technology (AT)

Services available to graduate students include electronic thesis and dissertation computing support; phone and walk-in consulting; noncredit computer courses; GatorLink mail; web and dialup services; Unix and CNS (Computing and Networking Services) computing accounts; software distribution; and the use of microcomputer classrooms, multimedia equipment, and laboratories. Unix and IBM computers offer programming languages and packages for mathematical and statistical analysis. The CIRCA microcomputer laboratories are available for personal and academic use. They are equipped with IBM-compatible and Macintosh computers, laser printers, plotters, and scanners. The CIRCA network offers applications for word processing, spreadsheets, data analysis, graphics, and the Internet.

Instructors whose courses require the use of Unix or IBM mainframe computing may apply for class computing accounts. Applications for these instructional accounts are available in E520 Computer Sciences and Engineering (CSE). Instructors may reserve CIRCA computer classrooms or multimedia lecture classrooms for class sessions. Instructors may also use site-licensed WebCT (Web Course Tools) software to provide a framework for developing course resources.

Additional information about CIRCA and CNS is available from the UF Computing Help Desk in E520 CSE, helpdesk@ufl.edu, (352)392-HELP, or on the World Wide Web at http://www.circa.ufl.edu.

Art Galleries

Samuel P. Harn Museum of Art provides the most advanced facilities for the exhibition, study, and preservation of works of art. The Harn offers approximately 15 changing exhibitions per year. The Museum's collection includes the arts of the Americas, Africa, and Asia as well as contemporary international works of art. Exciting performances, family programs, lectures, and films are also featured. Museum hours are 11 a.m. to 5 p.m., Tuesday through Friday; 10 a.m. to 5 p.m., Saturday; and 1 to 5 p.m., Sunday. The Harn Museum is accredited by the American Association of Museums. For additional information, visit http://www.harn.ufl.edu.

The University Gallery, established in 1965, is an essential component of the teaching, research, and service missions of the School of Art and Art History. The Gallery's primary purpose is to present high-quality visual-arts exhibitions that reach a diverse cross section of the University's many academic disciplines and core research areas and to time provide rich first-hand interaction with cutting-edge artwork for art students and faculty to foster learning in art.

Focus Gallery, located in the lobby of the School of Art and Art History offices in the Fine Arts Complex, was established in 1963. It provides a public exhibition space for use by students and faculty sponsors within the School of Art and Art History to experiment with artwork and experience the production of art exhibitions.

Grinter Galleries, established in 1972, is located in the lobby of Grinter Hall. This venue is reserved for exhibitions of international art and artifacts that teach about world culture. Many of the University's international centers are located in Grinter Hall, and their programs provide content for the galleries' exhibitions.

Performing Arts

University of Florida Performing Arts brings a diverse range of events to its venues each season, including theatre, chamber, classical, dance, family, jazz, opera, pops, film, and world music/dance. The 1,700-seat **Curtis M. Phillips Center for the Performing Arts** features computerized lighting and sound systems. Its Black Box Theatre is used for experimental or small musical productions, recitals, and receptions. The historic University Auditorium seats 867 and provides a classic setting for chamber and solo concerts, lectures, and more. The Baughman Center, a breathtaking pavilion on the shores of Lake Alice, is an inspirational setting for both contemplation and celebration. For information about UFPA, call the administrative offices at (352) 392-1900. For event information or tickets, call the Phillips Center Box Office at (352) 392-ARTS (2787) or visit http://www.performingarts.ufl.edu.

Museum of Natural History

The Florida Museum of Natural History was created by an act of 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 Center for the Performing Arts. Completed in 1997, Powell Hall is devoted exclusively to permanent and traveling exhibits, educational programs, and special events. Powell Hall is open from 10 a.m. to 5 p.m. Monday through Saturday, and 1 to 5 p.m. on Sundays and holidays. The Museum is closed on Thanksgiving and Christmas. There is no admission charge. The research and collections division of the Museum is located in Dickinson Hall at the corner of Museum Road and Newell Drive.

The Museum operates as a center of research in anthropology and natural science. Under the director are three administrative units: the Office of the Director is responsible for administrative oversight as well as fund-raising and development; 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; Exhibits and Public Programs in Powell Hall is staffed by specialists in the interpretation of natural history through exhibits and educational programs. The scientific and educational faculty (curators) hold appointments in appropriate University of Florida academic units. Through these appointments, they participate in both undergraduate and graduate teaching programs.

Attached to Powell Hall is the newly completed **William W. and Nadine M. 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 as well as the state-of-the-art research facilities for their study. It also contains dynamic public exhibitions and a live Butterfly Rainforest with walking trails, educational exhibits, and 2,000 living butterflies.

The Randell Research Center at the Pineland archeological site near Fort Myers, Florida, is dedicated to learning and teaching the archeology, history, and ecology of Southwest Florida.

The Herbarium of the University of Florida is also a division of the Museum. It contains over 240,000 specimens of vascular plants and 170,000 specimens of nonvascular plants. In addition, the herbarium operates a modern gas chromatographic/mass spectrometer laboratory for the study and identification of natural plant products. The research collections are under the care of curators who encourage the 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 ethnological 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, as well as 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 make application to the appropriate academic units. Graduate assistantships are available in the Museum in areas emphasized in its research programs.

The Katharine Ordway Preserve and Swisher Memorial Sanctuary (the Preserve) <file://www.ordway.ufl.edu> are adjacent pieces of land, owned by the University of Florida Foundation and The Nature Conservancy, and total some 9,600 acres. The facility is operated by the UF/IFAS Department of Wildlife Ecology and Conservation, and is managed as a biological field station dedicated to the long-term study and conservation of unique ecosystems through management, research, and education. The Preserve is a member of the Organization of Biological Field Stations and provides support for many UF departments/units as well as state/federal agencies and NGOs. Thesis and dissertation work is actively encouraged and has played a major role in the research conducted at the preserve. An array of habitats such as longleaf pine/wiregrass sandhill, upland mixed forests, mesic hammocks, freshwater lakes, marshes, and swamps provide many research and education opportunities. The Preserve is located approximately 25 miles east of Gainesville near Melrose and is not open to the general public.

Agricultural Experiment Station

The Florida Agricultural Experiment Station conducts a statewide program in food, agriculture, natural resources, and the environment. Research deals with agricultural production, processing, marketing, human nutrition, veterinary medicine, renewable natural resources, and environmental issues. This research program includes activities by departments located on the Gainesville campus as well as 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 Florida's broad variety of crops, commodities, and natural resources.

The land-grant philosophy of research, extension, and teaching is strongly supported and administered by the Vice President for Agriculture and Natural Resources. The Institute of Food and Agricultural Sciences, under his leadership, comprises 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 IFAS faculty have joint appointments involving teaching, research, and/or extension.

Funds for graduate assistants are made available to encourage graduate training and professional scientific improvement.

Research at the main station is conducted within 17 departments– 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, Fisheries and Aquatic Sciences, Forest Resources and Conservation, Family, Youth and Community Sciences, Horticultural Sciences, Microbiology and Cell Science, Plant Pathology, Soil and Water Science, Statistics, Veterinary Medicine, and Wildlife Ecology and Conservation. In addition to the above, there are support units vital to research programs, namely, Educational Media and Services, Facilities Planning and Operations, Planning and Business Affairs, Sponsored Programs, Personnel, and Governmental Relations.

The locations of the Research and Education Centers are Belle Glade, Bradenton, Fort Lauderdale, Homestead, Lake Alfred, Quincy, Monticello, Brooksville, Fort Pierce, Immokalee, Dover, Ona, Apopka, Marianna, Live Oak, Vero Beach, and Jay. A Center for Cooperative Agricultural Programs (CCAP) in Tallahassee is jointly supported with Florida A&M University.

The Florida Agricultural Experiment Station is cooperating with the Brooksville Subtropical Research Station,

Brooksville, a USDA field laboratory, in its beef cattle and pasture production and management programs and with the National Weather Service, Ruskin, in the agricultural weather service for Florida.

In addition to the above, research is conducted through the IFAS International Programs Office, the Center for Natural Resources Programs, the Center for Environmental Toxicology, and the Center for Aquatic and Invasive Plants.

Engineering and Industrial Experiment Station

The internationally recognized Engineering and Industrial Experiment Station (EIES) is the research arm of the College of Engineering. It was officially established in 1941 by the Florida Legislature. Its primary purpose is to perform research that benefits the state's industries, health, welfare, and public services. EIES also works to enhance our nation's global competitive posture by developing new materials, devices, and processes. In addition, EIES provides undergraduate and graduate engineering students with significant opportunities to participate in hands-on, cutting-edge research.

EIES 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 EIES broad-based research programs.

Florida Engineering Education Delivery System (FEEDS)

The Florida Engineering Education Delivery System (FEEDS) is a cooperative effort to deliver graduate engineering courses, and degree and certificate programs via an array of distance learning technologies to engineers throughout Florida. Along with the University of Florida, participating universities include the colleges of engineering at Florida State University-Florida A&M University, Florida Atlantic University, Florida International University, the University of Central Florida, and the University of South Florida. Florida Gulf Coast University, the University of North Florida, and the University of West Florida are educational partners in FEEDS and help facilitate course delivery and program marketing. Graduate students associated with any of these universities have access to the graduate engineering courses offered via FEEDS throughout the state during the school term. Students wishing to participate in FEEDS and intending to register for classes at the University of Florida should do so by contacting the FEEDS Coordinator, E117 CSE (352-392-9670 or http://feeds@eng.ufl.edu/). For detailed information, visit the web site at http://oeep.eng.ufl.edu. Students pursuing a degree through the College of Engineering are governed by its requirements, the academic unit to which they have been admitted, and the Graduate School.

Office of Research and Graduate Programs

The Office of Research and Graduate Programs (RGP) includes the Division of Sponsored Research, the Office of Technology Licensing, the University of Florida Research Foundation, and the Graduate School. RGP is administered by the Vice President for Research.

The primary missions of RGP are to administer and stimulate the growth of research and graduate education throughout the University; to help create significant relationships among government, industry, other research sponsors and the University; and to promote economic development in Alachua County, the State of Florida, and the nation through technology transfer opportunities.

The Division of Sponsored Research (DSR) has two general goals: to promote and administer the sponsored research program and to assist the faculty, staff, and students in developing research activities.

Research, grant-in-aid, training, or educational service agreement proposals are processed and approved by DSR. Negotiations of sponsored awards are also the responsibility of the Division. DSR assists researchers in identifying possible sponsors for their projects, coordinates cross-disciplinary research activities, and disseminates information and University policies and procedures for the conduct of research.

The University of Florida Research Foundation (UFRF) is the steward for the technology transfer process and, through the Office of Technology Licensing, handles all intellectual property at the University.

The Office of Technology Licensing (OTL) handles patenting, marketing, and licensing of intellectual property. OTL works closely with UF inventors in the identification and protection of new inventions. All patents, copyrights, and trademarks are processed and managed by OTL. OTL assists researchers in the development of confidentiality, mutual secrecy, and material transfer agreements.

For more information, write to RGP, P.O. Box 115500, visit the website at http://rgp.ufl.edu, or call (352)392-1582.

University Press of Florida

The University Press of Florida is the official scholarly publishing agency of the State University System of Florida.

The Press, which is located just off the University of Florida campus at 15 NW 15th Street, reports to the President of the University, who supervises the Press on

behalf of the 10 state universities. The statewide Council of Presidents is the governing board for the Press.

An advisory board, consisting of representatives from each of the 10 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 archaeology, history, and culture; Native
Americans; literary theory; medieval studies; women's studies; ethnicity; natural history; conservation biology; the fine arts; and Floridiana.

Manuscripts may be submitted to the Editor-in-Chief, University Press of Florida, 15 NW 15th Street, Gainesville, FL 32611.

Interdisciplinary Research Centers

The Office of Institutional Resources' website provides access to the Florida ExpertNet searchable database of Centers and Institutes. Go to http://www.ir.ufl.edu/centers.htm and choose SUS Centers & Institutes. In the box <University> choose University of Florida and then press <Submit Query> for a complete list of UF Interdisciplinary Research Centers.

Oak Ridge Associated Universities

Since 1948, students and faculty of the University of Florida have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 91 colleges and universities and a contractor of the U.S. Department of Energy located 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, and postgraduates, as well as 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 one month to four years. Many of these programs are especially designed to increase the number of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits may be found at http://www.orau.gov/orise/edu..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 about ORAU and its programs, contact

- Dr. Winfred M. Phillips, Vice President for Research, ORAU Councilor for the University of Florida;
- Monnie E. Champion, ORAU Corporate Secretary (865)556-3306; or
- Visit the ORAU home page at http://www.orau.org.

Student Services

Career Resource Center

The Career Resource Center (CRC), located on the west side of the J. Wayne Reitz Union at the first floor level, is the central agency for career planning, employment assistance, and cooperative education and internships for University of Florida students. The Center provides a full range of services for all graduate students and alumni seeking employment opportunities. The CRC also works closely with the Academic Advising Center to assist students in identifying a suitable career and associated academic preparation.

Graduate students wishing to explore career interests, gain experience through cooperative education assignments or internship, organize their job search campaign, or gain skills in portfolio development, resume preparation, and interview techniques are invited to visit the Center and utilize its services. The Center has an extensive career library, with employer recruiting materials, directories of employers, and other career skills information, and its "immediate job openings" section averages over 600 possible openings a week. For those graduate students seeking individual assistance in resolving career and academic problems, the Center has a number of career counselors and advisers available for personal appointments.

The World Wide Web—The Career Resource Center and the world of jobs and career information can be accessed via CRC's World Wide Web page at http://www.crc.ufl.edu/. This website is as near as the closest UF computer lab, through terminals in the CRC library, or if web access is available, from a personal computer. It contains a full spectrum of information, services, and direct web links; includes details about the Career Resource Center, its mission, location, and hours of operation; describes CRC programs and services for students, career fairs, and Career Showcase (including a current list of employers attending);

gives a schedule of CRC events and programs, job listings, and interviewing/on-campus recruiting (including signing up for interviews); and provides information for alumni. For those in the immediate job market, direct links to a wide variety of job posting services and registering with the Gator Career Link© System enable participation in on-campus interviews and resume referral via the Gator Locator resume database.

A significant on-campus job interview program with representatives from business, industry, government, and education is conducted by the Center. These major employers come to campus seeking graduating students in most career fields. Graduate students are encouraged to register early and to participate in the on-campus interview program. During the academic year, the Center also sponsors a number of Career Days and Showcases that bring employers to campus to talk to students about careers and jobs. These sessions are open to all majors and are an ideal way for graduate students to make contact with potential employers.

CRC also hosts Graduate and Professional School Day in the fall, bringing to campus representatives from up to 100 colleges and universities around the country. Students may gather information and ask questions about various graduate and professional education programs offered by these institutions.

The Center also provides reproduction and distribution services of professional placement files (qualifications records, vitae, resumes, and personal references). A modest charge is assessed to cover labor and materials for copy services and mailing of these credential packages to employers.

Counseling Center

The Counseling Center offers services to currently enrolled graduate students for personal, career, and educational concerns. Professional psychologists and counselors provide 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 assistance 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 Center faculty also provide a range of consultation and outreach programs to the campus community. Telephone or in-person consultation is available for students, parents, faculty, and staff regarding any issues related to student development. Center faculty 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. Faculty teach undergraduate and graduate courses in the Departments of Psychology and Counselor Education.

All Center activities are conducted with sensitivity to the diversity of the students on a large, multicultural campus. For more information please call (352)392-1575 or visit our website at http://www.counsel.ufl.edu.

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. These programs are (1) the English Language Institute, (2) Scholarly Writing, and (3) Academic Spoken English.

Applicants whose command of English is not as good as expected may be required by their academic units to attend the English Language Institute (ELI), an intensive English program designed to provide rapid gains in English proficiency. An ELI student may require one, two, or exceptionally, three semesters of full-time English study before entering Graduate School. Information about ELI is available in 315 Norman Hall and at the ELI website http://www.eli.ufl.edu.

The Scholarly Writing (SW) program is designed to help foreign graduate students improve their writing ability. Applicants whose verbal GRE scores are below 320 or who have been admitted provisionally with a TOEFL score lower than 550 are given a writing test. Those demonstrating a lower proficiency than needed for successful performance in written tasks at the graduate level are required to take EAP 5845. Another course, EAP 5846 (Research Writing) is offered to those who wish to learn to write in their fields of study. Information about the SW program is available at the coordinator's office, 4131 Turlington Hall, telephone (352) 392-0639.

Academic Spoken English (ASE) is designed to help international graduate students with their oral communication skills in English. Course offerings in ASE are particularly relevant for those who expect to be Graduate Teaching Assistants at the University of Florida but whose oral proficiency can benefit from additional language work. Students who must raise TSE /SPEAK scores to be eligible to teach are advised to take EAP 5835, a course to improve general oral language skills. EAP 5836 is a *required* course for international graduate students (whose first language is not English) whose oral proficiency is good enough to qualify them to teach, but is not sufficient to exempt them from language/teaching supervision (SPEAK/TSE scores less than 55.) During the course of EAP 5836, international graduate teaching assistants are videotaped teaching, and their class work is discussed constructively by the ASE staff. EAP 5837 is an advanced oral skills course for those students interested in continuing to improve their interpersonal and professional communication in English.

Graduate Student E-mail Listserv and Website

The Graduate School communicates directly with enrolled graduate students via e-mail using GatorLink addresses. Messages contain time-sensitive information about important deadlines. An archive of messages is available at http://lists.ufl.edu/archives/gradstudent-l.html. Students are required to establish this free account. Students

should regularly check this account or, if preferred, forward it to another e-mail address. The Graduate School cannot maintain personal e-mail addresses. GatorLink has a website at http://www.gatorlink.ufl.edu/ to create and modify an account. Information about grants and fellowships, workshops, and other items relevant to graduate education are posted in the graduate student section of the student page at www.my.ufl.edu. Students should subscribe to this section and check it regularly.

Graduate Newsletter

Excel, the Graduate School newsletter, is published annually in the spring to highlight graduate education at the University of Florida. For more information or to contribute a topic, call the Graduate School at 392-4646.

Graduate School Editorial Office

The Graduate School Editorial Office provides the *Guide for Preparing Theses and Dissertations* to assist the student in the preparation of the manuscript and offers suggestions and advice on such matters as the preparation and reproduction of illustrative materials, the treatment of special programs, the use of copyrighted material, and how to secure a copyright for a dissertation. The following procedures apply to the Graduate School's editorial services to students.

1. The responsibility for acceptable English in a thesis or dissertation, as well as the originality and acceptable quality of the content, lies with the student and the supervisory committee.
2. The Graduate School editorial staff act only in an advisory capacity but will answer questions regarding correct grammar, sentence structure, and acceptable forms of presentation.
3. The editorial staff will examine a limited portion of the final rough draft and make recommendations concerning the form of the thesis or dissertation before the final typing.
4. At the initial submission of the dissertation, the Editorial Office staff check the format and pagination and read portions of the text for general usage, references, and bibliographical form. Master's theses are checked for format, reference style, pagination, and signatures. Before final submission, ETD corrections and links to table of contents and lists of figures and tables are checked.
5. The Editorial Office maintains a file of experienced thesis typists and manuscript editors that the student may consult in the document preparation.

For more information, call (352)392-1282, fax (352)846-1855, e-mail hmartin@ufl.edu. The Guide, critical dates, and other information for graduate students are available on the World Wide Web at http://gradschool.rgp.ufl.edu/editorial/introduction.html.

Graduate School Records Office

The Records Office works 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 that all Graduate Council and University policies are followed.

It is the responsibility of the student and the supervisory committee chair to notify the Graduate School in writing of any changes that have been made in the structure of the supervisory committee. Changes to a student's committee are permitted through the published midpoint deadline of the term in which the student submits a degree application provided that the defense has not occurred. No changes are allowed after the defense. The student must contact the major academic unit for procedural details.

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 the coordination of 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 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 Handbook

The Graduate School makes available to all students a summary of useful information in the Graduate Student Handbook. Copies are distributed to new students by the academic unit. It is available on the World Wide Web at http://gradschool.rgp.ufl.edu/students/introduction.html.

Housing

For Graduate and Undergraduate Students with Families—Apartment accommodations on the University campus are available for students with families. Applicants must have applied to the University and have a UF ID number and are urged to apply as early as possible because of the demand for housing.

For Single Graduate Students—Apartments are available to single graduate students. Graduate students are housed within graduate and family housing villages or in the Keys Residential Complex. The Keys Residential Complex, part of the single student residence hall system, is available to graduate and upper-division students. To be considered for assignment to the Keys Residential Complex, a residence hall housing application must be completed which is a separate and different process from applying for graduate and family housing.

To be eligible to continue living in University housing, graduate students must make normal progress toward a degree as determined by their supervisory committees

Applications

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. Application information and the online application are available from this website: http://www.housing.ufl.edu. Off-campus housing information is available from the Dean of Students website: http://www.dso.ufl.edu/offcampus/.

Residence Halls for Single Students

Various types of accommodations are provided by the University including standard residence halls, apartments, and suites. The double room for two students in a standard residence hall is the most common type. Several of the larger rooms or suites are designated as permanent triple rooms. Suites for two students consist of two connected rooms–a bedroom and a study room.

Carpeted and air-conditioned apartments for four are available in the Keys Residential Complex, the Lakeside Residential Complex, and Beaty Towers. Key and Lakeside apartments include four single bedrooms, two baths, a kitchen, and a living room. Beaty Towers apartments include two single bedrooms, a private bath, and a study-kitchenette. The Springs Residential Complex offers single room suites and double room suites with central heating and air-conditioning and shared baths. Information about all facilities including rental rates is available online at http://www.housing.ufl.edu.

Cooperative Living Arrangements

Off-campus co-ops are the Collegiate Living Organization, 117 NW 15th Street, and Georgia Seagle Hall, 1002 West University Avenue. Inquiries should be made to these addresses.

Single Graduate and Family Housing

The University operates five apartment villages for eligible students. To be eligible to apply for graduate and family housing, a student must 1) meet the requirements for admission to UF and qualify as a degree-seeking student as defined by his/her college during the term housing is required; 2) make normal progress toward a degree as determined by the college; and 3a) be married and/or have legal custody of a dependent child(ren) prior to being offered an assignment OR 3b) be a single graduate student.

Most village apartments are unfurnished; limited furnished apartments are available in Corry Village only. Residents in all villages must furnish their own linens, dishes, rugs, curtains, or other similar items. Single graduate students may apply for a one-bedroom apartment in any village. Married couples without children may apply for a one- or two-bedroom apartment in any village. Utilities are an additional expense and are billed with the rent. Students assigned to Maguire Village are subject to maximum income limitations as established by the Department of Housing and Urban Development. Maximum income ranges from $33,650 for one person to $55,800 for six persons. Documentation of income is required prior to taking occupancy in Maguire Village.

Corry Memorial Village (216 units) of brick, concrete, and wood construction contains almost an equal number of one- and two-bedroom apartments, with a few three-bedroom units. Some apartments are furnished and have window air-conditioning units. Community facilities include a meeting room and a laundry.

Diamond Memorial Village consists of 208 apartments similar in construction to those in Corry Village. All Diamond apartments are unfurnished. Special features include a community building and air-conditioned study-meeting room, laundry facilities, and a study cubicle in each two-bedroom apartment. Tanglewood Village Apartments, located approximately 1.3 miles south of the central campus, consist of 208 unfurnished efficiency, one- and two-bedroom townhouse units. All units have disposals and two-bedroom units have dishwashers. All one- and two-bedroom units have 1-1/2 baths. Community facilities include a large recreation hall, laundry facilities, and two swimming pools.

University Village South and Maguire Village consist of 348 centrally heated and air-conditioned one- and two-bedroom unfurnished apartments. Community facilities include a pool, laundry, and meeting room. The kitchens are equipped with stoves and refrigerators.

For Maguire Village only, the student must be part of a family with a combined gross annual income (including grants-in-aid, VA benefits, scholarships, fellowships, and child support payments) which does not exceed, during the period of occupancy, the following maximum income limitations: one person, $33,650; two persons, $38,500; three persons, $43,300; four persons, $48,100; five persons, $51,950; and six persons, $55,800.

For more information contact the Village Communities Office.

Off-Campus Life

The Off-Campus Life Department in the Dean of Students Office offers many resources and services to a wide variety of students including students currently living in the community; students moving off campus; students living on campus; and graduate, undergraduate, and incoming students new to the Gainesville community. The services provided include the Off-Campus Life website <http://www.dso.ufl.edu/offcampus/>, Gator Guide to Off-Campus Life, apartment locator, one-on-one support for student and community issues and concerns, events for off-campus students, and educational programming to help students make the adjustment to living in the community. The publications and website include information

and resources on budgeting, finding the right place to live, apartment locator, leases, city codes, landlord laws, and community and campus resources. All services are free to students. For more information, stop by the Off-Campus Life Department in the Dean of Students Office, 202 Peabody Hall, or call (352)392-1261.

Ombudsman

The Office of the University Ombudsman was established by the state legislature and reports directly to the President. The purpose of the office is to assist students in resolving problems and conflicts. The office provides an informal avenue of redress for students' problems and grievances which arise in the course of interacting with the institution. By considering the problems in an unbiased way, the Ombudsman works to achieve a fair resolution and works to protect the rights of all involved parties.

The Office of the Ombudsman deals with student concerns of an academic nature. Students are required to first contact the instructor, the academic unit chair, and the college dean before seeking assistance from the Ombudsman, although instances do exist where contact with the University Ombudsman first is beneficial.

In many instances, nonacademic issues can be easily and readily resolved for students merely by providing an opportunity for direct communication and effective listening. For other problems not related to academic issues, the Office of the Ombudsman assists students in making contact with the appropriate campus office for dealing with their problems. For more information, visit http://www.ombudsman.ufl.edu.

Reading and Writing Center

The Reading and Writing Center is part of the Office of Academic Technology (formerly the Office of Instructional Resources). Located in Southwest Broward Hall, the Center offers one-on-one tutoring and writing help for both undergraduate and graduate students. The Center often helps people with application essays and personal statements for graduate school applications. It also offers help on papers written for graduate school classes, as well as theses or dissertations. The Center guarantees 15 to 20 minute sessions (longer if staff are not busy) to look over a student's writing. While multiple visits will give students feedback on the strengths and weaknesses in their writing, it is difficult to provide anything like a comprehensive reading of any document as long as most theses and dissertations. Contact the Center on the web at http://www.at.ufl.edu/r&w/ or call (352)392-2010.

Speech and Hearing Clinic

The University of Florida Speech and Hearing Clinic, located on the fourth floor of Dauer Hall, offers therapeutic and diagnostic services to persons with speech, language, and hearing disorders as well as to persons with dyslexia and other learning disabilities. Lessons for general accent reduction and diction may be arranged. These services are available to the University faculty and students. Therapy is scheduled between 8 a.m. and 5 p.m., Monday-Friday, with the Clinic being open in accordance with the University Calendar. Students are encouraged to visit the Clinic office at 435 Dauer Hall, check the website http://www.csd.ufl.edu, or call (352)392-2041 for additional information or to schedule an appointment.

Student Health Care Center

Student Health Care Center (SHCC) provides outpatient medical services that include primary medical care, health screening programs, health education, sexual assault recovery services, and mental health counseling. The SHCC is accredited by the Accreditation Association for Ambulatory Health Care, Inc.

Physicians, physician assistants, nurse practitioners, registered nurses, dietitians, psychiatrists, psychologists and mental health counselors staff the SHCC. The SHCC has a convenient appointment based system designed to encourage continuity of care. Students are assigned a medical provider in a team. This provider will see the student throughout his/her educational career at UF. Students should phone first to receive an appointment with their provider within 24 hours. Each team has a registered nurse that the student can phone to discuss medical concerns and questions. The health promotion staff provides counseling and an extensive campus outreach. In addition, the SHCC provides a pharmacy, clinical laboratory, and radiology services. Health services available for university students include immunizations, foreign travel consultation, women's health care, specialized programs for students with eating disorders and alcohol and substance abuse, an acute care clinic, and a sports medicine clinic. (An up-to-date description of all services, hours, and special events is listed on the Student Health Care Center website: http://www.shcc.ufl.edu.)

There is no charge for an office visit with SHCC clinical staff, health education, or mental health services. Fee-for-service charges are assessed for laboratory tests, X-rays, medical procedures, medications, physical therapy, massage therapy, and consultation with health care specialists. CPR and first-aid classes are also available for a fee. All the services are located in the Infirmary building, which is located on Fletcher Drive on campus. Limited SHCC services are also available at SHCC@Shands and the SHCC@Corry Village Satellite Clinics.

The fall and spring SHCC hours for medical care are 8:00 a.m. to 6:30 p.m. on weekdays, and noon to 4:00 p.m. on weekends and some holidays. Student Mental Health hours are 8:00 a.m. to 5:00 p.m., Monday and Friday. Pharmacy hours are 8:00 a.m. to 5:30 p.m., Monday through Friday and noon to 4:00 p.m. on weekends/holidays. Clinic hours vary during semester breaks and holidays. Summer semester hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday. Both a medical and mental health provider is available by phone by calling 392-1161 for urgent questions that require advice after hours.

All students registered for classes at the University are eligible for service. Spouses, postdoctoral students, and

semester-off students who plan to return the following semester may receive services if they pay an optional health fee. A Student Government-sponsored health insurance plan is available.

HIV Infection—The University's policy is to assess the needs of students, faculty or staff with HIV infection on a case-by-case basis. With permission of the affected individual, the director of the Student Health Care Center will assist in the coordination of resources and services.

The confidentiality of an individual's HIV status, as well as the individual's welfare, is respected. Breach of confidentiality of information obtained by a University employee in an official University capacity may result in disciplinary action.

Based on current medical information concerning risk of infection, the University does not isolate persons with HIV infection or AIDS from other individuals in the educational or work setting. Furthermore, the University supports the continued participation, to the fullest extend reasonably possible, of these individuals in the campus educational/work environment. It is also the policy of the University to provide education that seeks to prevent the spread of HIV infection. Those individuals at risk for the HIV infection are encouraged to get tested; those who are infected are urged to seek treatment. With current advances in HIV/AIDS treatment, early intervention is crucial to maintaining well-being and delaying complications of the illness. In keeping with the Americans with Disabilities Act, the University considers HIV/AIDS to be a disability. Students or employees who are disabled with HIV infection or AIDS can use existing support services.

University of Florida International Center

The University of Florida International Center (UFIC), located in 123 Grinter Hall, supports and promotes teaching, research, service, and the enhancement of international education. UFIC coordinates with government and university agencies to provide the following services: evaluation of international student financial statements, the issuance of DS-2019s and I-20s, and study abroad opportunities. UFIC is the University of Florida liaison with foreign and domestic embassies and consulates. For more information, contact UFIC: telephone (352)392-5323, fax (352)5575, e-mail ufic@ufic.ufl.edu, or visit the UFIC website at http://www.ufic@.ufl..edu and contact the appropriate person.

International Student Services (ISS) provides orientation, immigration services, and cross-cultural workshops to students from abroad coming to study at UF. Services are provided to international students immediately upon their arrival at the University of Florida and continue until they return to their home countries. ISS provides counseling to all international students on problems pertaining to academic, financial, cultural, and personal issues.

International Faculty and Scholar Services (IFSS) delivers administrative and support services to international faculty, scholars, and their families. Services are provided to faculty and scholars immediately upon their arrival on campus and continue until they return home. All international faculty and scholars as well as Fulbright fellows check in with IFSS to verify visa status and insurance coverage.

Study Abroad Services (SAS) administers summer, semester, and academic year programs that provide students the opportunity to live and study abroad while fulfilling degree requirements. Students can choose among faculty led summer programs, semester and academic year exchange programs, and a wide range of independent programs. Various scholarships and other financial aid can be applied to help finance the international academic experience. University of Florida exchange programs enable students to pay UF tuition while studying abroad. SAS program assistants advise applicants on all aspects of UF approved programs, provide pre-departure orientations, and process the foreign transcript upon return of the student. Program details are available in the UFIC library or on the UFIC website.

Program Development (PD) assists UF faculty and students in devising projects in international applied research, technical cooperation, student exchange, workshops, outreach, and other international activities. Working closely with other centers, academic units, and colleges, PD promotes programs and projects that capitalize on the strengths of UF's faculty and staff. UFIC administers the World Citizenship Program, an international internship program funded by the Coca-Cola Foundation, that places students with humanitarian assistance and environmental NGOs around the world. The Peace Corps maintains a recruiting office within UFIC for students interested in two years of voluntary services abroad. UFIC maintains a country specialist database that contains faculty expertise in particular countries and that anyone can search by country (http://www.ufic.ufl.edu/csd/index.asp).

Workshops for Teaching Assistants

The Graduate School and the Office of Academic Technology (AT) 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 who are beginning 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. Participants may request videotaping of their classroom presentations and student feedback on strengths and weaknesses. To register or for more information go to Resources for Teaching Assistants at http://www.teachingcenter.ufl.edu, call the AT Teaching Center, 392-2010, or drop by the office on the ground level, Southwest Broward Hall.

Teaching at the University of Florida: A Handbook for Teaching Assistants is available on line at http://grove.ufl.edu/~teachctr/tabook/tabook.html.

Fields of Instruction

Course Prefixes, Titles and Academic Units

PREFIX	TITLE	ACADEMIC UNIT
ABE	Agricultural & Biological Engineering	Agricultural & Biological Engineering
ACG	Accounting: General	Accounting
ADV	Advertising	Mass Communication
AEB	Agricultural Economics & Business	Food & Resource Economics
AEE	Agricultural & Extension Education	Agricultural Education & Communication
AFH	African History	History
AFS	African Studies	African Studies
AFS	African Studies	Anthropology
ALS	Agriculture—General	All Departments in College of Agricultural & Life Sciences
AGR	Agronomy	Agronomy
AMH	American History	History
AML	American Literature	English
ANG	Anthropology—Graduate	Anthropology
ANS	Animal Science	Animal Sciences
AOM	Agricultural Operations Engineering	Agricultural & Biological Management
ARE	Art Education	Art & Art History
ARH	Art History	Art & Art History
ART	Art	Art & Art History
ASH	Asian History	History
AST	Astronomy	Astronomy
AST	Astronomy	Physics
BCH	Biochemistry	Biochemistry & Molecular Biology
BCH	Biochemistry	Medical Sciences—IDP
BCN	Building Construction	Building Construction
BME	Biomedical Engineering	Biomedical Engineering
BOT	Botany	Botany
BOT	Botany	Geological Sciences
BOT	Botany	Horticultural Science
BUL	Business Law	Management
CAP	Computer Applications	Computer & Information Science & Engineering
CBH	Comparative Psychology	Psychology & Animal Behavior
CCE	Civil Construction Engineering	Civil & Coastal Engineering
CCJ	Criminology & Criminal Justice	Criminology, Law, & Society
CDA	Computer Design/Architecture	Computer & Information Science & Engineering
CDA	Computer Design/Architecture	Electrical & Computer Engineering
CEG	Civil Engineering Geotechnical	Civil & Coastal Engineering
CEN	Computer Engineering	Computer & Information Science & Engineering
CES	Civil Engineering Structures	Civil & Coastal Engineering
CGN	Civil Engineering	Civil & Coastal Engineering
CGS	Computer General Studies	Computer & Information Science & Engineering
CGS	Computer General Studies	Decision & Information Sciences
CGS	Computer General Studies	Industrial & Systems Engineering
CHM	Chemistry	Chemistry
CHS	Chemistry—Specialized	Chemistry
CIS	Computer & Information Systems	Computer & Information Science & Engineering
CJC	Corrections	Criminology, Law, & Society
CJE	Law Enforcement	Criminology, Law, & Society
CJJ	Juvenile Justice	Criminology, Law, & Society
CJL	Law & Process	Criminology, Law, & Society
CLA	Classical & Ancient Studies	Classics
CLP	Clinical Psychology	Clinical & Health Psychology
CLP	Clinical Psychology	Psychology
CLT	Classical Literature in Translation	Classics
COM	Communication	Communication Sciences & Disorders
COM	Communication	Mass Communication
COP	Computer Programming	Computer & Information Science & Engineering
COT	Computing Theory	Chemical Engineering
COT	Computing Theory	Computer & Information Science & Engineering
CPO	Comparative Politics	Political Science
CRW	Creative Writing	English
CWR	Civil Water Resources	Agricultural & Biological Engineering
CWR	Civil Water Resources	Environmental Engineering Science
CWR	Civil Water Resources	Forest Resources & Conservation
CWR	Civil Water Resources	Soil & Water Science
DAA	Dance Activities	Theatre & Dance
DAN	Dance	Theatre & Dance
DCP	Design, Construction, & Planning	All Departments in College of Design, Construction, & Planning
DEP	Developmental Psychology	Clinical & Health Psychology
DEP	Developmental Psychology	Psychology
DIE	Dietetics	Food Science & Human Nutrition
EAB	Experimental Analysis	Psychology of Behavior
EAS	Aerospace Engineering	Mechanical & Aerospace Engineering
ECH	Engineering: Chemical	Chemical Engineering
ECO	Economics	Economics
ECO	Economics	Education—Teaching & Learning
ECP	Economics Problems & Policy	Economics
ECS	Economics Systems & Development	Economics
EDA	Education: Administration	Educational Leadership, Policy, & Foundations
EDE	Education: Elementary	Teaching & Learning
EDF	Education: Foundations	Educational Leadership, Policy, & Foundations
EDF	Education: Foundations	Educational Psychology
EDG	Education: General	Educational Leadership, Policy, & Foundations
EDG	Education: General	Educational Psychology
EDG	Education: General	Teaching & Learning

Course Prefixes, Titles and Academic Units

PREFIX	TITLE	ACADEMIC UNIT
EDM	Education: Middle School	Teaching & Learning
EDS	Education: Supervision	Educational Leadership, Policy, & Foundations
EEC	Education: Early Childhood	Teaching & Learning
EED	Education: Emotional	Special Education Disorders
EEL	Engineering: Electrical	Electrical & Computer Engineering
EES	Environmental Engineering Science	Environmental Engineering Sciences
EEX	Education: Exceptional Child	Educational Leadership, Policy & Foundations
EEX	Education: Exceptional Child	Special Education
EGM	Engineering: Mechanical	Civil & Coastal Engineering
EGM	Engineering: Mechanics	Mechanical & Aerospace Engineering
EGN	Engineering: General	Civil & Coastal Engineering
EGN	Engineering: General	Electrical & Computer Engineering
EGN	Engineering: General	Computer & Information Sciences & Engineering
EGN	Engineering: General	Environmental Engineering Sciences
EGN	Engineering: General	Industrial & Systems Engineering
EGN	Engineering: General	Materials Science & Engineering
EGN	Engineering: General	Mechanical & Aerospace Engineering
EGN	Engineering: General	Nuclear & Radiological Engineering
EGN	Engineering: General	Chemical Engineering
EIN	Engineering: Industrial	Industrial & Systems Engineering
EMA	Materials Engineering	Materials Science & Engineering
EME	Education: Technology	Teaching & Learning
EML	Engineering: Mechanics	Mechanical & Aerospace Engineering
EML	Engineering: Mechanical	Nuclear & Radiological Engineering
EMR	Education: Mental Retardation	Special Education
ENC	English Composition	English
ENC	English Composition	Linguistics
ENG	English—General	English
ENL	English Literature	English
ENU	Engineering: Nuclear	Nuclear & Radiological Engineering
ENV	Engineering: Environmental	Environmental Engineering Sciences
ENY	Entomology	Entomology & Nematology
EPH	Physical & Multiple Handicaps	Special Education
ESE	Education: Secondary	Teaching & Learning
ESI	Engineering: Industrial Engineering (Systems)	Industrial & Systems Engineering
EUH	European History	History
EVR	Natural Resources	Natural Resources & Environment
EXP	Experimental Psychology	Psychology
FAS	Fisheries & Aquaculture	Fisheries & Aquatic Sciences
FIN	Finance	Finance, Insurance & Real Estate
FLE	Foreign Language Education	Teaching & Learning
FNR	Forestry & Natural Resources	Forest Resources & Conservation
FOL	Foreign & Biblical Languages	Romance Languages & Literatures
FOR	Forestry	Forest Resources & Conservation
FOS	Food Science	Food Science & Human Nutrition
FOT	Foreign Languages (in Translation)	Latin American Studies
FOW	Foreign & Biblical Literature	Romance Languages & Literatures
FRE	French Language	Romance Languages & Literatures—French
FRT	French Literature in Translation	Romance Languages & Literatures—French
FRW	French Literature	Romance Languages & Literatures—French
FYC	Family, Youth & Community Sciences	Family, Youth & Community Sciences
GEA	Geography—Regional (Area)	Geography
GEB	General Business	Business Administration—General
GEB	General Business	Finance, Insurance & Real Estate
GEO	Geography – Systematic	Geography
GER	German	Germanic & Slavic Studies
GET	German Literature	Germanic & Slavic Studies—in
	Translation	German
GEY	Gerontology	Gerontological Studies
GLY	Geology	Geological Sciences
GMS	Graduate Medical Sciences	All Departments in College of Medicine
GRE	Classical Greek Language	Classics—Greek Study
GRK	Modern Greek Language	Classics—Greek
GRW	Greek Literature	Classics—Greek
HIS	History—General	History
HLP	Health, Leisure, & Physical Education	All Departments in College of Health & Human Performance
HOS	Horticultural Sciences	Horticultural Science
HSA	Health Services Administration	Health Services Research, Management, & Policy
HSC	Health Science	Health Education & Behavior
HSC	Health Science	Public Health & Health Professions
HUN	Human Nutrition	Food Science & Human Nutrition
IND	Interior Design	Interior Design
INR	International Relations	Political Science
JOU	Journalism	Mass Communication
LAA	Landscape Architecture	Landscape Architecture
LAE	Language Arts & English Education	Communication Sciences & Disorders
LAE	Language Arts & English Education	English
LAE	Language Arts & English Education	Teaching & Learning
LAH	Latin American History	History
LAS	Latin American Studies	Latin American Studies
LAT	Latin (Language Study)	Classics—Latin
LEI	Leisure	Tourism, Parks, & Sport Mangement
LIN	Linguistics	Communication Sciences &

Course Prefixes, Titles and Academic Units

PREFIX	TITLE	ACADEMIC UNIT
		Disorders
LIN	Linguistics	Linguistics
LIN	Linguistics	Teaching & Learning
LIT	Literature	English
LNW	Latin Literature	Classics—Latin
MAA	Mathematics—Analysis	Mathematics
MAD	Mathematics—Discrete	Mathematics
MAE	Mathematics Education	Mathematics
MAE	Mathematics Education	Teaching & Learning
MAN	Management	Decision & Information Sciences
MAN	Management	Management
MAP	Mathematics—Applied	Mathematics
MAR	Marketing	Marketing
MAS	Mathematics—Algebraic	Mathematics Structure
MAT	Mathematics	Mathematics
MCB	Microbiology	Microbiology & Cell Science
MGF	Mathematics—General & Finite	Mathematics
MHF	Mathematics—History & Foundations	Mathematics
MHS	Education Guidance & Counseling	Counselor Education
MMC	Mass Media Communication	Mass Communication
MTG	Mathematics—Topology & Geometry	Mathematics
MUC	Music: Composition	Music
MUE	Music Education	Music
MUG	Music: Conducting	Music
MUH	Music: History/Musicology	Music
MUL	Music: Music Language	Music
MUN	Music: Music Ensembles	Music
MUO	Music: Opera/Musical Theatre	Music
MUS	Music	Music
MUT	Music: Theory	Music
MVB	Music: Applied—Brasses	Music
MVK	Music: Applied—Keyboard	Music
MVO	Music: Applied—Other Instruments	Music
MVP	Music: Applied—Percussion	Music
MVS	Music: Applied—Strings	Music
MVV	Music: Applied – Voice	Music
MVW	Music: Applied—Woodwinds	Music
NEM	Nematology	Entomology & Nematology
NGR	Nursing—Graduate	Nursing
OCE	Oceanography: General	Civil & Coastal Engineering
OCP	Oceanography: Physical	Civil & Coastal Engineering
ORH	Ornamental Horticulture	Horticultural Science
OTH	Occupational Therapy	Occupational Therapy
PAD	Public Administration	Political Science
PCB	Process Biology	Botany
PCB	Process Biology	Forest Resources & Conservation
PCB	Process Biology	Horticultural Science
PCB	Process Biology	Microbiology & Cell Science
PCB	Process Biology	Natural Resources & Environment
PCB	Process Biology	Zoology
PCO	Psychology for Counseling	Psychology
PET	Physical Education Theory	Applied Physiology & Kinesiology
PGY	Photography	Zoology
PHA	Pharmacy	Pharmacy—All Departments
PHH	Philosophy, History of	Philosophy
PHI	Philosophy	Philosophy
PHM	Philosophy of Man & Society	Philosophy
PHP	Philosophers & Schools	Philosophy
PHT	Physical Therapy	Physical Therapy
PHY	Physics	Physics
PHZ	Physics	Physics
PKG	Packaging—Agriculture	Agricultural & Biological Engineering
PLP	Plant Pathology	Plant Pathology
PLS	Plant Science	Agronomy
PLS	Plant Science	Horticultural Science
PMA	Pest Management	Entomology & Nematology
POS	Political Science	Political Science
POT	Political Theory	Political Science
POW	Portuguese Literature	Romance Languages & Literatures—Portuguese
PPE	Psychology in Personality	Clinical & Health Psychology
PPE	Psychology in Personality	Psychology
PSB	Psychobiology	Psychology
PSY	Psychology	Psychology
PUP	Public Policy	Political Science
PUR	Public Relations	Mass Communication
QMB	Quantitative Methods	Decision & Information Sciences in Business
RCS	Rehabilitation Counseling	Rehabilitation Counseling Services
RED	Reading Education	Teaching & Learning
REE	Real Estate	Finance, Insurance & Real Estate
REL	Religion	Religion
RMI	Risk Management & Insurance	Finance, Insurance & Real Estate
RTV	Radio—Television	Mass Communication
SCE	Science Education	Teaching & Learning
SDS	Education Guidance & Counseling	Counselor Education
SOP	Social Psychology	Psychology
SOS	Soil Science	Soil & Water Science
SPA	Speech Pathology & Audiology	Communication Sciences & Disorders
SPC	Speech Communication	Communication Sciences & Disorders
SPN	Spanish Language	Romance Languages & Literatures–Spanish
SPW	Spanish Literature	Romance Languages & Literatures–

Course Prefixes, Titles and Academic Units

PREFIX	TITLE	ACADEMIC UNIT
		Spanish
SSE	Social Studies Education	Teaching & Learning
STA	Statistics	Public Health
STA	Statistics	Statistics
SUR	Surveying & Related Areas	Civil & Coastal Engineering
SYA	Sociological Analysis	Sociology
SYD	Sociology of Demography & Area Studies	Sociology
SYG	General Sociology	Sociology
SYO	Social Organization	Sociology
SYP	Social Processes	Sociology
TAX	Taxation	Accounting
THE	Theatre	Theatre & Dance
TPA	Theatre Production & Administration	Theatre & Dance
TPP	Theatre Performance & Performance Training	Theatre & Dance
TSL	Teaching English as a Second Language	Linguistics
TSL	Teaching English as a Second Language	Teaching & Learning
TTE	Transportation & Traffic Engineering	Civil & Coastal Engineering
URP	Urban & Regional Planning	Urban & Regional Planning
VME	Veterinary Medicine	Veterinary Medical Sciences
WIS	Wildlife Ecology & Conservation	Wildlife Ecology & Conservation
WST	Women's Studies	Women's Studies
ZOO	Zoology	Zoology

Accounting

Warrington College of Business Administration

Graduate Faculty 2004-2005

Director: J. S. Demski. *Fisher Eminent Scholar:* J. S. Demski; J. Michael Cook. *Deloitte and Touche Professor:* D. A. Snowball. *Ernst and Young Professor:* W. R. Knechel. *Professors:* B. B. Ajinkya; J. L. Kramer. *PriceWaterhouse Coopers Associate Professor:* G. M. McGill. *Associate Professors:* S. K. Asare; J. V. Boyles; S. S. Kramer. *Assistant Professors:* H. Lin; J. Tucker.

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. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The M.Acc. degree program offers specialization in each of the three areas of auditing/financial accounting, accounting systems, and taxation. A joint program leading to the Juris Doctor and Master of Accounting degrees also is offered by the Fisher School of Accounting and College of Law. Specific details for the M.Acc., M.Acc./J.D., and Ph.D. programs will be supplied by the Fisher School of Accounting upon request.

The M.Acc. and the Ph.D. accounting programs require admission standards of at least the following: A combined verbal and quantitative score of 1200 on the Graduate Record Examination (GRE), or a score of 550 on the Graduate Management Admission Test (GMAT). Admission to the M.Acc. or Ph.D. accounting graduate programs cannot be granted until scores are received.

Information on minimum GPA standards for admission to the M.Acc. program may be obtained from the office of the Associate Director. International students must submit a TOEFL score of at least 570 with a minimum of 60 on the first section, 55 on the second section, and 55 on the third section, and a satisfactory GMAT or GRE score.

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 152-hour program. The entry point into the 3/2 program is the beginning of the senior year.

Students who have already completed an undergraduate degree in accounting may enter the one-year M.Acc. degree program which requires satisfactory completion of 34 hours of course work. A minimum of 20 credits must be in graduate level courses; a minimum of 18 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.

Requirements for the Ph.D. degree include a core of courses in mathematical methods, statistics, and economic theory; one or two supporting fields selected by the student; and a major field of accounting. Students are expected to acquire teaching experience as part of the Ph.D. degree program. Grants-in-aid will be awarded for this teaching. International students must submit a Test of Spoken English (TSE) test score of at least 220 along with satisfactory GMAT/GRE and TOEFL scores in order to obtain a teaching appointment. Students are expected to enroll in ACG 6940 for a minimum of three credits. Program requirements include fulfillment of a research skill area and a dissertation on an accounting-related topic.

Co-Major—The School offers a co-major program in conjunction with the Department of Statistics leading to the Doctor of Philosophy degree in business administration accounting and statistics. For information on this program, consult the School's graduate coordinator.

ACG 5065—Financial and Managerial Accounting (3) *Prereq: 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 (2) *Prereq: ACG 5005.* Introduction for prospective managers. Primary emphasis on management control systems.

ACG 5226—Mergers and Acquisitions and Consolidated Statements (2) *Prereq: ACG 4133C. 7AC standing.* Reporting of business combinations, equity method of accounting for investments in stocks, and issues concerning consolidated financial statements.

ACG 5385—Advanced Accounting Analysis for the Controllership Function (3) *Prereq: ACG 4353C; 7AC standing.* A study of planning and control as they relate to management of organizations. Draws from cases and journals to integrate managerial accounting concepts.

ACG 5505—Financial Reporting for Governmental and Not-for-Profit Organizations (2) *Prereq: ACG 4133C, 7AC standing.* Reporting by state and local governmental organizations and not-for-profit entities.

ACG 5637—Auditing I (4) *Prereq: C grade or better in ACG 4133C and in ACG 4352C.* Introduction to auditing and assurance services. Decision-making process, research, and auditing standards and procedures, with emphasis on ethics, legal liability, internal control, audit evidence, testing, and introduction to statistical sampling and EDP auditing.

ACG 5815—Accounting Institutions and Professional Literature (2) *Prereq: ACG 4133C, 5637, 7AC standing.* Private and public sector accounting institutions and their respective professional literature. Research techniques for addressing accounting issues emphasized through case assignments.

ACG 6136—Accounting Concepts and Financial Reporting (2) *Prereq: ACG 5815, 7AC standing.* Theoretical frameworks essential to explore structure, features, and limitations of accounting and financial reporting.

ACG 6207—Accounting Issues in Financial Risk Management (2) *Prereq: ACG 5815, 5226, 7AC standing.* Overview of risk management, financial instruments used in risk management, and related accounting issues and practices.

ACG 6255—International Accounting Issues (2) *Prereq: ACG 5815, 5226, 7AC standing.* Overview of international accounting and financial reporting practices in foreign jurisdictions and comparisons of financial reporting requirements between United States and selected foreign countries.

ACG 6265—International Accounting and Taxation (2) *Prereq: ACG 2021C or 5005; not open to students majoring in accounting.* Introduction to international accounting and tax concepts from a financial statement user's perspective.

ACG 6387—Strategic Costing (2) *Prereq: graduate standing.* Strategic view of design and use of an organization's internal accounting system.

ACG 6635—Issues in Audit Practice (2) *Prereq: ACG 5815, 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 6657—Auditing and Corporate Governance (2) *Prereq: ACG 5226, 5815, 7AC standing.* Concepts of corporate governance including regulation and practice. Overview of corporate governance mechanisms and introduction to economic foundation for auditing; linkages among governance, risk management and assurance; and essential attributes of auditing such as independence.

ACG 6695—Computer Assurance and Control (2) *Prereq: ACG 5637, 7AC standing.* Concepts of risk, control, and assurance in environments with advanced information technology. Technology based audit tools and techniques.

ACG 6835—Interdisciplinary Considerations in Accounting Theory Development (3) Developments in related disciplines, such as economics, law, and behavioral sciences, analyzed for their contribution to accounting thought.

ACG 6845—Accounting and Analytical Methods (3) Utilization of logic, including mathematics, in formulation of alternative accounting valuation models and in clarification of accounting concepts.

ACG 6888—Foundations of Measurement (2) *Prereq: graduate standing.* Foundations of measurement: whether measure exists, uniqueness properties if it does exist, and implementation issues. Measures of income, of value, of preference, and of risk.

ACG 6905—Individual Work in Accounting (1-4; max: 7) *Prereq: approval of graduate coordinator.* Reading and research in areas of accounting.

ACG 6935—Special Topics in Accounting (1-4; max: 8) *Prereq: consent of associate director.*

ACG 6940—Supervised Teaching (1-5; max: 5) S/U.

ACG 7887—Research Analysis in Accounting (3) *Prereq: 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 (3) *Prereq: 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 (1-12) 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. S/U.

ACG 7980—Research for Doctoral Dissertation (1-15) S/U.

TAX 5005—Introduction to Federal Income Taxation (4) *Prereq: C grade or better in ACG 3482C.* 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 5065—Tax Professional Research (2) *Prereq: TAX 5005, 7AC standing.* 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. Both problem identification and resolution emphasized.

TAX 6015—Taxation of Business Entities I (2) *Prereq: TAX 5065, 7AC standing.* First of three-course sequence examining taxation of corporations, S corporations, partnerships, and other business entities. In addition to basic taxation of business entities, tax planning and comparisons of taxation across entity forms emphasized.

TAX 6016—Taxation of Business Entities II (2) *Prereq: TAX 6015, 7AC standing.* Continuation of TAX 6015.

TAX 6017—Taxation of Business Entities III (2) *Prereq: TAX 6016, 7AC standing.* Continuation of TAX 6016.

TAX 6526—Advanced International Taxation (2) *Prereq: TAX 5065, 7AC standing.* 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 (2) *Prereq: 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—Multijurisdictional Taxation (2) *Prereq: TAX 5065, 7AC standing.* Tax issues involved when business enterprises operate in multiple taxing jurisdictions. Principles of both multi-state and international income taxation (and their overlap).

African Studies

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director: L. Villalon. *Assistant Director:* T. Leedy. *Distinguished Professors:* G. Hyden; J. W. Jones. *P. K. Nair. Distinguished Service Professors:* S. Berg; C. G. Davis. *Professors:* H. Armstrong; F. Baldwin; P. Basler; M. J. Burridge; B. A. Cailler; K. Campbell; S. Cohn; T. L. Crisman; R. H. Davis *(Emeritus);* H. Der-Houssikian *(Emeritus);* M. Duryea; R. Emerson; E. P. Gibbs; L. D. Harris; P. E. Hildebrand; S. Jacobson; C. F. Kiker; P. Magnarella; G. McClellan; L. McDowell; W. Nagan; K. Nunn; T. Oakland; D. Peters; R. E. Poynor; F. Putz; M. Reid; J. E. Seale; N. Smith; A. Spring; P. J. van Blokland; L. White. *Associate Professors:* A. Bamia; g. Barnes; S. A. Brandt; M. Brown; M. Chege; B. Child; L. N. Crook; D. Foster; J. Frosch; A. C. Goldman; M. Leslie; B. McDade; F. McLoughlin; D. Smith; S. Smith. *Assistant Professors:* A. Adesogan; A. Amoko; J. C. Bonzongo; B. Shalfin; G Cumming; A. Kane; S. Langwick; J. Meert;S. Sow.

The Center for African Studies 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.

A description of the Certificate Program in African Studies may be found in the section *Special Programs.* Listings of courses may be found in individual departmental descriptions or may be obtained from the Director, 427 Grinter Hall.

AFS 5061—Africana Bibliography (1) 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 (3) Interdisciplinary seminar on creating individual research designs and preparing funding proposals for research in Africa.
AFS 6905—Individual Work (1-3; max: 9)

Agricultural and Biological Engineering

Colleges of Engineering and Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chair: W. D. Graham. *Associate Chair and Graduate Coordinator:* K. L. Campbell. *Distinguished Professor:* J. W. Jones. *Professors:* M. O. Balaban; H. W. Beck; R. A. Bucklin; K. L. Campbell; K. V. Chau; D. P. Chynoweth; W. D. Graham; D. Z. Haman; P. H. Jones; W. M. Miller; J. W. Mishoe; R. A. Nordstedt; A. R. Overman; M. Salyani; J. K. Schueller; A. A. Teixeira; F. S. Zazueta. *Associate Professors:* B. J. Boman; J. F. Earle; B. T. French; C. J. Lehtola; M. T. Talbot. *Assistant Professors:* T. F. Burks; M. J. Correll; M. D. Dukes; J. Judge; W. S. Lee; R. Munoz-Carpena; S. Shukla; B. A. Welt. *Assistant Scientists:* C. W. Fraisse; K. T. Ingram; J. D. Jordan; W. A. Porter. *Senior Lecturer:* J. D. Leary. *Lecturer:* A. E. Turner.

The degrees of Master of Science, Master of Engineering, Doctor of Philosophy, and Engineer 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 area of agricultural operations management and applied science through the College of Agricultural and Life Sciences. 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 combined B.S./M.S. program allows up to 12 graduate credits to be double counted toward fulfillment of both degrees. Please check the *Undergraduate Catalog* or 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: land and water resources engineering, structures and environment modification systems, resource management and utilization, remote sensing, biological systems simulation, precision agriculture, robotics, post-harvest handling and processing, packaging, biological engineering, food engineering, and agricultural operations management. 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 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 field production management, process and manufacturing management, or technical sales and product support.

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.

Requirements for admission into the Master of Engineering and Doctor of Philosophy degree programs in the College of Engineering are the completion of an approved undergraduate program in agricultural engineering or related engineering discipline. Admission into the Master of Science program in the College of Engineering requires completion of a mathematics sequence through differential equations, 8 credits of general chemistry and 8 credits of general physics with calculus and laboratory or equivalent. Admission into the Doctor of Philosophy or the Master of Science program with a concentration in agricultural operations management in the College of Agricultural and Life Sciences requires completion of an approved undergraduate agricultural operations management program or equivalent and a working knowledge of a computer language. Admission into the Doctor of Philosophy program with a specialization in applied sciences requires an undergraduate degree in a basic science field and a master's degree in a science or engineering field with courses including analytic geometry, calculus, differential equations, 8 credits of general physics and 8 credits of general chemistry, or equivalent. Students not meeting the stated admissions requirements may be accepted into a degree program, providing sufficient articulation courses are included in the program of study. Students interested in enrolling in a graduate program should contact the graduate coordinator.

Candidates for advanced degrees in engineering are required to take at least 12 credits from an approved list of major courses at the 5000 level or higher, with at least 6 credits of ABE courses at the 6000 level, exclusive of seminar and thesis research credits. Other courses are taken in applicable basic sciences and engineering to meet educational objectives and to comprise an integrated program as approved by the Department's Graduate Committee. Master's students are required to complete at least 3 credits of mathematics at the 5000 level or higher, and doctoral students are required to complete at least 12 credits.

Candidates for the Master of Science specialization in agricultural operations management are required to complete AOM 5315, at least 12 credits from an approved list of major courses, and at least 3 credits of statistics at the 6000 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, in part, on the research topic but normally takes 3 to 4 years.

ABE 5015—Empirical Models of Crop Growth and Yield Response (3) *Prereq: permission 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 5032—Programming and Interfacing High-Performance Microcontrollers (3) *Prereq: experience in programming. Not available for students with credit in ESI 4161 and EEL 4744C.* Design of high-performance, embedded, microcontroller-based control systems with emphasis on integrating hardware, software, and applications interfacing. Hands-on experiments illustrate and reinforce principles.

ABE 5152—Electro-Hydraulic Circuits and Controls (2) *Prereq: 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 (3) 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 (3) Engineering problems in handling and processing agricultural products.

ABE 5643C—Biological Systems Modeling (3) *Prereq: 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 (3) *Prereq: MAC 2312, CGS 3460 or CIS 3020.* Numerical techniques for continuous system models using FORTRAN. Introduction to discrete simulation. Application of simulation and sensitivity analysis with examples relating to crops, soil, environment, and pests.

ABE 5653—Rheology and Mechanics of Agricultural and Biological Materials (3) *Prereq: 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—Applied Microbial Biotechnology (3) *Prereq: general biology and organic chemistry or permission of instructor.* Principles of microbial biotechnology with emphasis on application of microorganisms for industrial processes, e.g., energy, environmental, food, pharmaceutical, and chemical.

ABE 5707C—Agricultural Waste Management (3) *Prereq: 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 (4) Engineering design of unit process operations employed in agro/food, pharmaceutical, and biological industries including sterilization/pasteurization, radiation, freezing, drying, evaporation, fermentation, distillation.

ABE 6031—Instrumentation in Agricultural Engineering Research (3) Principles and application of measuring instruments and devices for obtaining experimental data in agricultural engineering research.

ABE 6035—Advanced Remote Sensing: Science and Sensors (3) *Prereq: MAP 2302.* To develop understanding of remote sensing theory and system using information obtained from visible/near infrared, thermal infrared, and microwave regions of EM spectrum.

ABE 6252—Advanced Soil and Water Management Engineering (3) Physical and mathematical analysis of problems in infiltration, drainage, and groundwater hydraulics.

ABE 6254—Simulation of Agricultural Watershed Systems (3) *Prereq: 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 6262C—Remote Sensing in Hydrology (3) *Prereq: ABE 6035.* To develop practical understanding of remote sensing applications to hydrology using observations in different regions of EM spectrum. Seminar style with emphasis on literature review and presentation.

ABE 6615—Advanced Heat and Mass Transfer in Biological Systems (3) *Prereq: 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 (3) Computerized decision systems for agriculture. Expert systems, decision support systems, simulations, and types of applications in agriculture.

ABE 6905—Individual Work in Agricultural and Biological Engineering (1-4; max: 6) Special problems in agricultural engineering.

ABE 6910—Supervised Research (1-5; max: 5) S/U.

ABE 6931—Seminar (1; max: 2) Preparation and presentation of reports on specialized aspects of research in agricultural engineering and agricultural operations management. S/U.

ABE 6933—Special Topics in Agricultural and Biological Engineering (1-4; max: 6) Lectures, laboratory, and/or special projects.

ABE 6940—Supervised Teaching (1-5; max: 5) S/U.

ABE 6971—Research for Master's Thesis (1-15) S/U.

ABE 6972—Research for Engineer's Thesis (1-15) S/U.

ABE 6974—Nonthesis Project (1-6; max: 6) In-depth project. S/U.

ABE 6986—Applied Mathematics in Agricultural and Biological Engineering (3) 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 (1-12) 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. S/U.

ABE 7980—Research for Doctoral Dissertation (1-15) S/U.

AOM 5315—Advanced Agricultural Operations Management (3) *Prereq: AOM 4455; CGS 2531 or equivalent or consent of instructor.* The functional and economic applications of machine monitoring and robotics. Analysis of farm machinery systems reliability performance. Queueing theory, linear programming, and ergonomic considerations for machine systems optimization.

AOM 5334C—Agricultural Chemical Application Technology (3) 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 (3) *Prereq: working knowledge of computer or permission 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 resources conservation.

AOM 5435—Advanced Precision Agriculture (3) 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 (1-6; max: 6) Special problems.
AOM 6932—Special Topics in Agricultural Operations Management (1-6; max: 6) Lectures, laboratory, and /or special projects.
CWR 6536—Stochastic Subsurface Hydrology (3) *Prereq: 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.
PKG 5002—Advanced Packaging, Society, and the Environment (3) Evolution of modern society and its relationship to packaging, technology, and both real and popular environmental concerns.
PKG 5003—Advanced Distribution and Transport Packaging (3) 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 (3) *Prereq: chemistry, physics, or biology.* Modern lab instruments and procedures employed for packaging used to solve problems from packaging industry.
PKG 5007—Advanced Packaging Materials (3) Major packaging materials, forms, and strategies. Specific issues related to packaging composition and form.
PKG 5105—Advanced Consumer Products Packaging (3) Major packaging methods, materials, forms, and strategies used for consumer products. Packaging plan with associated mockups for proposed consumer product prepared as specific team projects.
PKG 5206C—Advanced Package Decoration (3) Major decoration methods used for packaging. Student teams create original graphic designs and execute designs on 200 containers.
PKG 5256C—Advanced Analytical Packaging Methods (3) Materials, uses, functions, and production processes of packaging. Historical, societal, and technological drivers of packaging.
PKG 6100—Advanced Computer Tools for Packaging (3) Label design, bar code technology, spreadsheets, visual basic programming, 3D package design, and distribution efficiency analysis.
PKG 6905—Individual Work in Packaging (1-6; max: 6) Special problems in packaging sciences.
PKG 6932—Special Topics in Packaging Sciences (1-6; max: 6) Lectures, laboratory, and/or special projects.

Agricultural Education and Communication

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: E. W. Osborne. *Graduate Coordinator:* N. T. Place. *Professors:* L. R. Arrington; J. G. Cheek; G. D. Israel; H.W. Ladewig; E. W. Osborne. *Associate Professors:* J. E. Dyer; N. T. Place; R. D. Rudd; R. W. Telg. *Assistant Professors:* T. A. Irani; M.J. Kistler; B. E. Myers; S. G. Washburn.

The Department of Agricultural Education and Communication offers major work for the degrees of Doctor of Philosophy and Master of Science. The requirements for each degree are described in the General Information section of this catalog.

The Ph.D. program is designed to prepare graduates for domestic and international teaching, research, extension, administrative, and leadership positions in both the public and private sectors. Areas of specialization include teaching and learning, communication, leadership and volunteer development, and adult and extension education. Courses are taught from an agricultural and natural resources context and are broadly applicable in education, business, government, and agency settings.

The Master of Science degree includes four curriculum options in the graduate program. The agricultural communication option prepares students for professional communication careers in or dealing with agriculture, agribusiness, or natural resources or provides a foundation for further study at the doctoral level. It is intended primarily for students who enter with a bachelor's degree in journalism, agricultural journalism, advertising, broadcasting, public relations, or related fields. The agricultural leadership education specialization is designed to prepare students for educational leadership, training, and outreach positions in agricultural, extension, community, and governmental agencies. The agricultural extension option is designed to enhance the careers of those employed in the Cooperative Extension Service, including family and consumer sciences, agriculture, 4-H, and other related areas. Students gain valuable knowledge and experience in designing, implementing, and evaluating educational programs. The agricultural education option gives the student tremendous depth in the teaching and learning process. Students can be certified to teach in the state of Florida through this program.

A prospective graduate student need not have majored in agricultural education and communication as an undergraduate. However, students with an insufficient background in either agricultural education or technical agriculture will need to include some basic courses in these areas in their program.

The Department offers a combined bachelor's/master's program. Contact the graduate coordinator for information.
AEE 5032—Agricultural Media Writing (3) Varied media writing assignments: feature stories, news releases, and video.
AEE 5037—Agricultural Media Production (3) Variety of agricultural media production assignments. Agricultural websites and publication development.
AEE 5060—Public Opinion and Agricultural and Natural Resource Issues (3) Public opinion measurement and agenda setting. Media treatment, public opinion, and public relations/public information activity regarding issues affecting agricultural production and trade.
AEE 5073—Agriculture, Resources, People, and the Environment: A Global Perspective (3) Interdependence in global context. Necessity of cultivating life-long global perspective.
AEE 5206—Instructional Techniques in Agricultural and Life Sciences (3) Effective use of instructional materials and methods with emphasis on application of visual and nonvisual techniques.
AEE 5301—Professional Skill Development in Agriscience Education I (1-3; max: 9) *Prereq: teaching experience.* Development and enhancement of technical agricultural and scientific knowledge and skills by professional agriscience teachers.
AEE 5415—Critical and Creative Thinking in Problem Solving and Decision Making (3) Critical and creative thinking skills applied to agricultural, life sciences, and natural resources problem solving and decision making.
AEE 5454—Leadership Development for Extension and Community Nonprofit Organizations (3) Application of concepts related to developing leaders for organizing and maintaining extension and community nonprofit organizations.

AEE 5541—Communication and Instructional Technologies in Agricultural and Life Sciences (3) Planning and production of written and visual instructional and communication materials for programs in agricultural and life sciences. Major instructional project or communication campaign required.

AEE 5805—Professional Skill Development in Agriscience Education II (1-3; max: 9) *Prereq: AEE 5300.* Advanced level of development and enhancement of technical agriculture and scientific knowledge and skills by professional agriscience educators.

AEE 6300—Methodology of Planned Change (3) 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.

AEE 6316—From America to Zimbabwe: An Overview of International Extension Systems (3) Various extension models and delivery systems, extension partners; linkages and issues affecting extension internationally. Field trip.

AEE 6325—History and Philosophy of Agricultural Education (3) Analysis of evolving concepts and philosophies. Emphasis on history, legislation, and principles underlining organization and practice. Participation in field experience required.

AEE 6426—Development of a Volunteer Leadership Program (3) Identification, recruitment, training, retention, and supervision of volunteer leaders.

AEE 6500—Communication and Competencies for Global Leadership (3) Identifying and developing personal and professional competencies required for effective leadership in increasingly global society.

AEE 6512—Program Development in Extension Education (3) Concepts and processes drawn from the social sciences that are relevant to the development of extension education programs.

AEE 6540—Agricultural and Natural Resources Communications Theory and Strategies (3) Communication theory and concepts as they apply to important agricultural/natural resources issues.

AEE 6542—Teaching and Learning Theory: Applications in Agricultural Education (3) *Prereq: AEE 5206.* Contemporary and foundational theory and research on teaching and learning.

AEE 6552—Evaluating Programs in Extension Education (3) Concepts and research drawn from the social sciences relevant to evaluating youth and adult extension programs.

AEE 6611—Agricultural and Extension Adult Education (3) Concepts and principles related to design, implementation, and evaluation of education programs for adults.

AEE 6704—Extension Administration and Supervision (3) Principles and practices for effective administration and supervision of the cooperative extension service program at the county and state levels.

AEE 6767—Research Strategies in Agricultural Education and Communication (3) Application of principles, practices, and strategies for conducting behavioral research in agricultural and natural resource professsions.

AEE 6905—Problems in Agricultural and Extension Education (1-3; max: 8) *Prereq: approval of department chairman.* For advanced students to select and study a problem related to agricultural and/or extension education.

AEE 6910—Supervised Research (1-5; max: 5) S/U.

AEE 6912—Nonthesis Research in Agricultural and Extension Education (1-3; max: 6) Library and workshop related to methods in agricultural and extension education, including study of research work, review of publications, development of written reports.

AEE 6933—Seminar in Agricultural Education and Communication (1; max: 3) Exploration of current topics and trends.

AEE 6935—Seminar: Distance Education Issues and Applications (1) Forum for presentation and discussion of latest in distance education practice, application, and research, focusing on mechanisms and logistics supporting distance education development in secondary, higher education, and corporate settings.

AEE 6940—Supervised Teaching (1-5; max: 5) S/U.

AEE 6945—Practicum in Agricultural Education and Communication (1-3; max: 6) Supervised experience appropriate to student's professional and academic goals.

AEE 6971—Research for Master's Thesis (1-15) S/U.

AEE 7979—Advanced Research (1-12) 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. S/U.

AEE 7980—Research for Doctoral Dissertation (1-15) S/U.

Agriculture–General

College of Agricultural and Life Sciences

Interim Dean: W. H. Smith

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.

ALS 5036—Contemporary Issues in Science (2) A study of current issues in science as it relates to students pursuing scientific careers. Discussion topics will focus on issues of graduate education, funding for science, job markets, scientific research ethics, publication, and job expectations S/U.

ALS 5106—Food and the Environment (3) 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 5364C—Molecular Techniques Laboratory (2) Current protocols in molecular biology techniques.

ALS 5905—Individual Study (1-4; max: 6) Supervised study or research not covered by other courses.

ALS 5932—Special Topics (1-4; max: 6)

ALS 6046—Grant Writing (2) *Prereq: admitted to doctoral program.* Preparation, submission, and management of competitive grants, including operations of national review panels and finding sources of extramural funding.

ALS 6930—Graduate Seminar (1; max: 4) Topics in agriculture and/or natural resources. S/U option.

BCH 5045—Graduate Survey of Biochemistry (3) *Prereq: inorganic chemistry, organic chemistry, biology.* Introduction to plant, animal, and microbal biochemistry for graduate students who have not had biochemistry. Integration and regulation of biochemical processes stressed; limited discussion of some biochemical techniques.

Agronomy

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: J. M. Bennett. *Graduate Coordinator:* D. S. Wofford. *Professors:* L. H. Allen, Jr.; R. D. Barnett; J. M. Bennett; K. J. Boote; B. J. Brecke; P. S. Chourey; D. L. Colvin; R. N. Gallaher; D. W. Gorbet; W. T. Haller; J. C. Joyce; R. S. Kalmbacher; K. A. Langeland; P. Mislevy III; R. P. Nair; P. L. Pfahler; H. L. Popenoe; G. M. Prine; K. H. Quesenberry; D. G. Shilling; T. R. Sinclair; R. L. Smith; L. E. Sollenberger; R. K. Stocker; D. L. Sutton; J. C. V. Vu; S. H. West; E. B. Whitty; D. S. Wofford; D. L. Wright. *Associate Professors:* M. B. Adjei; A. S. Blount; C. G. Chambliss; A. M. Fox; M. Gallo-Meagher; M. J. Williams. *Assistant Professors:* F. Altpeter; K. L. Buhr; J. A. Ferrell; R. A. Gilbert; K. E. Kenworthy; G. E. MacDonald; J. M. Scholberg; R. G. Shatters.

The Department offers the degrees of Doctor of Philosophy and Master of Science (thesis and nonthesis option) in agronomy with specialization in crop ecology, crop nutrition and physiology, crop production, weed science, genetics, cytogenetics, or plant breeding. Complete descriptions of the requirements for the M. S. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Graduate programs emphasize the development and subsequent application of basic principles in each specialization to agronomic plants in Florida and throughout the tropics. The continuing need for increased food supplies is reflected in departmental research efforts. 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 one or more of several tropical countries.

A science background with basic courses in mathematics, chemistry, botany, microbiology, and physics is required of new graduate students. In addition to graduate courses in agronomy, the following courses in related areas are acceptable for graduate credits as part of the student's major: ABE 5643C—Biological and Agricultural Systems Analysis; ABE 5646—Biological and Agricultural Systems Simulation; ANS 6452—Principles of Forage Quality Evaluation; ANS 6715—The Rumen and Its Microbes; BOT 5225C—Plant Anatomy; BOT 6516—Plant Metabolism; BOT 6566—Plant Growth and Development; HOS 6201—Breeding Perennial Cultivars; HOS 6231—Biochemical Genetics of Higher Plants; HOS 6242—Genetics and Breeding of Vegetable Crops; HOS 6345—Environmental Physiology of Horticultural Crops; PCB 5307C—Limnology; PCB 6356C—Ecosystems of the Tropics; PCB 6555—Quantitative Genetics; SOS 6136—Soil Fertility.

The Department offers a combined bachelor's /master's program. Contact the graduate coordinator for information.

AGR 5215C—Integrated Field Crop Science (3) Intensive introduction to practical field crop production and management of common, as well as under-exploited, field crops. Offered ever summer A semester.

AGR 5230C—Grassland Agroecosystems (4) Comprehensive overview of planted and native grassland ecosystems in Florida emphasizing their growth, species diversity, management, and utilization by ruminant animals. Offered every spring semester.

AGR 5266C—Field Plot Techniques (3) *Prereq: STA 3023.* Techniques and procedures employed in the design and analysis of field plot, greenhouse, and laboratory research experiments. Application of research methodology, the analysis and interpretation of research results. Offered every fall semester.

AGR 5277C—Tropical Crop Production (3) *Prereq: consent of instructor.)* The ecology and production practices of selected crops grown in the tropics.

AGR 5307—Molecular Genetics for Crop Improvement (2) *Prereq: AGR 3303.* Overview of molecular genetics and plant transformation methodologies used in crop improvement. Offered every spring semester.

AGR 5321C—Genetic Improvement of Plants (3) *Prereq: 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 every fall semester.

AGR 5444—Ecophysiology of Crop Production (3) *Prereq: AGR 3005 or equivalent.* Physiological, ecological, and environmental responses that impact growth, development, and yield formation of cultivated crops. Offered spring semester.

AGR 5511—Crop Ecology (3) *Prereq: AGR 4210, BOT 3503, PCB 3043C, or equivalent.* Relationships of ecological factors and climatic classifications to agroecosystems, and crop modeling of the major crops.

AGR 5515—Medicinal Plant Research (3) Research on selected medicinal plants of eastern USA, including plant nutrition, ecology, and medicinal properties. Field trips to identify and collect specimens supplement laboratory exercises. Offered summer A semester.

AGR 6233C—Tropical Pasture and Forage Science (4) *Prereq: 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 utilization in livestock production. Offered fall semester in odd-numbered years.

AGR 6237C—Research Techniques in Forage Evaluation (3) *Prereq or coreq: 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 semester in odd-numbered years.

AGR 6311—Population Genetics (2) *Prereq: AGR 3303, STA 6166.* Application of statistical principles to biological populations in relation to gene frequency, zygotic frequency, mating systems, and the effects of selection, mutation and migration on equilibrium populations. Offered spring semester in even-numbered years.

AGR 6322—Advanced Plant Breeding (3) *Prereq: AGR 3303, 4231, 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 semester in even numbered years.

AGR 6325L—Plant Breeding Techniques (1; max: 2) *Prereq: AGR 3303 or equivalent; coreq: 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 semester in odd-numbered years.
AGR 6353—Cytogenetics (3) *Prereq: AGR 3303.* Genetic variability with emphasis on interrelationships of cytologic and genetic concepts. Chromosome structure and number, chromosomal aberrations, apomixis, and application of cytogenetic principles. Offered fall semester in odd-numbered years.
AGR 6422C—Environmental Crop Nutrition (3) *Prereq: BOT 3503.* Design of cost-effective and environmentally sound crop nutrient management strategies. Diagnostic nutrient analysis, nutrient uptake, BMPs, and sustainable agriculture. Offered every fall semester.
AGR 6442C—Physiology of Agronomic Plants (4) *Prereq: BOT 3503.* Yield potentials of crops as influenced by photosynthetic efficiencies, respiration, translocation, drought, and canopy architecture. Plant response to environmental factors. Offered every spring semester.
AGR 6905—Agronomic Problems (1-5; max: 8) Special topics for classroom, library, laboratory, or field studies of agronomic plants.
AGR 6910—Supervised Research (1-5; max: 5) S/U.
AGR 6932—Topics in Agronomy (1-3; max: 8) Critical review of selected topics in specific agronomic areas.
AGR 6933—Graduate Agronomy Seminar (1; max: 3) Current literature and agronomic developments.
AGR 6940—Supervised Teaching (1-5; max: 5) S/U.
AGR 6971—Research for Master's Thesis (1-15) S/U.
AGR 7979—Advanced Research (1-12) 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. S/U.
AGR 7980—Research for Doctoral Dissertation (1-15) S/U.
PLS 5632C—Integrated Weed Management (3) Overview of weed science principles and practices, with particular emphasis on strategies for southeastern cropping systems. Situations unique to the State of Florida. Offered every fall semester.
PLS 5652—Advanced Weed Science (3) *Prereq: 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 semester in odd-numbered years.
PLS 6623—Weed Ecology (3) *Prereq: 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 semester in even-numbered years.
PLS 6655—Plant/Herbicide Interaction (3) *Prereq: 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 semester in odd-numbered years.

Anatomy and Cell Biology

College of Medicine

Graduate Faculty 2004-2005

Chairman: S. P. Sugrue. *Graduate Coordinator:* D. Liao. Haskell Hess *Professor:* B. Burke. *Distinguished Professor:* S. Benner. *Professors:* N. Chegini; W. A. Dunn; C. Feldherr; P. Linser; W. S. May; K. Rarey; L. Romrell; G. Shaw; S. Sugrue; C. Tisher; R. Wallace. *Associate Professors:* J.P. Aris; M.Cohn; T. G. Hollinger; P. LuValle; K. Madsen; S. Narayan; K. Selman; P. D. Shirk. *Assistant Professors:* X. Deng; L.S. Holliday; A. Ishov; S. Kaushal; L. Kornberg; D. Liao; M. Segal; L. Xiao.

The Graduate Faculty of the Department of Anatomy and Cell Biology participates 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 cell biology, developmental biology, and molecular biology. Laboratory research is supported by funding from the National Institutes of Health, the National Science Foundation, state agencies, and private foundations. The Department is committed to provide an excellent intellectual environment for students who wish to pursue graduate studies. In addition to courses associated with the IDP, the Department of Anatomy and Cell Biology offers the courses listed below.
GMS 6061—The Nucleus (1) *Prereq: GMS 6001 or consent of instructor.* Cell biology of the nucleus. Offered in old-numbered years.
GMS 6062—Protein Trafficking (1) *Prereq: GMS 6001 or consent of instructor.* Movement of proteins in cell. Offered in even-numbered years.
GMS 6063—Cellular Aging (1) *Prereq: GMS 6001 or consent of instructor.* Recent developments in the field of aging.
GMS 6064—Tumor Biology (1) *Prereq: GMS 6001 or consent of instructor.* Current understanding of molecular basis of cancer. Offered in odd-numbered years.
GMS 6421—Cell Biology (4) *Prereq: 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 6609—Advanced Gross Anatomy (2-4; max: 6) Regional and specialized anatomy of the human body taught by laboratory dissection, conferences, and demonstrations.
GMS 6635—Organization of Cells and Tissues (2) *Prereq: GMS 6001 or consent of instructor.* Structural and functional aspects.
GMS 6642—Morphogenesis: Organ Systems I (2) *Prereq: GMS 6635, second-year IDP student.* Skin, respiratory, lymphatics, and special sense.
GMS 6643—Morphogenesis: Organ Systems II (2) *Prereq: GMS 6642, second-year IDP student.* GI, kidney, endocrine, male and female reproduction.
GMS 6644—Apoptosis (1) *Prereq: GMS 6001 or consent of instructor.* Modern view of molecular mechanisms of tumor development. Offered in even-numbered years.
GMS 6647—Transcriptional and Translational Control of Cell Growth and Proliferation (1) *Prereq: GMS 6001 or consent of instructor.* Role of transcription and translation in control of gene expression regulating cell growth and proliferation, and perturbations during cellular stress, viral infection, and cancer.

GMS 6690—Molecular Cell Biology Journal Club (1; max: 12) Faculty-student discussion of research papers and topics.
GMS 6691—Special Topics in Cell Biology and Anatomy (1-4; max: 10) Readings in recent research literature of anatomy and/or applied disciplines including cell, developmental, and reproductive biology.
GMS 6970—Individual Study (1-3; max: 8) Supervised study in areas not covered by other graduate courses.

Animal Sciences

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: F. G. Hembry. *Assistant Chairman and Graduate Coordinator:* J. H. Brendemuhl. *Professors:* J. H. Brendemuhl; W. E. Brown; W. C. Buhi; M. J. Burridge; S. W. Coleman; M. A. Elzo; M. J. Fields; K. N. Gelatt; E. P. Gibbs; R. N. Gronwall; P. J. Hansen; F. G. Hembry; D. D. Johnson; T. T. Marshall; L. R. McDowell; R. D. Miles; R. O. Myer; R. P. Natzke; D. C. Sharp III; C. R. Staples; A. I. Webb; D. W. Webb. *Associate Professors:* J. D. Arthington; K. C. Bachman; J. N. Bacus; L. Badinga; G. D. Butcher; C. C. Chase; E. L. Johnson; T. A. Olson; D. R. Sloan; S. H. TenBroeck; S. K. Williams; J. V. Yelich. *Assistant Professors:* A. Adesogan; J. Carter; A. De Vries; A. Ealy; M. Hersom; T Houser; S. Johnson; K. Moore; D. G. Riley; T. Thrift; L. Warren.

The Department of Animal Sciences offers the following degrees: Master of Agriculture, Master of Science, and Doctor of Philosophy in animal sciences with emphasis in beef or dairy cattle or equine. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The following specializations are available: breeding and genetics, management, nutrition (nutritional physiology, nutrient metabolism, and feedstuff utilization), physiology (environmental, lactational, and reproductive), molecular biology (embryology, endocrinology, and genetics), meat science (meat processing, meat quality, and food safety). Students may also complete the M.S. or Ph.D. degree through the interdisciplinary concentration in animal molecular and cell biology (AMCB). 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, 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 bacteriology, biology, mathematics, botany, and chemistry. All courses in the animal sciences program area are acceptable for graduate credit as part of the candidate's major. In addition, the following courses also fulfill this requirement: AEB 5326—Agribusiness Financial Management; AEB 6182—Agricultural Risk Analysis and Decision Making; AEB 6385—Management Strategies for Agribusiness Firms; AGR 6233C—Tropical Pasture and Forage Science; AGR 6311—Population Genetics; AGR 6353—Cytogenetics; BCH 6415—Advanced Molecular and Cell Biology; ESI 6314—Deterministic Methods in Operations Research; FOS 5225C—Principles in Food Microbiology; FOS 6126C—Psychophysical Aspect of Foods; FOS 6315C—Advanced Food Chemistry; FOS 6428C—Advanced Food Processing; HUN 6245—Advanced Human Nutrition; VME 5162C—Avian Diseases; and VME 5244—Physiology of Mammals: Organ Systems.

The Department offers a combined bachelor's/master's program. Contact the graduate coordinator for information.

ANS 5446—Animal Nutrition (3) *Prereq: ANS 3440, BCH 4024 or permission of instructor.* Carbohydrates, fats, proteins, minerals, and vitamins and their functions in the animal body. Offered every fall semester.
ANS 5935—Reproductive Biology Seminar and Research Studies (1; max: 4) *Prereq: ANS 3319 or equivalent.* Invited speakers on wide range of topics. Student-faculty participation in research projects. S/U.
ANS 6281—Dairy Science Research Techniques (3) *Prereq: STA 6167.* Methods employed in research in specialized dairy fields; genetics, nutrition, and physiology.
ANS 6288—Experimental Techniques and Analytical Procedures in Meat Research (3) Experimental design, analytical procedures; techniques; carcass measurements and analyses as related to livestock production and meats studies.
ANS 6310—Experimental Embryology (4) *Prereq: ANS 6751C, BCH 5045.* Fundamentals of embryology with emphasis on mammals and current experimental approaches to embryo research.
ANS 6313—Current Concepts in Reproductive Biology (2) *Prereq: ANS 3319 or equivalent; consent of instructor.* Lectures prepared by students and discussion of current review articles.
ANS 6449—Vitamins (3) *Prereq: organic chemistry.* Historical development, properties, assays, and physiological effects. Offered spring semester in even-numbered years.
ANS 6452—Principles of Forage Quality Evaluation (2) *Prereq: 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 semester in even-numbered years.
ANS 6458—Advanced Methods in Nutrition Technology (3) *For graduate students but open to seniors by special permission.* Demonstrations and limited performance of procedures used in nutrition research. Offered fall semester in even-numbered years.
ANS 6636—Meat Technology (3) Chemistry, physics, histology, bacteriology, and engineering involved in the handling, processing, manufacturing, preservation, storage, distribution, and utilization of meat.
ANS 6666L—Molecular and Cellular Research Methods (2) *Prereq: enrollment in AMCB concentration.* Diversity of research topics and laboratory techniques demonstrated. Short laboratory rotations (3 to 6 weeks) with 3 scientists. Offered fall and spring semesters.
ANS 6702C—Advanced Physiology of Lactation (2)
ANS 6704—Endocrinology (4) *Prereq: BCH 4024.*
ANS 6706—Environmental Physiology of Domestic Animals (3)
ANS 6711—Current Topics in Equine Nutrition and Exercise Physiology (2) Equine science with emphasis on current topics of interest.
ANS 6715—The Rumen and Its Microbes (3) *Prereq: ANS 5446.* Review and correlation of fundamental biochemical, physiological, and bacteriological research upon which feeding of

ruminants is based. Experimental methodology of rumen physiology and metabolism.

ANS 6717—Energy Metabolism (3) *Prereq: ANS 5446; BCH 4024; 3025, permission of instructor.*

ANS 6718—Nutritional Physiology of Domestic Animals (3) *Prereq: ANS 5446; introductory biochemistry course.* Integration of endocrine, biochemical, molecular control of nutritional processes in domestic animals. Offered every fall semester.

ANS 6723—Mineral Nutrition and Metabolism (3) Physiological effect of macro- and micro-elements, mineral interrelationships. Offered spring semester in odd-numbered years.

ANS 6745—Introduction to Statistical Genetics (2) *Prereq: PCB 6555, STA 6167.* Development and application of statistical and quantitative genetics theory to selection and estimation of genetic parameters.

ANS 6751C—Physiology of Reproduction (4) *Prereq: ANS 3319 or permission of instructor.* Conceptual relationship of hypothalamus, pituitary, and reproductive organs during estrous cycle and pregnancy. Influence of exteroceptive factors and seasonal reproduction. Offered every fall semester.

ANS 6767—Molecular Endocrinology (3) *Prereq: BCH 4024 or equivalent or permission 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 6905—Problems in Animal Science (1-4; max: 8) H.

ANS 6910—Supervised Research (1-5; max: 5) S/U.

ANS 6932—Topics in Animal Science (1-3; max: 9) New developments in animal nutrition and livestock feeding, animal genetics, animal physiology, and livestock management.

ANS 6933—Graduate Seminar in Animal Science (1; max: 8)

ANS 6936—Graduate Seminar in Animal Molecular and Cell Biology (1; max: 2) Seminar attendance and one-hour presentation on graduate research project.

ANS 6940—Supervised Teaching (1-5; max: 5) S/U.

ANS 6971—Research for Master's Thesis (1-15) S/U.

ANS 7979—Advanced Research (1-12) 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. S/U.

ANS 7980—Research for Doctoral Dissertation (1-15) S/U.

Anthropology

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Interim Chairperson: M. E. Moseley. *Graduate Coordinator:* D. J. Daegling. *Distinguished Professor:* M. E. Moseley. *Distinguished Research Professor:* K. Deagan. *Professors:* H. R. Bernard; A. F. Burns; B. M. du Toit *(Emeritus);* J. D. Early;+ B. T. Grindal;* W. F. Keegan; P. J. Magnarella; M. L. Margolis; W. H. Marquardt; J. T. Milanich; S. Milbrath; J. H. Moore; A. R. Oliver-Smith; J. A. Paredes;* M. E. Pohl;* B. A. Purdy *(Emerita);* H. I. Safa *(Emerita);* M. Schmink; P. R. Schmidt; A. Spring; G. Weiss;+ E. S. Wing *(Emerita). Associate Professors:* S. H. Boinski; S. A. Brandt; D. Daegling; A. Falsetti; S. D. Gillespie; T. Ho;* W. J. Kennedy;+ I. P. McClaurin; S. Milbrath; G. F. Murray; K. Sassaman; S. Simpson; A. M. Stearman;* M. Thurner. *Associate Research Scientists:* E. Guilette; D. McMillan. *Assistant Professors:* P. Collings; J. Davidson; G. H. Chalfin; S. D. de France; M. Heckenberger; A. Kane; J. Krigbaum; S. A. Langwick; C. J. Mulligan; J. Stansbury; J. R. Stepp; M. Thomas-Houston; K. J. Walker; M. Warren.

These members of the faculty of Florida State University (*) and Florida Atlantic University (+) are also members of the Graduate Faculty of the University of Florida and participate in the doctoral degree program in the University of Florida Department of Anthropology.

The Department of Anthropology offers graduate work leading to the Master of Arts (thesis or nonthesis option) and Doctor of Philosophy degrees. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog. Graduate training is offered in applied anthropology, social and cultural anthropology, archeology, anthropological linguistics, and physical/biological anthropology.

There is a general option and an interdisciplinary one. The general option allows students to concentrate at the M.A. level on the integration of the four subfields of anthropology and to specialize at the Ph.D. level. The interdisciplinary alternative allows students to 1) concentrate on one or two subfields of anthropology along with one or more areas outside of anthropology and 2) begin early specialization and integration of a subfield of anthropology and an outside field. More information about these two options is found in the publication on graduate programs and policies that may be accessed on the Department website .

The Department of Anthropology generally requires a minimum score of 1100 on the Graduate Record Examination and a 3.2 overall grade point average based on a 4.0 system.

All entering graduate students are required to take ANG 6930, Proseminar in Cultural and Linguistic Anthropology and Proseminar in Biological and Archeological Anthropology. No more than six hours of ANG 6971 will be counted toward the minimum requirements for the M.A. with thesis. Knowledge of a foreign language may be required by the student's supervisory committee. Other requirements for the program are listed in this catalog under *Requirements for Master's Degrees.*

Students enrolled in the M.A. program who wish to continue their studies for a Ph.D. must apply to the Department for certification. Minimum requirements will normally include 1) a minimum grade point average of 3.5 in all graduate anthropology courses and a minimum of 3.2 in other courses, 2) a grade of pass on the comprehensive M.A. examination, and 3) a thesis, report, or paper judged to be of excellent quality by the student's supervisory committee. In most cases, candidates for the Ph.D. must achieve competency in a language other than English. Entering students who already have earned a master's degree may apply for direct admission to the doctoral program.

The deadline for receiving completed applications for admission into the graduate program is January 5 (for fall semester admission only). The Department strongly encourages early applications.

ANG 5110—Archeological Theory (3) *Prereq: one course in archeology; and/or anthropology or permission of the instructor.* Survey of the theoretical and methodological tenets of anthropological archeology; critical review of archeological theories, past and present; relation of archeology to anthropology. Not open to students who have taken ANT 4110.

ANG 5126—Zooarcheology (3) *Prereq: consent of instructor.* Human use of animal resources, with emphasis on prehistoric hunting and fishing practices. Origins of animal domestication.

ANG 5158—Florida Archeology (3) 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 (3) 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 (3) 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 (3) *Prereq: 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 (3) *Prereq: 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 5242—Fantastic Anthropology and Fringe Science (3) Examination of paranormal and pseudoscientific theories concerning human condition. Critical examination of fringe science claims and their perpetuation in contemporary society.

ANG 5255—Rural Peoples in the Modern World (3) 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 5266—Economic Anthropology (3) Anthropological perspectives on economic philosophies and their behavioral bases. Studies of production, distribution, and consumption; money, savings, credit, peasant markets; and development in 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 (3) 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 (3) 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 (3) The settlement and early cultures of the area with an emphasis on the rise of the major culture centers. The impact of European civilization on surviving Indians. Not open to students who have taken ANT 4326.

ANG 5327—Maya and Aztec Civilizations (3) 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 (3) 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 (3) 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 (3) 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 5340—Anthropology of the Caribbean (3) 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 (3) 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—The Anthropology of Modern Africa (3) Continuity and change in contemporary African societies, with special reference to cultural and ethnic factors in modern nations. Not open to students who taken ANT 4354.

ANG 5395—Visual Anthropology (3) *Prereq: basic knowledge of photography or permission 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 5426—Kinship and Social Organization (3) *Prereq: 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 (3) *Prereq: 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 5467—Culture and Nutrition (3) *Prereq: HUN 3221.* The theory, methodology, and substantive material of nutritional anthropology. Emphasis on cross-cultural bio-behavioral patterns.

ANG 5485—Research Design in Anthropology (3) 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 (3) *Prereq: ANG 5485 or consent of instructor.* Practical introduction to computer. Collecting, organizing, processing, and interpreting numerical data on microcomputer. Data sets used correspond to participants' subfields.

ANG 5522—Human Rights Missions in Forensic Anthropology (3) 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 5523—International Forensic Fieldwork in Human Rights (3-6) 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 5525—Human Osteology and Osteometry (3) *Prereq: 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 5546—Seminar: Human Biology and Behavior (3) *Prereq: 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 (3) 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 (3) 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 (3) 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 5701—Seminar on Applied Anthropology (3) *Prereq: ANG 5700 or instructor's permission.* 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 5702—Anthropology and Development (3) An examination of theories and development and their relevance to the Third World, particularly Africa or Latin America. After this micro-analysis, microlevel development will be examined with special reference to rural areas.

ANG 5711—Culture and International Business (3) Anthropological and business concepts and literature in local and global economies. Value, wealth, communication, business practices, marketing, advertising, corporate organization, entrepreneurship, multinationals, etc.

ANG 5824L—Field Sessions in Archeology (6) *Prereq: 6 hours of anthropology or permission of instructor.* Excavation of archeological sites, recording data, laboratory handling and analysis of specimens, and study of theoretical principles which 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 (3) Theoretical principles and background of anthropology and its subfields.

ANG 6091—Research Strategies in Anthropology (3) *Prereq: permission 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 6115—Problems in Caribbean Prehistory (3) Theories and methods for study of prehistoric human societies. Case studies drawn primarily from Caribbean islands.

ANG 6128—Lithic Technology (3) Flintworking techniques and uses of stone implements for two million years. Emphasis on stoneworking technology in prehistoric Florida.

ANG 6180—Seminar in Contemporary Methods (3; max: 9) Collecting and analyzing research data. Focus on one method or set of methods in any semester.

ANG 6186—Seminar in Archeology (3; max: 10) Selected topic.

ANG 6224—Painted Books of Ancient Mexico: Codices of Aztecs, Mixtecs, and Mayas (3) Colonial period and Precolumbian Codices of Mexico, with emphasis on painted books recording history and calendars of Mixtecs, Aztecs, and Mayas.

ANG 6261—Anthropology, Geographic Information System, and Human Ecosystems (3) Sociocultural processes and interactions in large scale spatial/ecosystems context.

ANG 6273—Legal Anthropology (3) *Prereq: 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 (3) 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 (3; max: 10) Areas treated are North America, Central America, South America, Africa, Oceania.

ANG 6303—Seminar in Gender and International Development (3) *Prereq: 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 6351—Peoples and Culture in Southern Africa (3) 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 (3)

ANG 6461—Seminar in Molecular Anthropology (3) *Prereq: 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 6469—Molecular Genetics of Disease (3) Diseases range from single-gene recessive defects (such as cystic fibrosis) to complex diseases (such as alcoholism and diabetes). Detection and treatments.

ANG 6478—Evolution of Culture (3) *Prereq: ANT 3141.* Theories of culture growth and evolution from cultural beginnings to dawn of history. Major inventions of man and their significance.

ANG 6511—Seminar in Physical Anthropology (3; max: 10) Selected topic.

ANG 6514—Human Origins (3) Review of fossil record of human evolution from Miocene to present. "Hands-on" seminar in basics of hominid fossil record.

ANG 6547—Human Adaptation (3) *Prereq: ANT 2511 or permission of instructor.* An examination of adaptive processes(cultural, physiological, genetic) in past and contemporary populations.
ANG 6552—Primate Behavior (3) *Prereq: 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 (3) 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 (3) 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 (3) Practical and theoretical approaches to functional morphology in living and fossil primates. Biomechanical techniques. Problems of functional inference in paleontological and archeological records.
ANG 6589—Behavioral Decisions Among Human and Nonhuman Primates (3) Survey and synthesis of literature of human and animal behavioral ecology to address theoretical problems in social and behavioral decision-making. Strategies for data collections and analysis.
ANG 6737—Medical Anthropology (3) *Prereq: 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 (3) *Prereq: 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 6750—Research Methods in Cognitive Anthropology (3) Data collection including free lists, pile sorts, triad tests, paired comparisons, rankings, and ratings. Consensus analysis, cluster analysis, and multidimensional scaling.
ANG 6801—Ethnographic Field Methods (3) 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 6823—Laboratory Training in Archeology (3) *Prereq: 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 6905—Individual Work (1-3; max: 10) Guided readings on research in anthropology based on library, laboratory, or field work.
ANG 6910—Supervised Research (1-5; max: 5) S/U.
ANG 6915—Research Projects in Social, Cultural, and Applied Anthropology (1-3; max: 10) *Prereq: consent of instructor.* For students undertaking directed research in supplement to regular course work.
ANG 6917—Professions of Anthropology (3) *Prereq: 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 (1-3; max: 9) *Prereq: consent of instructor.*
ANG 6940—Supervised Teaching (1-5; max: 5) S/U.
ANG 6945—Internship in Anthropology (1-8; max: 8) *Prereq: 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 (1-15) S/U.
ANG 7979—Advanced Research (1-12) 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. S/U.
ANG 7980—Research for Doctoral Dissertation (1-15) S/U.

Applied Physiology and Kinesiology

College of Health and Human Performance

Graduate Faculty 2004-2005

Chair: S. L. Dodd. *Graduate Coordinator:* C. M. Janelle. *Professors:* R. W. Braith; J. A. Cauraugh; S. L. Dodd; S. K. Powers. *Associate Professors:* P. A. Borsa; J. W. Chow; H. A. Hausenblas; C. M. Janelle; C. Leeuwenburgh; R. A. Siders. *Assistant Professors:* S. E. Borst; D.S. Criswell; P. R. Giacobbi Jr.; M.D. Tillman; L. J. White.

A program leading to the Master of Science degree in applied physiology and kinesiology (thesis and nonthesis options) is offered by the Department. Areas of concentration for the master's program include athletic training/sports medicine, biomechanics, clinical exercise physiology, exercise physiology, human performance, motor learning/control, and sport and exercise psychology.

The thesis option provides the student with an opportunity to study, conduct research, and prepare a thesis in an area of special interest. The nonthesis option offers the student a specialization in a selected area of study, with additional work in other areas. A comprehensive written and oral examination is required for this option.

The Ph.D. program is offered through the College of Health and Human Performance with concentrations in athletic training/sport medicine, biomechanics, exercise physiology, motor learning/control, and sport and exercise psychology. These interdisciplinary concentrations blend concentrated course work with research.

Athletic Training/Sport Medicine—This concentration provides comprehensive academic preparation, research, and clinical experience in the areas of injury prevention, assessment, treatment, rehabilitation, and therapeutic modalities.
Biomechanics—The Ph.D. concentration in biomechanics draws from the fields of exercise, engineering, medicine, and manufacturing. The course work and training include kinematics and kinetics of animal movement. Course work also includes anatomy/kinesiology, biomechanics, engineering, medicine, physical therapy, and statistics.
Exercise Physiology—This area of concentration is 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 concentration merges a range of specializations within the Department into a curriculum that will provide educational experiences to graduate students with an interest in studying the factors that determine human performance in both athletic and nonathletic domains. This flexible approach allows students to focus on specific areas of sport or clinical applications that best meet their individual interests. Human performance incorporates components such as sport nutrition, exercise and sport psychology, motor behavior, and the physiological bases of strength and conditioning which are viable to clinical populations.

Motor Learning/Control—This interdisciplinary doctoral concentration draws upon 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.

Sport and Exercise Psychology—This area of concentration provides the basis for understanding and influencing the underlying attitudes, cognitions, and behaviors in both sport and exercise settings. Given the development of sport and exercise psychology as distinct fields that emphasize both science and practice, course offerings are relevant to both fields.

Complete descriptions of the minimum requirements for the Master of Science and Doctor of Philosophy degrees are provided in the *General Information* section of this catalog.

HLP 6515—Evaluation Procedures in Health and Human Performance (3) Evaluation and interpretation of tests and analysis of research data.

HLP 6535—Research Methods (3) Introduction to research methodology and design.

HLP 6911—Research Seminar (1; max: 6) Research presentations by graduate students and faculty in the College. S/U.

HLP 7979—Advanced Research (1-12) 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. S/U.

HLP 7980—Research for Doctoral Dissertation (1-15) S/U.

PET 5152—Sport Sociology (3) Advanced principles and applications of social issues within sport industry.

PET 5216—Sport Psychology (3) *Prereq: permission of instructor.* Survey of current research, learning processes, motivation, performance intervention, strategies, group dynamics, history of sport psychology, and other topics.

PET 5522—Assessment in Exercise Science (3) *Prereq: PET 3351C or equivalent.* Techniques and methodologies to assess health and physical fitness.

PET 5936—Current Topics in Exercise and Sport Sciences (1-3; max: 9) *Prereq: permission of department chairman.* Offered, upon request of students, to meet special interests inadequately covered in other courses.

PET 6052—Planning Motor Actions (3) *Prereq: permission of instructor.* Processes and mechanisms involved in planning voluntary human motor actions. Variables that influence movement planning and initiation.

PET 6054C—Nature and Bases of Motor Performance (3) Principles relating to development of motor skill, with emphasis on conditions affecting its development and retention in physical education activities.

PET 6217—Performance Enhancement (3) *Prereq: PET 5216.* Mental and psychological techniques and strategies to improve performance and achievement in sport and exercise.

PET 6219—Exercise Psychology (3) Overview of specialty. Research evidence examined for psychological factors associated with adapting and maintaining exercise program.

PET 6228—Controlling Motor Actions (3) Analysis of human voluntary motor actions, including mechanisms and systems involved in motor control.

PET 6298—Seminar in Exercise Psychology (3) *Prereq: PET 6219 or consent of instructor.* Critical review of literature on selected topic. Students design group research project and pilot test.

PET 6326—Clinical Anatomy for the Exercise Sciences (3) *Prereq: PET 2320C; 2350C; 3351C.* Cadaver dissection and lectures. Appreciation of clinical applications of anatomical knowledge for those pursuing careers in exercise science fields.

PET 6346C—Biomechanics of Human Motion (3) *Prereq: PET 2320C; MGF 1202 or MAC 1142.* Application of principles of statics, kinematics, and kinetics to kinesiological systems of the human body in movement and sports skills.

PET 6347—Biomechanical Instrumentation (3) *Prereq: PET 6346C.* Overview of data collection and analysis tools. Hands-on experience conducting projects using EMG, videography, and force transducer technology.

PET 6355C—Physiological Bases of Exercise and Sport Sciences (3) Application of fundamental concepts of human physiology to programs of physical education and sports. Recent research developments in sports physiology.

PET 6356L—Practicum in Exercise Physiology (3) *Prereq: PET 6355C.* Applied and experimental work emphasizing practical problems.

PET 6397—Neuromuscular Adaptation to Exercise (3) *Prereq: PET 6355C.* Description of neural and muscular function and adaptation to acute and chronic exercise. Research developments in neuromuscular adaptations to exercise.

PET 6456—Management and Planning of Sport and Physical Activity Facilities (3) Administrative tasks involved in managing, planning, renovating, and maintaining facilities and their effect on program selection and scheduling in sport and fitness.

PET 6472—Risk Management in Sport and Physical Activities (3) *Prereq: graduate sport law or equivalent* Theory and techniques for research and practical application.

PET 6521—Cardiopulmonary Pathologies (3) *Prereq: 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. Emphasis on dysfunction, clinical assessment, and rehabilitation of cardiopulmonary patient.

PET 6523—EKG Interpretation (3) *Prereq: 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.

PET 6550—Athletic Training Research and Technology I (3) Current theory and practical application of techniques (cardiovascular testing, isokinetic strength testing, and EMG testing) for understanding and design of research projects related to athletic training/sports medicine.

PET 6551—Athletic Training Research and Technology II (3) *Prereq: NATA certified or eligible, or related degree/certification.* Current theory and practical application of techniques (modalities in research, proprioception testing, and force plate and balance testing) for understanding and design of research projects related to athletic training/sports medicine.

PET 6615—Special Physical Education Assessment and Curriculum Techniques (3) Evaluating and teaching physical education to exceptional populations and administration of various assessment and curriculum instruments.

PET 6616—Physical Assessment of Athletic Injuries (3) *Designed for students who are NATA certified trainers.* Identification, evaluation, and management of acute athletic injuries.

PET 6627—Rehabilitation and Modalities of Athletic Injuries (3) Rehabilitation and therapeutic modalities in the field of athletic training. H.

PET 6636—Human Pathophysiology for the Exercise Sciences (3) *Prereq: PET 2320C; 2350C; 3351C.* Macrotraumatic and microtraumatic inflammatory processes, factors affecting inflammation and healing, and role of exercise in controlling onset or course of inflammatory response.

PET 6706—Research on Teaching Physical Education (3) In-depth study of research on teaching and application of research-based knowledge to teaching physical education.

PET 6910—Supervised Research (1-5; max: 5) S/U.

PET 6933—Seminar in Athletic Training (1-5; max: 5) *Prereq: NATA certification.* Research topics or contemporary issues in athletic training.

PET 6937—Seminar in Sport Psychology: Current Topics (3) *Prereq: sport psychology course or permission 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.

PET 6940—Supervised Teaching (1-5; max: 5) S/U.

PET 6947—Graduate Internship in Exercise and Sport Sciences (3-9; max: 9 [max: 5 to count toward degree credit requirement]) *Prereq: completion of 2 semesters of course work applicable to specialization; permission of adviser, written application, and site approval.* On-site full-time practical experience in field of study. S/U.

PET 6948—Advanced Practicum in Exercise and Sport Sciences (1-5; max: 10) On-site practical experience in field of study.

PET 6971—Research for Master's Thesis (1-15) S/U.

PET 7077—Free Radicals in Aging, Exercise and Disease (3) *Prereq: CHM 2040, PET 6355C or consent of instructor. Free radical biology and biochemistry.* Free radical biology and biochemistry dealing with aging, exercise, antioxidants, and diseases of aging, such as atherosclerosis, diabetes, and neurodegenerative diseases.

PET 7365—Cardiovascular Exercise Physiology (3) *Prereq: PET 6355C/6356L or equivalent.* Basic mechanisms of cardiovascular dynamics at rest and in response to exercise.

PET 7366—Pulmonary Function During Exercise (3) *Prereq: PET 6355C or equivalent.* Regulation of pulmonary gas exchange during exercise; acute and experimental procedures during exercise.

PET 7368—Exercise Metabolism (3) *Prereq: PET 6355C or equivalent.* Principles of metabolic regulation during exercise; effects of chronic exercise on muscle metabolism.

PET 7386—Environmental Stress Exercise Physiology (3) *Prereq: PET 6355C/6356L or equivalent.* Energetics of environmental stress on cardiovascular, respiratory, metabolic, and muscle physiology as they pertain to physical performance.

Architecture

College of Design, Construction, and Planning

Graduate Faculty 2004-2005

Director: M. Kohen. *Graduate Coordinators:* G. D. Ridgdill; O.W. Hill. *Professors:* A. J. Dasta; R. E. Graham; M. Kohen; R. S. McCarter; A. Perez-Mendez; G. D. Ridgdill; G. W. Siebein; K. Tanzer; K. S. Thorne; T. R. White; I. H. Winarsky. *Associate Professors:* D. Bitz; F. Cappellari; N. M. Clark; M. A. Gold; M. G. Gundersen; O. W. Hill; A. Hofer; M. W. Kuenstle; R. M. MacLeod; P. E. Prugh; W. L. Tilson. *Assistant Professors:* D. L. Cohen; C. L. Hailey; J. Maze; M. A. McGlothlin; N. M. Sanders; S. S. Sidhu; H. Zou.

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, 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. 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. Students entering the program at the University of Florida will matriculate in one of the following tracks:

Baccalaureate in Architecture Base—For those students who have a four-year baccalaureate degree from an accredited architectural program, two years in residence (52 credits) are normally required for completion of 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.

Baccalaureate in Related Degree Base—For those 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, three years of residence (83 credits, approximately) are normally required for completion of 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.

Baccalaureate in Nonrelated Degree Base—For those students who have a baccalaureate degree in a nonrelated academic area

and have completed less than 4 design studies courses, four years of residence (112 credits, approximately) are normally required for completion of 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 407 2, 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 Five-Year Professional Base—For those students holding a baccalaureate degree in architecture from an accredited five-year professional degree program, a one-year degree program is available. In these cases, a specialized curriculum that compliments the needs of the applicant is developed. The minimum registration is 30 credits; however, it may increase if transcript reviews reveal further course work is needed to meet registration and curriculum requirements. ARC 6356 is required and is prerequisite for the required thesis or master's project.

Most states require that an individual intending to become an architect hold an accredited degree. Two types of degrees are accredited by the National Architectural Accrediting Board: (1) the Bachelor of Architecture, which requires a minimum of five years of study, and (2) the Master o f Architecture, which requires a minimum of three years of study after an unrelated bachelor's degree or two years after a related preprofessional bachelor's degree. These professional degrees are structured to 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 those students who wish to engage in advanced investigations in specialized areas of architectural history, 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 three-to-four-semester program (32 hours minimum) that includes a thesis. (No more than six hours of ARC 6971 may be counted in the minimum credit hours for the degree.) Interdisciplinary study is encouraged.

The School sponsors special curricula in architecture to enhance the academic program. *Preservation Institute: Caribbean, Preservation Institute: Nantucket, and Vicenza Institute of Architecture (Italy)* accept students, not only from the University of Florida, but also from academic circles throughout the United States and the world for year-round study. All students in graduate architecture programs at the University of Florida are offered the opportunity to apply for one or more of these programs.

Complete descriptions of the requirements for the M.Arch., M.S.A.S., and Ph.D. degrees are provided in the *General Information* section of this catalog.

Applications—All applications for fall semester graduate admission, including official transcripts, GRE scores, and TOEFL scores, if necessary, must be received by the Office of the Registrar by February 1. 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 February 1 to be considered for admission in the following fall semester. (Portfolio must be accompanied by self-addressed, stamped envelope.) Students may apply after the February 1 deadline but will only be considered if spaces become available. (Updates of portfolios are accepted after February 1; 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.

The following courses are taught on a periodic schedule or by demand only.

ARC 5791—Topics in Architectural History (3)

ARC 5800—Survey of Architectural Preservation, Restoration, and Reconstruction (3)

ARC 5810—Techniques of Architectural Documentation (3) Documentation, interpretation, and maintenance issues relating to historic structures.

ARC 6176—Advanced Computer-Aided Design (3; max: 6) Focus on available hardware and software and their current and potential usefulness to the profession. Investigation of future directions in hardware and software development.

ARC 6241—Advanced Studio I (1-9; max: 9) Architecture as function of human action program and use) and potentials inherent in construction (structure and material); relationship between ritual and built form–culminating in a highly resolved spatial order.

ARC 6242—Research Methods (2) *Prereq: Required of all graduate students as preparation for thesis.*

ARC 6280—Advanced Topics in Architectural Practice (3; max: 6) Contemporary practice models analyzed.

ARC 6281—Professional Practice (3) Principles and processes of office practice management, investment and financing, project phases, building cost estimation, contracts.

ARC 6355—Advanced Studio II (6) Relation between the tectonic and the experience of place; emphasis on the joint, the detail, the tactile reading of architecture-culminating in a highly resolved tectonic order.

ARC 6356—Advanced Studio III (6) Development of design methods for synthesizing specialized aspects of architectural practice such as human behavior and space programming, environmental control and energy use, structures and materials of construction, project management, preservation and reuse of historic structures, theoretical and philosophical areas of inquiry.

ARC 6357—Advanced Topics in Architectural Design (3; max: 6) Focus on expanding familiar concepts in conception and production of architecture. Examination of potential for program to generate architectonic form, bringing multidisciplinary approach to historical manifestations.

ARC 6391—Architecture, Energy, and Ecology (3) Integration of energetic and environmental influences on architectural design.

ARC 6393—Advanced Architectural Connections (3) An analysis of architectural connections and details relative to selected space, form, and structural systems.

ARC 6399—Advanced Topics in Urban Design (3; max: 6) Impact of cultural, sociological, economic, and technological transformations of both historic urban form and newly developed urban areas.

ARC 6505—Architectural Structural Systems: Wood, Steel, and Concrete (4) *Prereq: ARC 3503 or equivalent.* Structural components as part of building system. Introduction to typical building components.
ARC 6576—Architectural Structures (3) Analysis and behavior of reinforced concrete, prestress, masonry, foundations, steel, and suspension systems.
ARC 6611—Advanced Topics in Architectural Technology (3; max: 6) Focus on structures, materials, construction systems, or environmental technology. Examination of determination of architectural form by available technologies and inventions throughout history.
ARC 6642—Architectural Acoustics Design Laboratory (3) *Coreq: ARC 6643.* Theory and practice of architectural acoustics in the solution to design problems.
ARC 6643—Architectural Acoustics (3) Theory, practice, and application of acoustics in architecture.
ARC 6670—Lighting Design Seminar (3; max: 6) Design problems investigating theoretical, conceptual, and practical applications of illumination systems through speculative and analytical inquiry.
ARC 6685—Life Safety, Sanitation, and Plumbing Systems (3) Design problems investigating the theory, practice, and applications of fire safety, movement, sanitation, and plumbing systems in architecture.
ARC 6711—Architecture of the Ancient World (3) Key built works from Egyptian, Greek, Roman, and Meso-American civilizations. Emphasis on understanding both cultural context for these works and construction technologies utilized in their making. Examination of their use as ruins and their contemporary meanings.
ARC 6750—Architectural History: America (3) Development of American architecture and the determinants affecting its function, form, and expression.
ARC 6793—Architectural History: Regional (3) Group and individual studies of architecture unique to specific geographic regions.
ARC 6805—Architectural Conservation (3) 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 (3) Preservation in the larger context. Establishing historic districts; procedures and architectural guidelines for their protection.
ARC 6822—Preservation Programming and Design (3) Architectural design focusing on compatibility within the fabric of historic districts and settings.
ARC 6851—Technology of Preservation: Materials and Methods I (3) Materials, elements, tools, and personnel of traditional building.
ARC 6852—Technology of Preservation: Materials and Methods II (3) *Prereq: ARC 6851.* Preservation of twentieth-century structures.
ARC 6911—Architectural Research (1-6; max: 9) Special studies adjusted to individual needs. H.
ARC 6912—Architectural Research II (1-6; max: 9) Special studies adjusted to individual needs. H.
ARC 6913—Architectural Research III (1-6; max: 9) Special studies adjusted to individual needs. H.
ARC 6932—Advanced Topics in Architectural Methods (3; max: 6) Exploration of interconnection between architectural design and research methodology.
ARC 6940—Supervised Teaching (1-5; max: 5) S/U.
ARC 6971—Research for Master's Thesis (1-15) S/U.
ARC 6979—Master's Research Project (1-10) H.
DCP 6710—Introduction to Historic Preservation (3) Interdisiplinary nature and emerging issues in historic preservation.
DCP 6931—Special Topics in Design, Construction, and Planning (1-4; max: 6)
DCP 7790—Doctoral Core I (3) Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.
DCP 7792—Doctoral Core II (3) *Prereq: DCP 7790.* Urban, environmental, and legal systems in the context of urban development.
DCP 7794—Doctoral Seminar (1; max: 4) *Prereq: Coreq: DCP 7911. For entering Ph.D. students.* Successfully negotiating graduate school and writing dissertation.
DCP 7911—Advanced Design, Construction, and Planning Research I (3) *Prereq: STA 6167; coreq: DCP 7794; for entering Ph.D. students.* Survey and critical analysis of research in disciplines of design, construction, and planning with emphasis on theory and methods.
DCP 7912—Advanced Design, Construction, and Planning Research II (3) *Prereq: ARD 7911.* Conduct of advanced research in architecture, design, landscape, planning, and construction.
DCP 7940—Supervised Teaching (1-5; max: 5) *Prereq: not open to students who have taken 6940.* Independent student teaching under supervision of faculty member. S/U.
DCP 7949—Professional Internship (1-5; max: 5) Professional faculty-supervised practicum.
DCP 7979—Advanced Research (1-12) 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. S/U.
DCP 7980—Research for Doctoral Dissertation (1-15) S/U.
URP 6272—Advanced Planning Information Systems (3) *Prereq: URP 6271.* Theoretical and practical knowledge about the structure, use, and architecture of georeference data base systems. Discussion of spatial relationships which exist between network and area-related systems. Development and maintenance of geographic information systems as related to urban and regional planning.

Art and Art History

College of Fine Arts

Graduate Faculty 2004-2005

Director: M. J. Isaacson. *Graduate Program Coordinator:* R. Poynor. *Graduate Program Advisers:* C. Roland (Art Education); M. Hyde (Art History); R. Poynor (Art Studio); G. Willumson (Museum Studies). *Professors:* L. J. Arbuckle; B. A. Barletta; J. L. Cutler; R. C. Heipp; M. J. Isaacson; J. A. O'Connor; R. E. Poynor; B. J. Revelle; J. F. Scott; N. S. Smith; R. H. Westin. *Associate Professors:* A. Alberro; L. J. Arbuckle; R. Mueller; C. A. Roberge; D. C. Roland; B. Slawson; D. J. Stanley; G. Willumson. *Assistant Professors:* M. Davenport; L. Garber; C. Hwang; M. L. Hyde; R. Janowich; G. Lai; D. Navab; M. Rogal; E. Segal; S. Vega.

Master of Fine Arts Degree—The School offers the M.F.A. degree in art with concentrations in ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and electronic intermedia. 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. A minimum of three years residency is normally required for completion of the requirements for this degree, which for studio students culminates with an M.F.A. exhibition. The School reserves the right to retain student work for purposes of record, exhibition, or instruction.

The M.F.A. requires a minimum of 60 credit hours. Twenty-four hours must be in an area of specialization. Twelve hours of studio electives outside the area of specialization, six hours of art history electives; three hours of aesthetics, theory, or criticism; six hours of electives; and six hours of individual project or thesis research comprise the normal course requirements. 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. (If the student elects to write a thesis, he/she must discuss the reasons with the Graduate Program Adviser and the supervisory committee during the second year and make appropriate modifications. ARH 5815 is required for all students who select the written thesis.)

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 (1) hold a degree in art education or have teaching experience in a K-12 school art program or alternative art education setting; (2) send up to ten 35mm slides of original works of art and a research paper, article, or other sample of academic writing; (3) send up to ten slides or photographs of student art work and a sample of curriculum materials if available; and (4) submit three current letters of recommendation.

The M.A. in art education requires a minimum of 36 credit hours. ARE 6047 and ARE 6148 are required. The basic plan of study includes three credits of an approved art education elective; nine credits in studio courses; three credits in art history; six credits in art history, studio, art education, or education electives; three credits of ARE 6705; and three 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.

Master of Arts and Doctor of Philosophy Degrees in Art History—The School offers graduate programs leading to the M.A. and Ph.D. degrees. For complete details of the M.A. and Ph.D. degree requirements, see the art history graduate adviser. Art history students may participate in courses offered by the State University System's programs in London and Florence. Other study abroad programs may be approved by the graduate program adviser.

For the M.A. degree, the School offers areas of emphasis in Ancient, Medieval, Renaissance/Baroque, Modern, and Non-Western art history (including African, Native American, Asian, and Oceanic).

A minimum of 36 credit hours is required: ARH 5815 (3 credits), 27 hours with at least one graduate seminar course in four different areas of emphasis, and ARH 6971 (6 credits). Nine credits may be taken in related areas with the graduate program adviser's approval.

Students must pass a review at the end of the first year. Failure to pass the review will result in adjustments to the student's program or, if warranted, dismissal from the program.

Reading proficiency in a foreign language appropriate to the major area of study must be demonstrated before thesis research is begun. Language courses are not applicable toward degree credit.

For the Ph.D. degree, the School offers the same areas of emphasis 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 secondary area (5000-level or above), and 3 hours of theory/methodology of art history (if ARH 5815 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, 18 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 which must agree to serve as chair of the committee and will be the primary dissertation adviser. 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.

Upon 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.

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) and at the same time complete a concentrated study in professional museum practices. The M.A. degree in museology requires 48 credit hours including 15 credits of museum studies courses (seminar, 3 credits; collections I, 3 credits; collections II, 3 credits; exhibitions, 3 credits; elective, 3 credits); 15 graduate credits in a disciplinary focus, 6 credits of internship; 6 credits of electives, and 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 Reitz Union.

Students must complete a 6-credit internship of at least 300 hours at an approved museum. In this experience students are assigned to specific projects in which they will 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) must be selected, research, and carried out under the direction of a supervisory committee. Students register for project-in-lieu-of-thesis credits for two semesters. (If a thesis is chosen, it must be justified through the director and the supervisory committee, and 3 credits of Research and Methodology must precede thesis credit.)

Master of Arts Degree in Digital Arts and Sciences—The Master of Arts degree in digital arts and sciences (DAS) is a two-year, interdisciplinary program. Students seeking admission are expected to have an undergraduate background including 1) a degree in one of the fine arts or liberal arts; 2) a body of work that demonstrates accomplishment in the intended area; and 3) 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. Admission into the program requires the submission of a portfolio with digital representations of work done by the artist. The medium for this portfolio is digital, either on a CD or as a web page, preferably both.

The M.A. degree in digital arts and sciences requires 36 credit hours, including studio and computer courses. A creative project in lieu of thesis must be selected, researched, and carried out under the direction of a supervisory committee. Students are advised by the graduate program adviser on the requirements of the creative project. The School reserves the right to retain student work for purposes of record, exhibition, or instruction.

Complete descriptions of the requirements for the M.A., M.F.A., and Ph.D. degrees are provided in the *General Information* section of this catalog.

ARE 6049—History of Teaching Art (3) History of the theory and practice of teaching art.

ARE 6148—Curriculum in Teaching Art (3) Contemporary theories for development of art teaching curricula.

ARE 6441—Issues in Art Education (3) Exploration of contemporary issues in art, general education, and society that affect teaching of art in public schools.

ARE 6705—Methods of Research in Art Education (3) Study of qualitative and quantitative research methods. Review of research literature.

ARE 6905—Individual Study (1-5; max: 12)

ARE 6933—Special Topics in Art Education (1-3; max: 6)

ARE 6971—Research for Master's Thesis (1-15) S/U.

ARE 6973—Individual Project (1-10; max: 10) Project in lieu of thesis. S/U.

ARH 5357—French Art of the Ancien Regime: 1680-1780 (3) *Prereq: ARH 2051 or permission of instructor.* Major artists, artistic movements, works and issues in art theory, and criticism in Europe from late seventeenth century to 1780s. Emphasis on painting in France and reaction against Rococo.

ARH 5440—Beginnings of Modernism (3) *Prereq: ARH 2051 or permission of instructor.* Visual arts in Europe in second half of nineteenth century, focusing on emergence of avant-garde and formulation of modern aesthetic with reference to industrialized, urban culture, especially in Paris. Realism, Impressionism, and Post-Impressionism.

ARH 5441—Art in the Age of Revolution (3) *Prereq: ARH 2051 or permission of instructor.* Late-eighteenth and early-nineteenth century European art, including Neo-Classicism and Romanticism. Works considered in cultural, political, social, and aesthetic contexts in which created. Emphasis on politics of style during period of revolution and reaction.

ARH 5655—Indigenous American Art (3; max: 9) *Prereq: ARH 2518 or permission of instructor.* Examination of native arts of the Americas, North, Central, or South, from pre-European times.

ARH 5815—Methods of Research and Bibliography (3)

ARH 5877—Gender, Representation, and the Visual Arts: 1600-1900 (3) *Prereq: ARH 2051 or permission of instructor.* Historical and theoretical issues posed for visual media byattention to issues of gender, with particular emphasis on women artists.

ARH 5905—Individual Study (3-4; max: 12 including ART 5905C)

ARH 6477—Eighteenth-Century European Art Seminar (3) *Prereq: ARH 2051 or permission of instructor.* Intersecting ideologies of gender and representation in French art.

ARH 6694—Nineteenth-Century Art Seminar (3) *Prereq: ARH 2050 or permission of instructor.*

ARH 6797—Museum Education (3; max: 9) Issues and content related to education in museums and other nontraditional education settings.

ARH 6836—Exhibitions Seminar (3; max: 6) Basic information necessary for museum curator. Exhibition research, planning, interpreting, installing, and organizing and designing museum space.

ARH 6895—Collections Management Seminar (3; max: 9) Information necessary to access and conserve objects. Topics: legal issues involved in collections management, preparing objects for travel, and risk management.

ARH 6900—Independent Study in Museology (3-9; max: 9) Independent research topics under faculty guidance.

ARH 6910—Supervised Research (1-5; max: 5) S/U.

ARH 6911—Advanced Study (3-4; max: 16) *Prereq: major in art.*

ARH 6914—Independent Study in Ancient Art History (3-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Egyptian, Near Eastern, Aegean, Greek, Etruscan, Roman.

ARH 6915—Independent Study in Medieval Art History (3-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Early Christian, Byzantine, Early Medieval, Romanesque, Gothic.

ARH 6916—Independent Study in Renaissance and Baroque Art History (3-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Renaissance, High Renaissance, Mannerism, Baroque, Eighteenth Century art.

ARH 6917—Independent Study in Modern Art History (3-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Major art movements of the nineteenth and twentieth centuries.

ARH 6918—Independent Study in Non-Western Art History (3-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* African, Latin American, American Indian, Asian, and Oceanic.

ARH 6930—Special Topics in Museology (3-9; max: 9) Contemporary issues pertaining to museums and their social and cultural functions.

ARH 6938—Seminar in Museum Studies (3) *Prereq: permission of instructor.* History, purposes, functions of museums in general and art museums in particular.

ARH 6941—Supervised Internship (3-6; max: 9) Training in approved regional or national museum, arts organization,

institution, or facility. On-site supervision and periodic reports filed with instructor of record.

ARH 6946—Museum Practicum (3) *Prereq: permission of graduate program adviser and prior arrangements with professors.* Work under museum professionals. Readings and periodic discussions with coordinating professor.

ARH 6948—Gallery Practicum (3) *Prereq: permission of graduate program adviser and prior arrangements with coordinating professor.* Work under supervision of gallery professionals. Readings and periodic discussions with coordinating professor.

ARH 6971—Research for Master's Thesis (1-15) S/U.

ARH 7979—Advanced Research (1-12) 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. S/U.

ARH 7980—Research for Doctoral Dissertation (1/15) S/U.

ART 5905C—Individual Study (3-4; max: 12 including ARH 5905)

ART 5930C—Special Topics (3; max: 15) Rotating topics in studio art and studio practice.

ART 6691—Digital Art Studio (4; max: 12) *Prereq: graduate standing in art or permission 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 6835C—Research in Methods and Materials of the Artist (3-4; max: 8)

ART 6897—Seminar: Practice, Theory, and Criticism of Art (3)

ART 6910C—Supervised Research (1-5; max: 5) S/U.

ART 6926C—Advanced Study I (2-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Application of basic principles of studio art in one of the following areas: ceramics, creative photography, drawing, painting, printmaking, sculpture, graphic design, and multi-media.

ART 6927C—Advanced Study II (2-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* Investigation of 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 (2-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* 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 (2-4; max: 12) *Prereq: major in art; permission of graduate program adviser and instructor.* 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—Special Topics (1-4; max: 12) *Prereq: permission of graduate program adviser and instructor.* Readings, discussions, and/or studio exploration of various art issues.

ART 6971—Research for Master's Thesis (1-15) S/U.

ART 6973C—Individual Project (1-10; max: 10) Creative project in lieu of written thesis. S/U.

Astronomy

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: S. F. Dermott. *Graduate Coordinator:* A. Sarajedini. *Professors:* J. R. Buchler; T. D. Carr *(Emeritus);* K-Y. Chen *(Emeritus);* S. F. Dermott; S. S. Eikenberry; S. T. Gottesman; B. A. S. Gustafson; F. Hamann III; J. H. Hunter; E. A. Lada; C. M. Telesco; R. E. Wilson. *Associate Professors:* R. Guzman; R. J. Leacock; J. P. Oliver; A. Sarajedini; H. C. Smith. *Associate Scientist:* F. J. Reyes. *Assistant Professor:* V. Sarajedini. *Assistant Scientists:* T. Kehoe; C. C. Packham.

The Department of Astronomy at the University of Florida, Gainesville, offers graduate programs leading to the M.S. or Ph.D. degrees in astronomy. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The Astronomy Department currently consists of 23 faculty, 10 research staff, and 33 graduate students, making it one of the largest departments 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, ground- and space-based facilities. Support for graduate studies is available through fellowships, research assistantships and teaching assistantships.

Solar System—Researchers are active in studying the origins and orbital evolution of interplanetary dust and small bodies in the solar system (and around nearby stars). The properties of cosmic dust are studied using a microwave analog-to-light- scattering facility. The UF Radio Observatory (UFRO) is one of the largest observatories in the world dedicated to the study of decametric radio emission from the giant planets.

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. In addition, the group maintains and disseminates the widely used Wilson-Devinney code. 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. Theoretical studies emphasize the influences of thermodynamics, velocity fields, and interface instabilities upon star formation.

Structure and Evolution of Galaxies—Some 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 using neutral hydrogen (H I) and molecules such as carbon monoxide (CO).

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 the design and construction of advanced near-infrared and mid-infrared instrumentation for major telescopes around the world, including the National Optical Astronomy Observatory, the 8m Gemini North and South Telescopes, and the 10m Gran Telescopio Canarias. The Laboratory for Astrophysics is a leading developer of satellite instruments for NASA and international space agencies to measure the optical properties of dust particles in diverse environments.

Computing Facilities—The Department of Astronomy maintains a network of high performance computers running Linux, OS-X, and the Sun Solaris operating systems. The university campus also has several high performance GRID supercomputing clusters which faculty can access for research and modeling. The local network is maintained by a full-time systems manager and a full-time support person.

AST 6112—Solar System Astrophysics (3) Systematic examination of formation and current state of solar system.

AST 6215—Stellar Structure and Function (3) Theoretical approach to the study of stellar structure.

AST 6245—Stellar Atmospheres and Radiative Processes (3) Radiative transfer, spectral line formation and broadening, and other topics applicable to stellar atmospheres and photoionized nebulae.

AST 6309—Galactic and Extragalactic Astronomy (3) Observations and interpretations of the kinematics, dynamics, and structure of the Milky Way Galaxy, extragalactic objects, and galaxy clusters.

AST 6336—Interstellar Matter (3) Complex interplay of physical processes that determine the structure of the interstellar medium in our galaxy; emphasis is placed upon a comparison of observational data with theoretical prediction.

AST 6415—Observational Cosmology (3) Basic science and observations that underlie modern cosmology.

AST 6416—Physical Cosmology (3) Introduction to the observational background and to the theory of cosmology.

AST 6725C—Observational Techniques (3) *Prereq: graduate student in astronomy.* Overview of techniques associated with observational astronomy.

AST 6905—Individual Work (1-6; max: 12) Supervised study or research in areas not covered by other courses.

AST 6910—Supervised Research (1-5; max: 5) S/U.

AST 6925—Departmental Colloquium (1) *Prereq: Coreq: AST 6935, 6936. Intended for first-year graduate students.* Presentation of topics by visiting and local researchers. S/U.

AST 6935—Frontiers in Astronomy (1; max: 6) *Prereq: Coreq: AST 6925, 6936.* Recent developments in theoretical and observational astronomy and astrophysics. S/U.

AST 6936—Journal Club (1) *Prereq: AST 6925, 6935. Intended for first-year graduate students.* Discussion of journal articles. S/U.

AST 6971—Research for Master's Thesis (1-15) S/U.

AST 7939—Special Topics (2-4; max: 12) Assigned reading, programs, seminar, or lecture series in a new field of advanced astronomy.

AST 7979—Advanced Research (1-12) 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. S/U.

AST 7980—Research for Doctoral Dissertation (1-15) S/U.

Biochemistry and Molecular Biology

College of Medicine

Graduate Faculty 2004-2005

Chair: J. B. Flanegan. *Associate Chair:* J. Laipis. *Graduate Coordinator:* S. C. Frost. *IDP Advanced Concentration Director:* M.S. Kilberg. *Distinguished Professor:* B. M. Dunn. *Professors:* A. Agarwal; C. Allen *(Emeritus);* B. D. Cain; P. Chun *(Emeritus);* J. B. Flanegan; S.C. Frost; M. S. Kilberg; P. J. Laipis; T. O'Brien *(Emeritus);* D. L. Purich; T. P. Yang. *Associate Professors:* R. J. Cohen; N. D. Denslow; A. S. Edison; T. H. Mareci; P. M. McGuire. *Associate Scientists:* R. D. Allison; M. J. Koroly. *Assistant Professors:* M. Agbandje-McKenna; L. B. Bloom; J. Bungert; J. R. Long; R. McKenna; K. Robertson.

The Department of Biochemistry and Molecular Biology faculty mentor Ph.D. students in the College of Medicine interdisciplinary program (IDP) in medical sciences. Students who are interested in pursuing a doctoral degree can view specific features of the biochemistry and molecular biology concentration at http://www.med.ufl.edu.biochem and http://idp.med.ufl.edu/. Admission information is found on the IDP site.

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 Mammalian Genetics 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, 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 the fall of their first year and beginning in the spring semester 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.

BCH 5413—Mammalian Molecular Biology and Genetics (3) *Prereq: 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 6206—Advanced Metabolism (3) *Prereq: BCH 4024, CHM 4207, or consent of instructor. One of three core biochemistry courses.* Reactions of intermediary metabolism with emphasis on their integrations, mechanisms, and control. Extensive examples from current literature.

BCH 6207—Advanced Metabolism: Role of Membranes in Signal Transduction and Metabolic Control (1) *Prereq: 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 (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Key reactions in metabolic pathways of carbohydrate and lipid metabolism with special attention to exploration of experimental basis for current understanding of these processes. Understanding of interactions between major metabolic pathways and control of pathways under different physiological conditions.

BCH 6209—Advanced Metabolism: Regulation of Key Reactions in Amino Acid and Nucleotide Metabolism (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Special attention to understanding interactions between major metabolic pathways and control of these pathways under different physiological conditions. Structural basis of enzyme function and regulation.

BCH 6296—Advanced Topics in Metabolic Control (1; max: 6) *Prereq: Coreq: BCH 6206 or consent of instructor.* Thermodynamic, allosteric, hormonal, and genetic control of metabolic reactions.

BCH 6415—Advanced Molecular and Cell Biology (3) *Prereq: 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, emphasis on understanding experimental approaches which 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 (3) *Prereq: 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 (1-2; max: 2) *Prereq: BCH 6740 or equivalent or consent of instructor.* MR imaging methods used to study structure of cells, tissues, and whole animals. MR spectroscopy methods for monitoring biochemistry in living animals. Sample preparation, operation of instrumentation, and data analysis.

BCH 6744—Molecular Structure Determination by X-ray Crystallography (1; max: 2) *Prereq: BCH 6740 or equivalent or consent of instructor.* Detailed theoretical and practical instruction on technique of x-ray crystallography utilized for three-dimensional structure determination of macromolecules in studies aimed at structure-function elucidation.

BCH 6744L—Molecular Structure Determination by X-Ray Crystallography Laboratory (1) *Prereq: or coreq: BCH 6744.* 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 (1; max: 2) *Prereq: 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 (1) *Prereq: or coreq: BCH 6745.* Complement to BCH 6745 lectures. Emphasis on 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 (1; max: 3) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001 or consent of instructor.* Experimental approaches to biological macromolecular structure determination. Emphasis on current understanding or protein-protein, protein-nucleic acid structure motifs.

BCH 6747—Structural Biology/Advanced Physical Biochemistry: Spectroscopy and Hydrodynamics (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Application of 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 (1) *Prereq: 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 6876—Recent Advances in Membrane Biology (1) *Prereq: general biochemistry or consent of instructor.* Literature presented by students and faculty, discussed in depth. Emphasis on current developments, data, interpretation, and critical analysis. S/U.

BCH 6877—Recent Advances in Structural Biology (1; max: 8) *Prereq: 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. S/U.

BCH 6878—Recent Advances in Cytoskeletal Processes (1; max: 8) *Prereq: 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. S/U.

BCH 6910—Supervised Research (1-5; max: 5) S/U.

BCH 6936—Biochemistry Seminar (1; max: 20) *Prereq: 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 (1-15) S/U.
BCH 7410—Advanced Gene Regulation (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Literature-based assessment of most recent advances in factors governing eukaryotic gene regulation.
BCH 7515—Structural Biology/Advanced Physical Biochemistry: Kinetics and Thermodynamics (1) *Prereq: BCH 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Fundamentals of chemical kinetics and thermodynamic analysis of equilibria. Emphasis on application of this knowledge to understanding basic enzyme kinetics, pulse-chase kinetics, protein polymerization, DNA dynamics, protein-nucleic acid interactions, and cooperative ligand binding.
BCH 7980—Research for Doctoral Dissertation (1-15) S/U.
GMS 6195—Chromatin Structure and Gene Expression Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles in literature. S/U.

Biomedical Engineering

College of Engineering

Graduate Faculty 2004-2005

Chair: W. L. Ditto. *Graduate Coordinator:* A. B. Brennan. *Distinguished Professor:* J. C. Principe. *Professors:* C. D. Batich; W. E. Bolch; F. J. Bova; A. B. Brennan; M. Ding; J. R. Fitzsimmons; E. P. Goldberg; J. J. Mecholsky; R. J. Melker; P. M. Pardalos; W. M. Phillips; C. J. Sackellares; R. Tran-Son-Tay; B. C. Vemuri; E. K. Walsh. *Associate Professors:* I. Constantinidis; R. B. Dickinson; Z. H. Fan; D. R. Gilland; J. G. Harris; D. Hintenlang; T. H. Mareci. *Assistant Professors:* P. R Carney; T. B. DeMarse; B. J. Fregly; L. B. Gower; A. Narang; M. Sarntinoronant; J. H. Van Oostrom. *Assistant Scientist:* R. Sadleir.

The mission of the Biomedical Engineering (BME) Department is to educate students with strong engineering and science backgrounds for master's and/or Ph.D. degrees in biomedical engineering. BME graduates 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 includes joint, affiliate, and adjunct appointments with other departments in the College of Engineering, College of Medicine and local industry. This diversity ensures students have both the highest quality education and opportunities for research. The BME Department currently focuses on six principal areas: biomechanics, cellular and tissue engineering, biomedical imaging and signal processing, cardiac engineering, neural engineering, and bio-micro-electromechanical systems. The Department has major ongoing research in areas such as biomaterials, medical imaging, biomechanics, anesthesiology, neuroscience, tissue engineering, transplantation, and cardiology. Although these programs are most often centered in other departments, they provide strong support for the academic dimensions of BME. A web page, that is maintained at http://www.bme.ufl.edu, contains additional information on admissions requirements, faculty and research projects.

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.

For the master's degree (thesis or nonthesis) a minimum of 30 semester hours is required. The Ph.D. degree requires the accumulation of 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 petitions the Dean of the Graduate School.

Complete descriptions of the requirements for the M.E., M.S., and Ph.D. degrees are provided in the *General Information* section of this catalog.

Combined Program—Biomedical Engineering also offers a combined bachelor's/master's degree program in collaboration with the Mechanical and Aerospace Engineering Department, and the Materials Science and Engineering Department. This program allows qualified students to earn both a bachelor's degree and a master's degree within five years for a net savings of one year.

Biomedical Engineering Certificate—The Biomedical Engineering program offers a BME certificate. Please contact the program office for additional information.

Biomedical Engineering

BME 5001—Biomedical Engineering and Physiology I (3) Physiology of cells, bones, and circulator system from a biomaterials, biomechanics, cellular, and tissue engineering perspective. Intellectual property and technology transfer included.
BME 5002—Biomedical Engineering and Physiology II (3) Physiology of human body, imaging techniques and subsequent processing. Various imaging modalities discussed along with appropriate processing methods to reveal details of physiology and diagnosis.
BME 5085—Patents, Product Development, and Technology Transfer (2) 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 5500—Biomedical Instrumentation (3) *Prereq: basic knowledge of physics and calculus, consent of instructor.* Engineering and medical aspects of measurement and processing of signals from living systems. Discussion of biomedical transducers for measurements of movement, biopotentials, pressure, flow, concentrations, and temperature, as well as treatment devices like ventilators and infusion pumps. Whenever possible devices actually used in clinical practice are used in class.
BME 5937—Special Topics (1-4; max: 6)
BME 6010—Clinical Preceptorship (2; max: 6) Students observe clinical faculty and work with engineering faculty to examine current clinical practice and restraints with goal to propose jointly possible improvements.
BME 6330—Cell and Tissue Engineering (3) *Prereq: GMS 6421, BME 5001, or permission of instructor.* Application of

engineering principles, combined with molecular cell biology, to develop fundamental understanding of property-function relationships in cells and tissues. Exploitation of this understanding to manipulate cell and tissue properties rationally to alter, restore, maintain, or improve cell and tissue functions as well as to design bioartificial tissue substitutes.

BME 6360—Neural Engineering (3) *Prereq: consent of instructor.* Application of engineering to neuroscience including such diverse areas as neural tissue engineering, models of neural function, and neural interface technology. Focus on areas primarily in context of neural interfaces/prosthetics beginning with basic neural physiology and models of neural mechanisms to advanced neural interfaces currently in development or produced commercially.

BME 6400—Theory and Instrumentation for Medical Image Acquisition (3) Physics of ionizing and non-ionizing radiation interactions with biological systems; radiation detection systems utilized in medical image acquisition; radiation sources for image generation; features of image quality; applications of these concepts to project radiography, fluoroscopy, nuclear medicine, computer tomography, magnetic resonance imaging, and ultrasound.

BME 6707—BME Problem Based Learning (2) Team-based, interdisciplinary problem-solving environment to devise solutions and approaches to topical and real-world biomedical engineering problems and technologies.

BME 6905—Individual Work in Biomedical Engineering (1-4; max: 8)

BME 6910—Supervised Research (1-5; max: 5) S/U.

BME 6936—Biomedical Engineering Seminar (1; max: 4)

BME 6938—Special Topics in Biomedical Engineering (1-4; max: 6)

BME 6940—Supervised Teaching (1-5; max: 5) S/U.

BME 6971—Research for Master's Thesis (1-15) S/U.

BME 7979—Advanced Research (1-12) 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. S/U.

BME 7980—Research for Doctoral Dissertation (1-15) S/U.

EMA 6001—Properties of Materials__A Survey (3) *Prereq: bachelor's degree in physics, chemistry or engineering.* Review of physical properties of materials such as mechanical, electrical, optical, magnetic, and thermal properties.

EMA 6165—Polymer Physical Science (3) *Prereq: EMA 3066.* Solid state properties of amorphous and semi-crystalline polymers.

EMA 6166—Polymer Composites (3) Physical and mechanical properties of polymers and polymer composites as related to preparation and microstructure.

EMA 6316—Materials Thermodynamics (3) *Prereq: EMA 4314.* Thermodynamics of materials systems, surfaces in solids, irreversible processes.

EMA 6461—Polymer Characterization (3) *Prereq: EMA 3066.* Use of broad variety of spectroscopic and other scattering phenomena in polymer research.

EMA 6580—Science of Biomaterials I (3) *Prereq: undergraduate chemistry.* Introduction to variables that control compatibility and performance of biomaterials, including physical and chemical properties, corrosion, fatigue, and interfacial histochemical changes.

EMA 6581C—Polymeric Biomaterials (4) *Prereq: undergraduate chemistry and EMA 3066.* 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.).

EML 5595—Mechanics of the Human Locomotor System (3) Prereq: EGM 3401, 3520. Analysis of 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 for analysis of human activities.

Biomechanics

EGM 5111L—Experimental Stress Analysis (3) *Prereq: 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 5533—Applied Elasticity and Advanced Mechanics of Solids (3) *Prereq: 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, creep deformation procedures, introduction to instability and fracture mechanics. Design applications.

EGM 5584—Biomechanics of Soft Tissue (3) *Prereq: 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 6321—Principles of Engineering Analysis I (3) *Prereq: 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 (3) *Prereq: 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. Poison, Helmholtz, and Schroedinger equations.

EGM 6570—Principles of Fracture Mechanics (3) *Prereq: 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 6595—Bone Mechanics (3) Biology, composition, and mechanical properties of cortical bone tissue, cancellous bone tissue, and cartilage. Bone modeled as anisotropic elastic material, as bioviscoelastic material and as composite material. Adaptation to stress and remodeling; articular cartilage.

EGM 6611—Continuum Mechanics (3) *Prereq: 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 6812—Fluid Mechanics I (3) *Prereq: 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 (3) *Prereq: EGM 6812.* Mathematical and physical structures of Navier-Stokes equation. Exact solutions of 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 (3) *Prereq: undergraduate fluid mechanics.* Biothermal fluid sciences. Emphasis on physiological processes occurring in human blood circulation and underlying physical mechanisms from engineering perspective.

EMA 6580—Science of Biomaterials I (3) *Prereq: undergraduate chemistry.* Introduction to variables that control compatibility and performance of biomaterials, including physical and chemical properties, corrosion, fatigue, and interfacial histochemical changes.

EML 5591—Biometrics (3) *Prereq: EGM 2511, EMA 3010, EEL 3003 or 3111, EML 3023.* Human/machine interface examined. Basic human anatomy introduced. Physical capabilities and limitations explored in context of practical design problems. Injury prevention, both acute and cumulative investigated.

EML 5598—Orthopedic Biomechanics (3) *Prereq: mechanics of materials.* Mechanical properties of 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, orthotic and prosthetic devices.

EML 6597—Mechanics of Gait (3) *Prereq: EML 5595.* Concepts, nomenclature, and control mechanics of normal and pathological bipedal gait.

Biomedical Imaging and Signal Processing

CAP 5416—Computer Vision (3) *Prereq: 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 5515—Computational Molecular Biology (3) 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 6516—Medical Image Analysis (3) *Prereq: 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.

EEL 5701—Foundations of Digital Signal Processing (3) Analysis and design of digital filters for discrete signal processing; spectral analysis; fast Fourier transform.

EEL 6502—Adaptive Signal Processing (3) *Prereq: EEL 5701, 5544.* Theory of adaptation with stationary signals; performance measures. LMS, RLS algorithms. Implementation issues and applications.

EEL 6562—Image Processing and Computer Vision (3) 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.

EEL 6814—Neural Networks for Signal Processing (3) *Prereq: EEL 6502.* 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 (3) Decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.

ENU 5615—Nuclear Radiation Detection and Instrumentation (3) Interaction of radiation with matter, radiation detector 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 (1) Laboratory associated with ENU 5615.

ENU 5626—Radiation Biology (3) *Prereq: 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—Image Analysis with Medical Physics Applications (3) Description and processing of images obtained using X-ray/neutron fields. Filtering, enhancement, reconstruction of CT and coded aperature images. Digital and optical methods.

ENU 6051—Radiation Interaction Basics and Applications I (3) 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 (3) 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 6627—Therapeutic Radiological Physics (3) *Prereq: ENU 5615, EEL 6051, 6053.* 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 6657—Diagnostic Radiological Physics (3) *Prereq: ENU 5615, 6051, 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 (2) *Prereq: ENU 5615 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.

Molecular, Cellular, and Tissue Engineering

ECH 6126—Thermodynamics of Reaction and Phase Equilibria (3) Methods of treating chemical and phase equilibria in multi-component systems through application of thermodynamics and molecular theory.
ECH 6726—Interfacial Phenomena I (2) 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 (2) *Prereq: 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.
EMA 6105—Fundamentals and Applications of Surface Science (3) *Prereq: CHM 2045, MAP 2302, 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 6165—Polymer Physical Science (3) *Prereq: EMA 3066.* Solid state properties of amorphous and semi-crystalline polymers.
EMA 6461—Polymer Characterization (3) *Prereq: EMA 3066.* Use of broad variety of spectroscopic and other scattering phenomena in polymer research.
GMS 6421—Cell Biology (4) *Prereq: 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.

Botany

Colleges of Liberal Arts and Sciences and Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: G. E. Bowes. *Graduate Coordinator:* A. C. Harmon. *Graduate Research Professor:* D. Dilcher. *Professors:* H. C. Aldrich; G. E. Bowes; J. S. Davis; D. R. Gordon; D. G. Griffin; A. C. Harmon; D. A. Jones; W. S. Judd; S. R. Manchester; J. T. Mullins; F. E. Putz; D. E. Soltis; P. S. Soltis; W. L. Stern; N. H. Williams. *Associate Professors:* T. W. Lucansky; S. S. Mulkey; D. Oppenheimer. *Associate Scientist:* G. Erdos. *Assistant Professors:* B. A. Hauser; M. C. Mack; E. A. Schuur. *Assistant Scientist:* M. A. Gitzendanner.

The Department of Botany offers graduate work leading to the degrees of Master of Science, Master of Agriculture, Master of Science in Teaching, and Doctor of Philosophy. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The Department offers studies in the areas of biochemistry, molecular biology, physiology, ecology, population genetics, systematics, and evolution. Specific areas of specialization include anatomy/morphology with emphasis on tropical ferns, woody plants, and orchids; ecology and environmental studies; ecological, cellular, and molecular genetics; cell biology; algology with emphasis on algae of brine ponds; physiology, biochemistry, and molecular biology with emphasis on photosynthesis and photorespiration, growth and development of angiosperms, protein phosphorylation and signal transduction; systematics with emphasis on molecular evolution and monographic and floristic studies; paleobotany; physiological ecology; tropical botany and ecology.

For admission to graduate studies a student should present acceptable scores on the verbal, quantitative, and analytical sections of the GRE General Test. Full graduate standing also requires credits equivalent to those required for undergraduate majors in the Department, namely 24 credits in botany, a course in genetics with laboratory, mathematics through differential calculus, one year of college physics, and chemistry through organic. Those admitted without full equivalents of an undergraduate major will be required to make up the deficiencies by passing appropriate courses early in their graduate programs. A reading knowledge of a foreign language and credit for basic courses in zoology and microbiology are desirable. The program of graduate study for each student will be determined by a supervisory committee. No more than nine credits of BOT 6905 may be used to satisfy the credit requirements for a master's degree.

There are, in addition to the facilities of the Department for graduate work, the following special resources that may be utilized in support of graduate student training and research: (1) Florida Agricultural Experiment Stations, (2) the Marine Sciences Center on the Gulf of Mexico , (3) Welaka Conservation Reserve, (4) Center for Tropical Agriculture, (5) Center for Latin American Studies, (6) Center for Aquatic and Invasive Plants, (7) Interdisciplinary Center for Biotechnology Research, (8) Fairchild Tropical Garden, (9) Marie Selby Botanical Gardens, Sarasota, (10) Herbarium of the Florida Museum of Natural History.
BOT 5115—Paleobotany (3) *Prereq: upper-level course in botany or geology or permission of instructor.* Comparative study of plants through geologic time with attention to morphology and evolution of major groups of land plants based on fossil record.
BOT 5225C—Plant Anatomy (4) *Prereq: 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 semester.
BOT 5505C—Intermediate Plant Physiology (3) *Prereq: 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 (2) *Prereq: BOT 3151C or 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 semester in even-numbered years.
BOT 5646C—Ecology and Physiology of Aquatic Plants (3) Ecological and physiological principles in freshwater habitats and plant communities with laboratory and field studies.
BOT 5655C—Physiological Plant Ecology (3) *Prereq: basic plant physiology or consent of instructor.* Traits affecting success in different environments. Energy balance, carbon balance, water relations, and nutrient relations emphasized. Introduction to ecophysiological methods and instrumentation. Offered fall semester in even-numbered years.

BOT 5685C—Tropical Botany (5) *Prereq: elementary biology/ botany; consent of instructor.* Study of tropical plants utilizing the diverse habitats of South Florida with emphasis on uses, anatomy and morphology, physiology and ecology, and systematics of these plants. Field trips and the Fairchild Tropical Garden supplement laboratory experiences. Offered summer semester.

BOT 5695—Ecosystems of Florida (3) *Prereq: 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 semester in odd-numbered years.

BOT 5725C—Taxonomy of Vascular Plants (4) *Prereq: 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 semester in odd-numbered years.

BOT 6516—Plant Metabolism (3) *Prereq: BOT 5505C, BCH 4024.* Metabolism of carbohydrates, fats, and nitrogen compounds in higher plants; cell structures as related to metabolism; metabolic control mechanisms. Offered spring semester.

BOT 6566—Plant Growth and Development (3) *Prereq: BOT 5505C.* Fundamental concepts of plant growth and development with emphasis on the molecular biological approach. Offered fall semester in even-numbered years.

BOT 6716C—Advanced Taxonomy (2) *Prereq: BOT 5725C or equivalent.* Survey of vascular plant families of limited distribution and/or of phylogenetic significance not covered in BOT 5725C with discussions of their classification, morphology, and evolutionary relationships. Published studies reviewed to demonstrate principles and methods involved in classification. Offered on demand.

BOT 6905—Individual Studies in Botany (1-9; max: 9) *Prereq: all credits in excess of 3 must be approved by department chairman 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 (1-5; max: 5) S/U.

BOT 6927—Advances in Botany (1-3; max: 9) Supervised study in specific areas.

BOT 6935—Special Topics (1-4; max: 9)

BOT 6936—Graduate Student Seminar (1-2; max: 9) Readings and oral presentation on general topics in botany. S/U.

BOT 6940—Supervised Teaching (1-5; max: 5) S/U.

BOT 6943—Internship in College Teaching (1-6; max: 6) 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 (1-15) S/U.

BOT 7979—Advanced Research (1-12) 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. S/U.

BOT 7980—Research for Doctoral Dissertation (1-15) S/U.

PCB 5046C—Advanced Ecology (3) *Prereq: basic ecology and one course in statistics; physics, chemistry, and physiology desirable.* Plant ecology and plant-animal interactions with emphasis on design of field studies and data analysis. Students conduct a series of one-day research projects in various ecosystems and present results orally and as short research papers. Offered fall semester in odd-numbered years.

PCB 6176—Electron Microscopy of Biological Materials (2) *Prereq: MCB 3020 or equivalent.* Use of the electron microscope, including fixation, embedding, sectioning, freeze-etching, negative staining, and use of vacuum evaporator.

PCB 6176L—Laboratory in Electron Microscopy (2) *Coreq: PCB 6176 and consent of instructor.* Laboratory training in use of electron microscopes, ultramicrotomes, vacuum evaporators, and freeze-etch machines.

PCB 6356C—Ecosystems of the Tropics (3) *Prereq: PCB 3034C.* Natural and man-dominated tropical ecosystems, their structure, function, and relation to man. Offered spring semester.

PCB 6605C—Principles of Systematic Biology (4) Theory of biological classification and taxonomic practice. Laboratory experience in taxonomic procedures and techniques, including computer methods. Offered on demand.

Building Construction

College of Design, Construction, and Planning

Graduate Faculty 2004-2005

Director: S. Chini. *Graduate Coordinator:* R. Issa. *Professors:* S. Chini; W. E. Dukes; J. W. Hinze; R. Issa; C. Kibert; P. Oppenheim. *Research Professor:* R. Stroh. *Associate Professors:* R. Cox; I. Flood; L. C. Muszynski; A. Shanker; M. Smith; K. Tenah. *Assistant Professor:* K. Grosskopf. *Lecturers:* M. Cook; L. Wetherington.

Doctor of Philosophy—The College offers an interdisciplinary doctoral program in design, construction, and planning. Areas of specialization within the program include architecture, building construction, interior design, landscape architecture, and urban and regional planning. Within the area of building construction specialization options include sustainable construction, information systems, facilities management, 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 School of Building Construction, write to the Director of Graduate and Distance Education, Rinker School of Building Construction, 304 Rinker Hall, P.O. Box 115703.

The School offers courses leading to the degrees of Master of Science in Building Construction (thesis), Master of Building Construction (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, facilities, management, sustainable construction, information systems and construction law.

Complete descriptions of the requirements for the M.B.C., M.S.B.C., M.I.C.M., and Ph.D. degrees are provided in the *General Information* section of this catalog.

To be eligible for admission to the M.B.C. or M.S.B.C. programs, a student must hold a four-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 three credits of BCN 6934 or BCN 6971 may be used to satisfy the credit requirements for a master's degree without written permission of the Director. Candidates are required to take BCN 5625 and BCN 5715.

The M.I.C.M. 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 four-year undergraduate degree; at least five years of meaningful, supervisory-level construction management experiences, a cumulative verbal and quantitative GRE score of 1000 or higher; a grade point average of 3.0 on a 4.0 scale; and employer sponsorship. International students must have a TOEFL score of 565 or higher.

No more than three 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 six research oriented graduate credit hours, the student selects one or two areas of emphasis and than 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 School reserves the right to retain student work for purposes of record, exhibition, or instruction.

Research Facilities—The Shimberg Center for Affordable Housing, operating within the School, researches the problems and possible solutions associated with the development and production of affordable housing. The Powell Center for Construction and the Environment conducts research on the implementation of sustainability in the creation, operations, and construction of a built environment. The Fluor Program for Construction Safety researches and disseminates information on matters related to construction safety and health. The Center for Collective Protection promotes interdisciplinary activities to develop technology and planning guidance needed to enhance the nation's ability to mitigate the human, economic, and environmental consequences of natural hazards and terrorist events.

Combined Program—The School offers a bachelor's/master's degree program. Contact the graduate coordinator for information.

BCN 5285C—Advanced Construction Layout (3) *Prereq: BCN 3281, graduate standing.* Principles of building component layout, both horizontally and vertically, using state-of-the-art electronic surveying equipment such as total stations, EDMs, and laser levels.

BCN 5470—Construction Methods Improvements (3) *Prereq: 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 5584—Natural Hazards in Built Environment (3) *Prereq: graduate standing.* Effects of natural disasters on design, planning, and construction including impacts of flood, fire, radon, hurricane, and earthquakes as well as environmental sustainability issues. Examination of theories, techniques, and codes.

BCN 5618C—Comprehensive Estimating (3) *Prereq: 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 (3) *Prereq: BCN 4612C/5618C, 4720/5722, 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 (3) *Prereq: BCN 5618, 3700, non-BCN graduate.* Project organization, site planning, and implementation.

BCN 5715—Advanced Construction Labor Problems (3) *Prereq: 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 (3) *Prereq: BCN 4720, graduate standing.* Time-cost relationships for various construction operations.

BCN 5737—Advanced Issues in Construction Safety and Health (3) *Prereq: 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 (3) Principles and practices of land development including market analysis, site analysis, project programming, and financial feasibility.

BCN 5776—International Construction Business Management (3) *Prereq: BCN 3700, graduate standing.* Construction contracting, emphasis on international economics, marketing, contracts, design, and specifications.

BCN 5779—Facilities Operation and Maintenance (3) *Prereq: 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 (3) *Prereq: BCN 5618, 4720, 3700, non-BCN graduate.* Designing, developing, estimating, scheduling, contracting, and administering small construction project, including extensive site and feasibility analysis.

BCN 5905—Special Studies in Construction (1-5; max: 12) *Prereq: graduate standing.* For students requiring supplemental work in the building construction area.

BCN 5949—Graduate Construction Management Internship (1-3; max: 6) *Prereq: approval of graduate coordinator.* Two-term employment in construction management position. S/U.

BCN 5957—Advanced International Studies in Construction (1-4; max: 6) *Prereq: 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. S/U.

BCN 6036—Research Methods in Construction (3) *Prereq: graduate standing.* Research proposal development process and statistical, computational, visualization, and presentation tools available to researcher.

BCN 6585—Sustainable Construction (3) *Prereq: 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 (3) *Prereq: graduate standing.* Sustainability principles and concepts related to reducing environmental impacts of creating, operating, and deconstruction built environment.

BCN 6621—Bidding Strategy (3) *Prereq: BCN 3700/6748C, 4612C/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 (3) *Prereq: BCN 4612C/5618C, graduate standing.* Principles and applications of value engineering in construction industry.

BCN 6748—Construction Law (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: graduate standing.* Concepts, terminology, and issues in affordable housing.

BCN 6771—Construction Work Acquisition (3) *Prereq: BCN 5618C, MAR 3023, and graduate standing.* Importance of successful strategy to remain competitive in industry. Marketing strategy developed for commercial construction company in private sector.

BCN 6777—Construction Management Processes (3) *Prereq: graduate standing.* Existing and emerging systems for designing, planning, and construction of projects. Changing roles, relationships, and responsibilities of the parties involved.

BCN 6787—Construction Information Systems (3) *Prereq: CGS 2531 or equivalent, graduate standing.* Potential applications of computer and information systems in construction industry.

BCN 6905—Directed Independent Study in Construction (1-3; max: 3) *Prereq: graduate standing.*

BCN 6910—Supervised Research (1-3; max: 3) *Prereq: graduate standing.* S/U.

BCN 6933—Advanced Construction Management (1-5; max: 12) *Prereq: graduate standing.* Financial and technological changes affecting construction and the management of construction projects. H.

BCN 6934—Construction Research (1-6; max: 12) *Prereq: graduate standing.* Research for master's report option. S/U.

BCN 6940—Supervised Teaching (1-3; max: 3) *Prereq: graduate standing.* S/U.

BCN 6971—Research for Master's Thesis (1-15) *Prereq: graduate standing.* S/U.

DCP 6931—Special Topics in Design, Construction, and Planning (1-4; max: 6)

DCP 7790—Doctoral Core I (3) Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.

DCP 7792—Doctoral Core II (3) *Prereq: DCP 7790.* Urban, environmental, and legal systems in the context of urban development.

DCP 7794—Doctoral Seminar (1; max: 4) *Coreq: DCP 7911. For entering Ph.D. students.* Successfully negotiating graduate school and writing dissertation.

DCP 7911—Advanced Design, Construction, and Planning Research I (3) *Prereq: STA 6167; coreq: DCP 7794; for entering Ph.D. students.* Survey and critical analysis of research in disciplines of design, construction, and planning with emphasis on theory and mehtods.

DCP 7912—Advanced Design, Construction, and Planning Research II (3) *Prereq: ARD 7911.* Conduct of advanced research in architecture, design, landscape, planning, and construction.

DCP 7949—Professional Internship (1-5; max: 5) Professional faculty-supervised practicum.

DCP 7979—Advanced Research (1-12) 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. S/U.

DCP 7980—Research for Doctoral Dissertation (1-15) S/U.

ICM 6420—Commercial Management and Cost Control (3) *Prereq: graduate standing.* Budgeting and estimating, and principles of cost analysis for international projects.

ICM 6440—Construction Value Management (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: graduate standing.* Application of ecological theory and developments in industrial ecology to ecological design in built environment.

ICM 6710—Construction Human Resource Management (3) *Prereq: graduate standing.* Theories of human behavior and influence and leadership, organization, environment, motivation, and culture.

ICM 6750—Managing Construction Information Technology (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: graduate standing.* Overview of what is meant by risk and uncertainty and influences in international construction industry.

ICM 6770—Advanced Project Safety Management (3) *Prereq: graduate standing.* International, governmental, and construction industry requirements of safety and loss control regulations. Project responsibilities.

ICM 6772—International Strategic Management (3) *Prereq: 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 (1-3; max: 3)
ICM 6910—Supervised Research (1-3; max: 3) S/U.
ICM 6930—Construction Communication and Research (3) *Prereq: graduate standing.* Research proposal development process and statistical, computational, visual, and presentational tools available to researcher.
ICM 6934—International Construction Research (1-6; max: 12) S/U.

Business Administration–General

Warrington College of Business Administration

Graduate degrees offered by the Warrington College of Business Administration are the Doctor of Philosophy with major programs in business administration and in economics; the Master of Arts with major programs in economics and in business administration; the Master of Science with major programs in business administration, in decision and information sciences, in finance, and in management; the Master of Business Administration; and the Master of Accounting. The Master of Arts degree with a major program in business administration includes concentrations in international business, insurance, and marketing. The Master of Science degree with a major program in business administration includes concentrations in entrepreneurship, insurance, marketing, real estate and urban analysis, and retailing. Fields of concentration and requirements for the M.B.A. are given under *Requirements for Master's Degrees* of this catalog. Admission and degree requirements for the Ph.D., M.A., and M.S. degrees can be found in the *General Information* section.

The Master of Arts degree with a major program in business administration and a concentration in international business is designed to provide students with quantitative and application skills to be used in an international business setting. The program provides practical training with a brief study trip to a major international city, where students are required to actively participate in business tours and lectures. The students also have the opportunity to gain credits for the degree by studying at one or more foreign universities for a period of 2 weeks to 8 months.

The Master of Science degree with major program in management targets students from nonbusiness backgrounds who would like to gain "core" business knowledge and application skills. Requirements span the traditional business disciplines to produce a sound knowledge base for students seeking a solid business foundation. Students are required to take such courses as accounting, finance, economics, entrepreneurship, management, marketing, organizational behavior, and statistics. Typical positions for graduates include managers, consultants, and analysts.

The Ph.D. in business administration requires a principal or major field in one of the following: accounting, decision and information sciences, finance, insurance, management, marketing, or real estate and urban analysis. Specific requirements for the various departments and specialties within the departments are stated in the department descriptions in this catalog. (The Ph.D. degree in economics requirements are described under Economics in this section of the catalog.) All candidates for the Ph.D. in business administration must satisfy the following general requirements:

Breadth Requirement—All applicants for the Ph.D. in 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. Other requirements for the Ph.D. are given in the *General Information* section of this catalog.

GEB 5214—Professional Writing in Business (1-3; max: 6) 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 (1-3; max: 6) *Prereq: GEB 5213.* Balance between descriptive information and application of organizational communication theories and techniques for business and professional speaking.
GEB 5217—Executive Communication (1-2; max: 2) Guidelines to help build confidence as presenters and to make workplace presentations more effective. S/U.
GEB 5929—Foundations Review (1-3; max: 3) Overview of M.B.A. core courses to be used in working professional programs. S/U.
GEB 6365—International Business (3) *Designed for M.B.A. students.* Exploration of 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 6905—Individual Work (1-4; max: 8) *Prereq: consent of Associate Dean or M.B.A. Director.* Reading and/or research in business administration.
GEB 6928—Professional Development Module IV (1; max: 2) *Designed for M.B.A. students.* Personal financial planning. S/U.
GEB 6930—Special Topics (1-3; max: 12) *Prereq: consent of instructor.* Topics not offered in other courses and of special current significance. S/U option.
GEB 6941—Internship (1-4; max: 6) *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. S/U.
GEB 6957—International Studies in Business (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

Chemical Engineering

College of Engineering

Graduate Faculty 2004-2005

Chairman: J. S. Curtis. *Graduate Coordinator:* R. B. Dickinson. *Professors:* T. J. Anderson; O. D. Crisalle; J. S. Curtis; G. B. Hoflund; L. E. Johns, Jr.; A. Ladd; R. Narayanan; M. E. Orazem; C. W. Park; F. Ren; D. O. Shah; S. A. Svoronos. *Associate Professor:* R. B. Dickinson. *Assistant Professors:* J. E. Butler; A. Chauhan; A. Narang; J. F. Weaver.

Graduate work for the Ph.D., M.E., and M.S. degrees in chemical engineering requires course work in three core areas: (1) the *basis of chemical engineering core* consisting of four courses in the mathematical, the experimental, and the continuum basis of chemical engineering in addition to a classical thermodynamics course; (2) the *chemical engineering science and systems core* 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; and (3) the *research specialty core* consisting of courses designed to build depth in a field of specialization. Courses may be from other departments or chemical engineering courses such as energy conversion and fuel cells, corrosion, polymer science, microelectronics, particle science and technology, process economics, and bioengineering.

Complete descriptions of the minimum requirements for the M.E., M.S., and Ph.D. degrees are provided in the *General Information* section of this catalog. Beyond the Graduate School requirements, admission to graduate work in chemical engineering depends upon the qualifications of the student, whose record and recommendations are carefully and individually studied. During registration week each graduate student registering for the first time is counseled to develop an initial study program. The program of all students will involve research experience through the courses ECH 6905, ECH 6971, or ECH 7980.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for more information.

ECH 5708—Disinfection, Sterilization, and Preservation (2) Description of problems and need for these treatments; causative agents and their nature; nature and use of chemical and physical antimicrobial agents; specific problems and solutions.

ECH 5938—Topics in Colloid Science (3) *Prereq: 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 (3) Methods of treating chemical and phase equilibria in multi-component systems through application of thermodynamics and molecular theory.

ECH 6207—Polymer Processing (3) Analysis and characterization of rheological systems.

ECH 6270—Continuum Basis of Chemical Engineering (3) 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 (3) 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 (1-3; max: 3) *Prereq: ECH 6270.*

ECH 6326—Computer Control of Processes (3) Introduction to digital computers, sampled data systems and Z-transforms, control of multiple input-multiple output systems, optimal control, state estimation and filtering, self-tuning regulators.

ECH 6506—Chemical Engineering Kinetics (3) 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 (3) 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 (3) Fundamentals of electrodics and ionics applied to systems of interest in electrochemical engineering.

ECH 6726—Interfacial Phenomena I (2) 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 (2) *Prereq: 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 (3) 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 (3) Methods of linear systems, chemical engineering applications in finite and infinite dimensional spaces, concepts of stability, application to transport phenomena.

ECH 6905—Individual Work (1-6; max: 12) Individual engineering projects suitable for a nonthesis Master of Engineering degree.

ECH 6910—Supervised Research (1-5; max: 5) S/U.

ECH 6926—Graduate Seminar (1; max: 10)

ECH 6937—Topics in Chemical Engineering I (1-4; max: 9) 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 (1-4; max: 9)

ECH 6940—Supervised Teaching (1-5; max: 5) S/U.

ECH 6969—Research Proposal Preparation (1-2; max: 4) H.

ECH 6971—Research for Master's Thesis (1-15) S/U.

ECH 7938—Advanced Special Chemical Engineering Topics for Doctoral Candidates (1-4; max: 8)

ECH 7979—Advanced Research (1-12) 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. S/U.

ECH 7980—Research for Doctoral Dissertation (1-15) S/U.

Chemistry

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: D. E. Richardson. *Associate Chair:* J. E. Enholm. *Assistant Chair:* D. R. Talman. *Graduate Coordinator:* B. W. Smith. *Graduate Research Professor:* R. J. Bartlett. *Graduate Research Professor and Jackson Professor:* J. D. Winefordner. *Butler Professor:* K. Wagener. *Crow Professors:* W. R. Dolbier, Jr.; C. R. Martin. *Distinguished Professor and Jackson Professor: S. A. Benner. Drago Professor:* G. Christou. *Kenan Professor:* A. R. Katritzky. *Professors:* J. E. Enholm; J. R. Eyler; W. W. Harrison; L. McElwee-White; D. A. Micha; N. Y. Ohrn; N. Omenetto; J. R. Reynolds; N. G. Richards; D. E. Richardson; K. S. Schanze; D. R. Talham; W. H. Tan; M. T. Vala, Jr.; R. A. Yost. *Scientists:* K. Abboud; D. H. Powell; B. W. Smith. *Scholar:* K. R. Williams. *Associate Professors:* A. Angerhofer; C. R. Bowers; P. J. Brucat; A. Brajter-Toth; R. Duran; N. Horenstein; J. L. Krause; A. E. Roitberg; M. J. Scott; J. D. Stewart; V. Young. *Associate Scientist:* I. Ghiviriga. *Assistant Professors:* Y. Cao; R. K. Castellano; G. E. Fanucci; S. Hirata; T. Lyons; V. D. Kleiman; A. S. Veige.

The Department offers the Master of Science (thesis or nonthesis) and Doctor of Philosophy degrees with a major in chemistry and specialization in biochemistry and analytical, organic, inorganic, or physical chemistry. The nonthesis degree Master of Science in Teaching is also offered with a major in chemistry. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

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. International students whose native language is not English must achieve a minimum score of 50 on the Test of Spoken English.

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

CHM 5224—Basic Principles for Organic Chemistry (3) *Prereq: 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 (3) *Prereq: 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 (2) *Prereq: 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 (3) *Prereq: 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 (2) *Prereq: 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 (2) *Prereq: 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 6153—Electrochemical Processes (3) Principles of electrochemical methods, ionic solutions, and electrochemical kinetics.

CHM 6154—Chemical Separations (3) Theory and practice of modern separation methods with emphasis on gas and liquid chromatographic techniques.

CHM 6155—Spectrochemical Methods (3) Principles of atomic and molecular spectrometric methods; discussion of instrumentation, methodology, applications.

CHM 6158C—Electronics and Instrumentation (1-4; max: 6) Principles of operation of instruments, optimization of instrumental conditions, and interpretation of instrumental data for qualitative and quantitative analysis.

CHM 6159—Mass Spectrometric Methods (3) Modern spectrometry including fundamentals, instrumentation, and analytical applications.

CHM 6165—Chemometrics (3) *Prereq: 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 (1-3; max: 9) *Prereq: two courses of graduate level analytical chemistry.* Lectures or conferences covering selected topics of current interest in analytical chemistry.

CHM 6190—Analytical Chemistry Seminar (1; max: 20) *Attendance required of graduate majors in the analytical area. graduate course in analytical chemistry.* Presentation of one seminar. S/U option.

CHM 6225—Advanced Principles of Organic Chemistry (4) *Prereq: CHM 2211.* Principles of organic chemistry and their application to reaction mechanisms.

CHM 6226—Advanced Synthetic Organic Chemistry (3) *Prereq: CHM 6225.* Discussion and application of synthetic methodology.

CHM 6227—Topics in Synthetic Organic Chemistry (2) *Prereq: CHM 6226.* Synthesis of complex organic molecules, with emphasis on recent developments in approaches and methods.

CHM 6251—Organometallic Compounds (3) 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 (2) Fundamental polymer chemistry, with emphasis on the mechanisms of polymerization reactions and the relationship of physical properties to chemical constitution.

CHM 6301—Enzyme Mechanisms (3) 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 (3) 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 (3) Modeling and protein structures enzyme reaction mechanisms using empirical as well as quantum-mechanical methods.

CHM 6304—Special Topics in Biological Chemistry Mechanisms (3; max: 9) Molecular evolution, bioinformatics and protein structure prediction, principles of molecular recognition, rational protein design, biotechnology, reengineered organisms, advanced biophysical techiques, and computational biology.

CHM 6381—Special Topics in Organic Chemistry (1-3; max: 9) *Prereq: CHM 6225, 6226.* Chemistry of selected types of organic compounds, such as alkaloids, carbohydrates, natural products, steroids.

CHM 6390—Organic Chemistry Seminar Presentation (1; max: 20) *Attendance required of graduate majors in the organic area.* Presentation of one seminar.

CHM 6391—Organic Chemistry Seminar Discussion (1; max: 10) *Prereq: graduate standing.* Attendance at weekly seminars reporting current advances in organic chemistry. S/U.

CHM 6430—Chemical Thermodynamics (3) Energetics, properties of ideal and nonideal systems primarily from the standpoint of classical thermodynamics.

CHM 6461—Statistical Thermodynamics (3) *Prereq: CHM 6430.* Fundamental principles with applications to systems of chemical interest.

CHM 6470—Chemical Bonding and Spectra I (3) 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 (3) *Prereq: 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 (3) *Prereq: CHM 6471.* Brief treatment of the Schrodinger equation, followed by a survey of applications to chemical problems.

CHM 6490—Theory of Molecular Spectroscopy (3) *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 (3) *Prereq: CHM 6470 or permission 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 (1-3; max: 12) Lecture or conferences covering selected topics of current interest in physical chemistry.

CHM 6586—Computational Chemistry (3) *Prereq: 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 (1; max: 20) *Attendance required of graduate majors in physical chemistry. graduate course in physical chemistry.* Presentation of one seminar. S/U.

CHM 6620—Advanced Inorganic Chemistry I (3) 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) Structure and properties of solids; semiconductors and superconductors.

CHM 6670—Inorganic Biochemistry (3) *Prereq: 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 (1-3; max: 12) Lectures or conferences on selected topics of current research interest in inorganic chemistry.

CHM 6690—Inorganic Chemistry Seminar (1; max: 20) *Attendance required of graduate majors in inorganic chemistry, graduate course in inorganic chemistry.* Presentation of one seminar. S/U option.

CHM 6720—Chemical Dynamics (3) 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 (1-5; max: 10) *Prereq: consent of faculty member supervising the work.* Double registration permitted. Assigned reading program or development of assigned experimental problem. S/U option.
CHM 6910—Supervised Research (1-5; max: 5) S/U.
CHM 6934—Advanced Topics in Chemistry (1; max: 8) *Prereq: consent of instructor.* Discussion and evaluation of chemical research advances reported in current chemical literature. S/U.
CHM 6935—Chemistry Colloquium (1; max: 7) Topics presented by visiting scientists and local staff members. S/U.
CHM 6943—Internship in College Teaching (2, 4, 6; max: 6) *Prereq: 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 (1-15) S/U.
CHM 7485—Special Topics in Theory of Atomic and Molecular Structure (1-3; max: 9) *Prereq: 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 (1-12) 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. S/U.
CHM 7980—Research for Doctoral Dissertation (1-15) S/U.
CHS 5110L—Radiochemistry Laboratory (3) *Prereq: 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.

Civil and Coastal Engineering

College of Engineering

Graduate Faculty 2004-2005

Chairman: J. W. Tedesco. *Associate Chairman for Graduate Programs:* M. Tia. *Director and Graduate Coordinator of Coastal and Oceanographic Engineering Programs:* R. Thieke. *Graduate Research Professor:* R. G. Dean *(Emeritus)*. *Professors:* R. A. Cook; K. G. Courage *(Emeritus)*; J. L. Davidson; D. S. Ellifritt *(Emeritus)*; C. O. Hayes *(Emeritus)*; Z. Herbsman; M. I. Hoit; M. C. McVay; A. J. Mehta; F. T. Najafi; M. K. Ochi *(Emeritus)*; R. Roque; B. E. Ruth *(Emeritus)*; J. H. Schaub *(Emeritus)*; Y. P. Sheng; D. M. Sheppard; R. Shrestha; J. W. Tedesco; M. Tia; F. C. Townsend. *Engineer:* J. D. Degner. *Associate Professors:* B. Birgison; D. G. Bloomquist; G. Consolazio; L. Elefteriadou; R. D. Ellis; C. R. Glagola; K. Gurley; H. R. Hamilton; K. Hatfield; D. Hiltunen; G. Long; J. M. Lybas; L. H. Motz. *Assistant Professors:* A. J. Boyd; C. Clark; A. B. Kennedy; R. E. Minchin, Jr.; K. C. Slatton; D. N. Slinn; R. Thieke; S. Washburn.

The Department offers two distinct graduate programs: civil engineering and coastal and oceanographic engineering. The civil engineering program is offered with the following degrees: Master of Civil Engineering, Master of Engineering, Master of Science, Engineer, and Doctor of Philosophy. The coastal and oceanographic engineering program is offered with the following degrees: Master of Engineering, Master of Science, and Doctor of Philosophy degree. All 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. All degrees except the Ph.D. are available in a thesis or nonthesis option. The nonthesis option has two formats: report and 30-hour nonreport. 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. 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 by the end of their second term of enrollment. The minimum requirements for the Master of Engineering, Master of Science, Engineer, and Doctor of Philosophy degrees are presented in the *General Information* section of this catalog.

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.

In the Department of Civil and Coastal Engineering credit hours graded S/U will not count toward graduation except for 6 hours of CGN or EOC 6971 for thesis students, 6 to 12 hours of CGN or EOC 6972 for students electing the Engineer thesis, 2 hours of CGN 6974 for students working on the M.E. or Engineer report, CGN or EOC 7979, and CGN or EOC 7980.

Civil Engineering

CCE 5035—Construction Planning and Scheduling (2) *Prereq: 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 (2) *Prereq: CCE 4204 or consent of instructor.* Design and optimization of equipment systems for heavy construction.
CCE 6037—Civil Engineering Operations I (2) *Prereq: graduate status.* Advanced construction engineering and management procedures at the project level to support quantitative decision making.
CCE 6038—Innovative Construction Techniques (2) *Prereq: CCE 4204 or consent of instructor.* Advanced construction engineering techniques and management coordination procedures for civil engineering projects.
CCE 6207—Geosensing II (3) *Prereq: CCE 5136.* 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.
CCE 6505—Computer Applications in Construction Engineering (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: SUR 6381, CCE 6136.* 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.

CEG 5105—Geotechnical Engineering (3) *Prereq: consent of instructor.* Shallow foundations, bearing capacity, settlements, deep foundations, pile testing, earth pressures, excavations, retaining structures, dewatering.

CEG 5112—Advanced Geotechnical Aspects of Landfill Design (3) *Prereq: CEG 4012 or consent of instructor.* Settlement analysis, slope stability, liner design, and LCRS design.

CEG 5115—Foundation Design (3) *Prereq: 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 (3) *Prereq: CEG 4012.* Methods of soil exploration; techniques of soil sampling and insitu testing; field performance of insitu testing.

CEG 5805—Ground Modification Design (2) *Prereq: CEG 4012, CGS 2425.* Introduction to design of ground modification techniques for improvement of marginal construction sites.

CEG 6015—Advanced Soil Mechanics (3) *Prereq: 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 (3) *Prereq: CEG 6015, CES 4702.* Application of soil mechanics to design and analysis of shallow foundations.

CEG 6117—Advanced Deep Foundation Design (3) *Prereq: CEG 6015.* Application of soil mechanics to design and analysis of deep foundations.

CEG 6201—Experimental Determination of Soil Properties (3) *Prereq: 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. H.

CEG 6405—Seepage and Drainage Problems in Geotechnical Engineering (2) *Prereq: CEG 4011, 4012, or consent of instructor.* Darcy's law, coefficient of permeability, flownets, seepage forces. Engineering applications-dewatering systems, slope stability, filter design, earth dams, drainage.

CEG 6505—Numerical Methods of Geomechanics (3) *Prereq: CGN 3421, CEG 6015 or consent of instructor.* Application of computer solutions to geotechnical engineering problems.

CEG 6515—Earth Retaining Systems and Slope Stability (3) *Prereq: CEG 6015.* Applications of soil mechanics to design and analysis of earth retaining systems and slope stability.

CES 5116—Finite Elements in Civil Engineering (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: CES 4605.* Plastic analysis and designs of beams and frames. Buckling and stability problems. Shear and torsion.

CES 5715—Prestressed Concrete (3) *Prereq: 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 (3) *Prereq: 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 (2) *Prereq: consent of instructor.* Analysis and design in timber. Beams, columns, and connections. Timber structure. Plywood beams, panels, diaphragms. Laminated beams and frames. Formwork.

CES 5835—Design of Reinforced Masonry Structures (3) *Prereq: CES 4702.* Properties of clay brick, concrete block and mortar, beams and columns, structural walls, joints and details.

CES 6106—Advanced Structural Analysis (4) *Prereq: CES 4605, 4702.* Traditional methods of analyses for forces and deformations; modern matrix methods including direct stiffness method.

CES 6108—Structural Dynamics (3) *Prereq: EGM 3400, CES 6106.* Evaluation of structural response to the effect of dynamic loads for single-degree and multidegree of freedom systems. Consideration of seismic and wind effects, modal analysis, numerical methods, structural idealization, response spectra, and design codes.

CES 6165—Computer Methods in Structural Engineering (3) *Prereq: 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 (3) *Prereq: 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 6706—Advanced Reinforced Concrete (3) *Prereq: 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 (3) Testing techniques for assessing condition of existing structures with focus on material damage and durability.

CGN 5115—Civil Engineering Feasibility Analysis (3)

CGN 5125—Legal Aspects of Civil Engineering (3) Engineer's view of contracts for design and construction. Legislation and policy affecting labor-management relationships in construction.

CGN 5135—Project Optimization Using Value Engineering and TQM (3) Total quality management methods applied to traditional value engineering theory for optimization of engineering projects. Function analysis systems techniques (FAST), constructability, front-end-planning, agreement matrix, life cycle costing, and statistical methods for process control.

CGN 5315—Civil Engineering Systems (3) Civil engineering applications of operations research techniques, models of scheduling, linear programming, queuing theory, and simulation.

CGN 5508—Experimentation and Instrumentation in Civil Engineering Materials Research (3) Fundamentals and applications of testing and measuring systems commonly used; constitutive models, testing methods, instrumentation, and error analysis.

CGN 5605—Public Works Planning (3) Functional approach to planning and implementing public works needs with emphasis on role of engineer.

CGN 5606—Public Works Management (3) Nature of profession, duties, and administrative responsibilities. Organization and management of operating divisions with emphasis on role of engineer.

CGN 6155—Construction Engineering I (3) *Prereq: graduate status.* Advanced construction engineering management skills and procedures in support of design and construction practice at project level.

CGN 6156—Construction Engineering II (3) *Prereq: CCE 4204 or consent of instructor.* Advanced construction engineering management skills and procedures in support of design and construction practice above project level.

CGN 6505—Properties, Design and Control of Concrete (3) *Prereq: 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 (3) *Prereq: 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 6905—Special Problems in Civil Engineering (1-6; max: 10) Studies in areas not covered by other graduate courses.

CGN 6910—Supervised Research (1-5; max: 5) Credits do not apply to any graduate degree. S/U.

CGN 6936—Civil Engineering Graduate Seminar (1; max: 6) Lectures by graduate students, faculty members, and invited speakers. S/U.

CGN 6940—Supervised Teaching (1-5; max: 5) Credits do not apply to any graduate degree. S/U.

CGN 6971—Research for Master's Thesis (1-15) S/U.

CGN 6972—Research for Engineer's Thesis (1-15) S/U.

CGN 6974—Master of Engineering or Engineer Degree Report (1-6; max: 6) Individual work culminating in a professional practice-oriented report suitable for the requirements of the Master of Engineering or Engineer degree. Two credits only are applicable toward the requirements of each degree. S/U.

CGN 7979—Advanced Research (1-12) 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. S/U.

CGN 7980—Research for Doctoral Dissertation (1-15) S/U.

CWR 5125—Groundwater Flow I (3) *Prereq: 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 (3) *Prereq: CWR 5125 or 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 (3) *Prereq: CWR 4202 or consent of instructor.* Classification of flow, Normal depth. Specific energy and critical depth. Gradually varied flow. Transitions.

CWR 6115—Surface Hydrology (3) *Prereq: MAP 2302 or EGM 3311, 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 6236—Sediment Transport I (3) *Prereq: 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 6255—Diffusive and Dispersive Transport (3) *Prereq: 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 (3) *Prereq: 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 6537—Contaminant Subsurface Hydrology (3) *Prereq: MAP 2302 or 4341 or equivalent; CGS 2420 or equivalent; SOS 4602C or ABE 6252 or CWR 5125 or 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 emphasized.

TTE 5006—Transportation Systems Planning (3) *Prereq: graduate standing or consent of instructor.* Analytical techniques for estimating future travel demands, planning, transportation facilities and locations. Review of transportation technology and future systems.

TTE 5255—Traffic Signal Operation (1) Traffic control equipment, MUTCD requirements, HCM procedures, design and analysis of signal timing plans for simple problems.

TTE 5256—Traffic Engineering (3) Traffic characteristics, studies and analyses, street operations, level of service analysis, congestion and access management, signs and markings, pedestrians, bicycles, parking, roadway lighting.

TTE 5258—Urban Intersection Operations (3) *Prereq: TTE 5255.* Signal and stop sign control, roundabouts, traffic flow theory (interrupted flow), field studies, analytical intersection models, simulation models, software for intersection analysis.

TTE 5805—Geometric Design of Transportation Facilities (3) *Prereq: TTE 4004 or consent of instructor.* Geometric design criteria and controls of highways and intersections.

TTE 5835—Pavement Design (2) *Prereq: TTE 4811 or consent of instructor.* Design of flexible and concrete pavements.

TTE 5837—Pavement Management Systems (3) *Prereq: TTE 5835.* Evaluation, analysis, design, performance prediction, planning, and maintenance of pavements.

TTE 6257—Traffic Management and Control (3) Standards and functions, communication equipment and protocols, traffic detection, centrally controlled signal networks, traffic surveillance, advanced traffic management systems, traveler information systems.

TTE 6315—Highway Safety Analysis (3) Statistics and characteristics of accidents, accident reconstruction, accident causation and reduction.

TTE 6606—Urban Transportation Models (3) *Prereq: CGN 3421 or consent of instructor.* Calibration and application of UTPS computer models for urban transportation planning; land use and urban activity models for forecasting and allocation. H.

TTE 6815—Transportation Corridor Operations (3) *Prereq: TTE 5258.* Freeway, urban arterial, and rural roadway operations, traffic flow theory (uninterrupted flow), Highway Capacity Manual analysis, arterial signal timing models, freeway corridor models, simulation of corridor operations, multimodal corridors.

Coastal and Oceanographic Engineering

EGM 5816—Intermediate Fluid Dynamics (4) *Prereq: EGN 3353C (or CWR 3201), MAP 2302.* Basic laws of fluid dynamics, introduction to potential flow, viscous flow, boundary layer theory, and turbulence.
EOC 5860—Port and Harbor Engineering (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) 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 (1-4; max: 8)
EOC 6932—Selected Field and Laboratory Problems (3) *Prereq: 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 (1-6; max: 9) Waves; wave-structure interaction; coastal structures; ocean structures; sediment transport; instrumentation; advanced data analysis techniques.
EOC 6939—Graduate Seminar (1; max: 6) Guest lecturers; lectures by COE faculty and students. S/U.
EOC 6971—Research for Master's Thesis (1-15) S/U.
EOC 6972—Research for Engineer's Thesis (1-15) S/U.
EOC 7979—Advanced Research (1-12) 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. S/U.
EOC 7980—Research for Doctoral Dissertation (1-15) S/U.
OCP 5293—Coastal Processes (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (1) Laboratory for linear wave theory. Basic measurement techniques and properties of water waves.
OCP 6167—Ocean Waves II: Nonlinear Theory (3) *Prereq: OCP 6165.* 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 (3) Data editing, fundamentals of spectral analysis, subsurface and surface signal analysis, directional spectral analysis.
OCP 6169—Random Sea Analysis (3) *Prereq: STA 5855, 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; principle of hindcasting and forecasting seas.
OCP 6295—Estuarine and Shelf Hydrodynamics I (3) *Prereq: 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 (3) 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 6655—Coastal Sediment Transport Processes (3) *Prereq: CWR 6236, OCP 6165.* Physical sedimentation processes, including boundary layer hydrodynamics, suspended sediment dynamics, and bedload mechanics under wave and current conditions.
STA 5855—Stochastic Processes for Coastal and Ocean Engineers (3) *Prereq: undergraduate calculus.* Principles of spectral analysis; cross-spectral analysis; linear-system; threshold crossing and prediction of period; prediction of random amplitudes; prediction of extreme values and its application to coastal and ocean engineering problems.

Classics

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: R. Wagman. *Graduate Coordinators:* K. V. Hartigan; T. Johnson. *Distance Learning Coordinator:* A. Cahill. *Distinguished Professor:* G. L. Schmeling *(Emeritus)*. *Professors:* K. V. Hartigan; L. A. Sussman; D. C. Young. *Associate Professors:* S. K. Dickison; M. A. Eaverly; T. Johnson; K. Kapparis; R. S. Wagman. *Assistant Professor:* J. Rea.

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. Complete descriptions of the requiremens for these degrees are provided in the *General Information* section of this catalog.

Within the Ph.D. program there are three areas of specialization: 1) Latin and Roman studies, 2) classical civilization, and 3) philology. The Master of Arts degree with a major in classical studies. Requirements for the doctoral degree include 60 credit hours after the M.A. (or a total of 90 credit hours); LNW 6935—Proseminar in Classics; five additional seminars after the M.A., plus one course in either Greek or Latin prose composition; a reading knowledge of two modern Languages, one of which must be German; a reading list of Greek and Roman authors; a supervised experience in teaching at least one Latin or Greek course and assisting in one or more civilization courses in translation; sight translation

examinations in Greek and Latin (these must be passed before taking the qualifying examinations); qualifying examinations; dissertation; and final examination.

The M.A. degree in classical studies is recommended for students who plan to continue their studies at the doctoral level. The M.A. degree in Latin is recommended for students who do not plan to continue at the doctoral level, but plan to pursue a career in teaching. Both M.A. programs require 30 credit hours include 6 credits of GRW or LNW 6971, a thesis, and final examination.

The Master of Latin degree is a nonthesis 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 as well as directed independent study and/or distance learning courses during the regular academic year.

The nonthesis degree, Master of Arts in Teaching, is also offered with a program in Latin and is intended for students preparing to teach in community colleges or high schools.

Because most teachers cannot afford to leave their jobs, their families, and their homes for extended courses of study, the Department of Classics offers graduate-level distance courses during the regular academic year (fall and spring). These courses, in conjunction with the Department's long-standing two-week summer institutes in Latin, extend to teachers–no matter where they reside–workable paths to certification, re-certification, an M.A., and the Ph.D.

CLA 6125—Augustan Age (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: B.A. in classics or related field.* Grounding in monuments of ancient Greece and Roman, and history and methodology of classical archeology.

CLA 6885—Roman Law and Society (3) 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 (3) *Prereq: 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 6930—Greece and the Near East (3; max: 9) Rotating topics concerning political, economic, diplomatic, and cultural interaction between Greek world and its neighbors in the East.

CLT 6295—Greek Drama in Translation (3) *Prereq: 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.

GRE 6755—Epigraphy (3; max: 6) *Prereq: 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.

GRW 6216—Greek Novel (3; max: 6) Selections from ancient Greek novels.

GRW 6316—Greek Tragedy (3; max: 9) *Prereq: 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 (3) *Prereq: advanced reading ability in Greek.* Reading and study of ancient Greek comedy, with selected plays by Aristophanes and Menander.

GRW 6345—Greek Lyric Poetry (3; max: 6) Variety and peculiarities of lyric content, style, grammar, structure, dialect, and meter shown through selected poems.

GRW 6346—Pindar (3; max: 6) Selected poems.

GRW 6347—Homer (3; max: 6) Reading's from *Iliad* and *Odyssey.*

GRW 6506—Plato (3; max: 6) Reading of *Symposium* and selected books of the *Republic*.

GRW 6905—Individual Work (2-4; max: 10) *Prereq: graduate standing or consent of instructor.* Readings and reports in Greek language and literature.

GRW 6931—Comparative Study of Greek and Latin Literature (3) Study of genre types.

GRW 6971—Research for Master's Thesis (1-3) *Prereq: reading knowledge of ancient Greek at advanced level.* S/U.

GRW 7979—Advanced Research (3-12) 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. S/U.

GRW 7980—Research for Doctoral Dissertation (1-15) S/U.

LAT 6425—Latin Prose Composition (3) Translating English into Latin and imitation of various Latin prose styles.

LNW 5655—Roman Poets: Horace (3; max: 6) Horace's poetry and metrics.

LNW 5665—Roman Poets: Vergil (3; max: 6) The poetic art of Vergil and its literary, historical, and political background.

LNW 5675—Roman Poets: Ovid (3; max: 6) Ovid's poetic art against its literary, historical, and political background.

LNW 6225—The Ancient Roman Novel (3; max: 6) Readings from Petronius and/or Apuleius.

LNW 6335—Roman Oratory and Rhetoric (3; max: 6) 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 (3; max: 6) Readings from Horace, Persius, Petronius, Juvenal, Martial.

LNW 6385—Roman Historians (3; max: 9) Readings from major historians: Sallust, Caesar, Livy, Tacitus, Suetonius, and others.

LNW 6495—Late Latin Literature (3) Readings from one or more of the following: Vulgate, Christian Church Fathers, Historia Apollonii, Peregrinatio Aetheriae, Harrington's Medieval Latin.

LNW 6905—Individual Work (2-4; max: 10) Readings and reports in language and literature.

LNW 6933—Special Topics in Latin Literature (3; max: 6) *Prereq: graduate standing or consent of instructor.* Intensive study of particular author, genre, period, or subject.

LNW 6935—Proseminar in Classics (3) Introduction to the study of classical literature, history of scholarship, bibliographies, areas of the discipline.

LNW 6940—Supervised Teaching (1-5; max: 5) S/U.

LNW 6971—Research for Master's Thesis (1-15) S/U.

LNW 7979—Advanced Research (3-12) 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. S/U.

LNW 7980—Research for Doctoral Dissertation (3-12) S/U.

Clinical and Health Psychology

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chairman: R. H. Rozensky. *Graduate Coordinator:* R. M. Bauer. *Graduate Research Professor:* P. J. Lang. *Professors:* R. M. Bauer; C. D. Belar; W. K. Berg; B. A. Crosson; S. M. Eyberg; E. B. Fennell; I. S. Fischler; R. G. Frank; J. Graham-Pole; M. Heft; K. Heilman; J. H. Johnson; C. M. Levy; M. E. Meyer; S. E. Nadeau; M. G. Perri; M. E. Robinson; J. R. Rodrigue; R. H. Rozensky; B. R. Schlenker; J. Silverstein; E. Valenstein. *Associate Professors:* S. R. Boggs; D. Bowers; R. Bussing; R. B. Fillingim; G. R. Geffken; M. Marsiske; S. F. Sears; R. L. West; K. D. White. *Clinical Associate Professors:* G. Ashkanazi; D. E. Dede; T. Kerkhoff; C. Strauss. *Assistant Professors:* S. C. Heaton; D. Janicke; A. B. Moore; D. Pereira;W. M. Perlstein; J. L. Riley. *Research Assistant Professors:* M. M. Bishop; B. A. Wiens.

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; the Center for Clinical and Health Psychology, a teaching and service unit of the Shands Hospital; an American Psychological Association accredited doctoral internship program; and postdoctoral studies and research.

Complete descriptions of the requirements for the M.S. and Ph.D. degrees are provided in the *General Information* section of this catalog.

The clinical psychology doctoral curriculum adheres to the scientist-practitioner model. 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 and the psycho-physiology of emotion. A minor is offered in health services administration.

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.

CLP 5316—Health Psychology (3) *Prereq: PSY 2013.* Examination of 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 (3) *Prereq: PSY 2013, CLP 3144.* Overview of clinical and experimental data on brain-cognition relationships in humans.

CLP 6304—Psychological Foundations of Clinical Psychology I (2-3; max: 3) History and systems of psychology, social psychology, developmental psychology, and cognitive psychology foundations of clinical psychology.

CLP 6307—Human Higher Cortical Functioning (3) Models that explain linkages between brain and behavior. Focus on both functions and dysfunctions.

CLP 6308—Psychological Foundations of Clinical Psychology II (2-3; max: 3) *Prereq: CLP 6304.* Continuation of CLP 6304.

CLP 6309—Psychological Foundations of Clinical Psychology III (2-3; max: 3) *Prereq: CLP 6308.* Continuation of CLP 6308.

CLP 6344C—Lifespan Foundations of Behavioral Health and Illness I (4) *Prereq: 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 (4) *Prereq: CLP 6344.* Continuation of CLP 6344.

CLP 6375—Introduction to Clinical Psychology (1-3; max: 3) *Prereq: admission to CLP.* Seminar on issues and concepts concurrent with field observation and participation.

CLP 6407—Psychological Treatment I (3) *Prereq: admission to CLP or consent of instructor.* Current dynamic and personality theories, practices, and related research in psychotherapy.

CLP 6417—Psychological Treatment II (3) *Prereq: admission to CLP or consent of instructor.* Current behavioral theories, practices, and related research.

CLP 6425—Seminar in Clinical Neuropsychology (1; max: 6) *Prereq: graduate students only and permission of director.* Basic issues and recent advances. Presentation of research topics, clinical cases, and discussion of professional issues.

CLP 6434C—Clinical Psychology Assessment I (4) *Prereq: CLP 6345.* Lifespan approach to assessment with special focus on cognitive functioning.

CLP 6435C—Clinical Psychology Assessment II (4) *Prereq: CLP 6345.* Lifespan approach to assessment with special focus on personality and behavior.

CLP 6446C—Psychological Assessment of Children (3) *Prereq: admission to CLP or consent of instructor.* Developmental, intellectual, visual-motor, achievement, and personality assessment of children.

CLP 6447C—Psychological Assessment of Adults (3) *Prereq: admission to CLP or consent of instructor.* Basic theories, procedures and administration experience in assessment of adult intellect and personality factors.

CLP 6497—Psychopathological Disturbances (3) *Prereq: 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 (4) *Prereq: 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 (4) *Prereq: CLP 6527C.* Continuation of CLP 6527C.

CLP 6905—Individual Work (1-4; max: 12) Reading or research in areas in clinical psychology.

CLP 6910—Supervised Research (1-4; max: 5) S/U.

CLP 6940—Supervised Teaching (1-5; max: 5) S/U.

CLP 6943—Practicum in Clinical Psychology (1-4; max: 8) *Prereq: consent of program director.* Supervised training in appropriate work settings. S/U.

CLP 6945—Practicum in Neuropsychology (1-3; max: 3) *Prereq: CLP 7427, consent of area head and program director.* Supervised clinical experience in neuropsychological assessment and cognitive rehabilitation of patients with neurologic impairments. S/U.

CLP 6946—Practicum in Applied Medical Psychology (1-3; max: 8) *Prereq: 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. S/U.

CLP 6947—Advanced Practicum in Clinical Psychology (1-4; max: 18) *Prereq: consent of program director.* Designed for individual with special interests and needs. S/U.

CLP 6948—Practicum in Clinical Child Psychology (1-3; max: 8) *Prereq: CLP 6943, consent of area head and program director.* Supervised clinical experiences working with children or adolescents in either inpatient or outpatient settings. S/U.

CLP 6971—Research for Master's Thesis (1-15) S/U.

CLP 7317—Advanced Health Psychology and Behavior Medicine (3) *Prereq: 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 (3; max: 12) *Prereq: CLP 6407, 6417, or consent of instructor.*

CLP 7427C—Neuropsychological Assessment of Children (3) *Prereq: PSB 6067 or consent of instructor.* Research, theory, and basic procedures.

CLP 7428C—Neuropsychological Assessment of Adults (3) *Prereq: PSB 6067 or consent of instructor.* Research, theory, and basic procedures.

CLP 7934—Special Topics In Clinical Psychology (1-9; max: 15) *Prereq: admission to CLP.* Advanced seminar for in-depth examination of selected issues and topics.

CLP 7949—Internship (1-2; max: 6) *Prereq: 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 two semester sequence. S/U.

CLP 7979—Advanced Research (1-12) 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. S/U.

CLP 7980—Research for Doctoral Dissertation (1-15) S/U.

DEP 6216—Psychological Disturbances of Children (3) *Prereq: admission to CLP or PSY or consent of instructor.* Stresses both affective and cognitive.

GEY 7408—Psychotherapy with Older Adults (3) *Prereq: 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.

Clinical Investigation

College of Medicine

Graduate Faculty 2004-2005

Director: M. C. Limacher. *Eminent Scholar:* D. J. Barrett. *Professors:* N. Asal; M Brantly; D. Driscoll; M. Heft; J. Johnson; P. J. Laipis; M. C. Limacher; S. A. Moyer; S. Roberts; P. W. Stacpoole; C. Sumners. *Associate Professors:* W. T. McCormack; N. McKay. *Assistant Professor:* C. Garvan.

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. The 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 investigation 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). Contact Dr. Marian Limacher, Program Director, for more information, P.O. Box 100277, Health Science Center, Gainesville, FL 32610.

In addition to the courses listed below, the following courses are part of the core curriculum: GMS 6971—Research for Master's Thesis, STA 6934—Survey of Biostatistical Methods.

The following courses are approved for graduate credit toward the M.S. concentration in clinical investigation: GMS 6181—Special Topics in Microbiology, GMS 6800—Principles of Epidemiology, GMS 6910—Supervised Research, and PET 5936—Current Topics in Exercise and Sport Sciences.

GMS 6903—Manuscript and Abstract Writing for Clinician/Scientists (2) *Prereq: consent of instructor.* Didactic and interactive sessions to improve quality of manuscript and abstract writing.

GMS 6931—Ethical and Policy Issues in Clinical Research (2) Ethical and policy issues related to conduct of clinical research. Basic understanding of regulations that govern human subject research and introduction to topic of research with animals.

Communication Sciences and Disorders

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: W. S. Brown, Jr. *Graduate Coordinator:* S. K. Griffiths. *Professors:* P. J. Antonelli; W. S. Brown, Jr.; R. H. Carpenter; N. J. Cassissi; C. C. Crandell; M. A. Crary; K. J. Gerhardt; L. J. Gonzalez-Rothi; J.W. Hall; H. F. Hollien *(Emeritus);* A. E. Holmes; F. J. Kemker; P. B. Kricos; L. J. Lombardino; J. Rosenbek; H. B. Rothman *(Emeritus);* C. M. Sapienza; G. T. Singleton; D. E. Williams *(Emeritus);* W. N. Williams; G. Woodson. *Associate Professors:* S. K. Griffiths; K. J. Logan. *Assistant Professors:* L. Altmann; B. W. Johnson; D. Kendall; R. Shrivastav; B. P. Vinson.

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. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Major areas of emphasis include audiology, phonetic science, and speech-language pathology. Students, in conjunction with their supervisory committees, develop graduate programs to meet their specific needs and interests. Graduate specializations and programs in speech-language pathology and audiology are accredited by the Council on Academic Accreditation/American Speech-Language-Hearing Association.

The Department of Communication Sciences and Disorders, in conjunction with the Department of Communicative Disorders in the College of Health Professions, offers the Doctor of Audiology (Au.D.) degree. Graduate students take course work in both departments in theoretical and applied audiologic sciences and research.

Students must contact the graduate coordinator to obtain information about specific specialty requirements. Application deadline for fall admission to the M.A. and Au.D. programs is February 1. Entering master's students with deficiencies in the major area of study or with a bachelor's degree in another field of study must fulfill basic prerequisites during the first year of graduate work. There are no specific undergraduate courses required for admission to the Au.D. degree program.

LAE 6505—Applied Preschool Language Disorders: Diagnosis and Treatment (3) Seminar and practicum in diagnoses and treatment of preschool children with language learning disabilities.

SPA 5051—Initial Clinical Experience in Audiology (1) *Prereq: For beginning graduate students in audiology.* Opportunity to observe various phases of audiologic practice and to accumulate minimum of 15 hours of observation experience.

SPA 5102—Auditory Anatomy and Physiology (2) 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 (2) 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 (3) Advanced principles of diagnosis and remediation.

SPA 5211—Voice Disorders (3) Advanced theory and techniques of diagnosis and remediation.

SPA 5225—Principles of Speech Pathology: Stuttering (3) Advanced theories and techniques of diagnosis and therapy.

SPA 5245—Communicative Disorders Related to Cleft Palate (3) *Prereq: SPA 5204, 5211, 5403.* Lectures and laboratory study of the "team approach" and interdisciplinary aspects of communicative disorders in the cleft palate individual.

SPA 5304—Principles of Audiological Evaluation (3) Advanced procedures in speech audiometry, masking, and audiogram interpretation.

SPA 5315—Peripheral and Central Auditory Disorders (2) 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 5347—Amplification I (2) Theoretical and applied understanding of current technology in amplification systems for hearing impaired. Part in seminar format (2/3) and remainder in context of clinical laboratory activities.

SPA 5404—Language Disorders I (3) Advanced theory and techniques of diagnosis and remediation of language disorders in infants and preschoolers.

SPA 5405—Language Disorders II (3) Detailed examination of language intervention programs and nonvocal communication systems.

SPA 5553—Instrumentation and Diagnosis in Speech-Language Pathology (2) Hands-on experience in use of instrumentation in diagnosis.

SPA 5563—Psychosocial Aspects of Hearing Loss (2) Psychological implications of hearing impairment. Specifically psychoeducational/psychosocial and counseling strategies and rehabilitation procedures for patient and family management.

SPA 5627—Manual Communication with the Hearing Impaired (1; max: 3) Overview of signing systems, including ASL, Signed English, and Signing Exact English. Emphasis on signing skills most useful to audiologist.

SPA 5646—Speech and Language of the Deaf and Hard of Hearing (2) Advanced principles and procedures in the assessment and development of speech and language in individuals with hearing loss.

SPA 6010—Basic Auditory Sciences (3) Nature of sound, structure and function of auditory system, frequency selectivity, auditory filtering, and psychoacoustics of pure tones and complex sounds.

SPA 6133L—Hearing Aid Analysis Laboratory (1) *Coreq: SPA 6345.* Advanced analysis and description of electroacoustical properties of hearing aids.

SPA 6207—Applied Phonological Disorders: Diagnosis and Treatment (3) *Prereq: majors only.* Seminar and practicum.

SPA 6211—Applied Voice Disorders: Diagnosis and Treatment (3) *Prereq: majors only.* Seminar and practicum.

SPA 6229—Applied Fluency Disorders: Diagnosis and Treatment (3) *Prereq: majors only.* Seminar and practicum.

SPA 6233—Speech Motor Control Disorders (3) Consideration of both developmental and acquired neurogenic speech disorders and their associated neuropathology, etiology, characteristics, assessment practices, and treatment strategies.

SPA 6270—Auditory Processing Disorders (3) *Prereq: SPA 5304, 5102.* Anatomy and physiology of central auditory nervous system and disorders of auditory processing that occur in humans. Focus on evaluation and treatment of auditory processing disorders.

SPA 6300—Introduction to Graduate Research (3) *Required of all graduate students specializing in speech-language pathology or audiology.*

SPA 6305—Pediatric Audiology (3) *Prereq: SPA 6313.*

SPA 6316—Clinical Auditory Electrophysiology (3) Auditory electrophysiological measures used in clinical assessment.

SPA 6317—Vestibular Disorders (2) *Prereq: 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 (2) Exploration of theoretical and clinical literature. Description of assessment and management strategies.

SPA 6324—Audiologic Rehabilitation for Children (2) Exploration of theoretical and clinical literature. Assessment and therapy techniques for children.

SPA 6410—Adult Language Disorders (3) 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 (3) *Prereq: majors only.* Seminar and practicum.
SPA 6430—Applied Developmental Disorders: Diagnosis and Treatment in Speech and Language (3) *Prereq: majors only.* Seminar and practicum.
SPA 6506—Clinical Clerkship in Audiology (1; max: 3) Beginning level audiologic practicum.
SPA 6507—Applied Augmentative and Alternative Communication (3) 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 (1-6; max: 6) *Prereq: SPA 5553.*
SPA 6524—Practicum in Speech-Language Therapy: UFSHC (1-6; max: 6)
SPA 6531—Clinical Practice in Hearing Assessment (1-6; max: 6)
SPA 6533—Clinical Practice in Aural Rehabilitation (1-6; max: 6)
SPA 6559—Alternative and Augmentative Communication (2) *Prereq: SPA 5403, 5405.* Survey of issues and research into use of unaided and aided augmentative and alternative communication methods by persons with deficits in speech and writing.
SPA 6564—Communication and Aging (3) Characteristics of, and management approaches for, communication disorders found with some frequency in elderly. Communication enhancement stressed.
SPA 6565—Seminar in Dysphagia (3) Anatomy, physiology, and neurology of normal swallow. Review of further diagnostic procedures and treatment protocols.
SPA 6570—Seminar: Professional Aspects of Speech-Language Pathology (3) 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 6905—Individual Study (1-3; max: 9) *Prereq: consent of instructor.* Supervised study of specialized topic or research project.
SPA 6910—Supervised Research (1-5; max: 5) *Prereq: SPA 6300, and instructor's approval.* S/U.
SPA 6920—Amplificiation III (2) Theoretical and applied understanding of current and future technology in amplification systems in (1) recent advances in programmable and digital hearing aids, (2) hearing aid selection procedures for special populations, (3) assistive learning devices, and (4) classroom amplification systems.
SPA 6930—Proseminar in Speech-Language Pathology and Audiology (1; max: 6) Faculty and graduate student research in speech-language pathology, audiology, and related disciplines. S/U.
SPA 6935—Applied Reading Disabilities: Diagnosis and Treatment (3) *Prereq: majors only.* Seminar and practicum in diagnosis and treatment of developmental reading disabilities.
SPA 6936—Special Topics (3; max: 9) *Prereq: consent of instructor.* Theory and research in communication.
SPA 6940—Supervised Teaching (1-5; max: 5) S/U.
SPA 6942—Externship in Speech-Language Pathology (7-12; max: 12) 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 (1-15) S/U.
SPA 7318—Clinical Auditory Electrophysiology (5) *Open only to students in distance learning Au.D. program.* Understanding of 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 (5) *Open only to students in distance learning Au.D. program.* Understanding of how humans maintain balance, contribution of inner ear to balance, disorders of balance, and approaches to rehabilitation of these disorders.
SPA 7325—Audiologic Rehabilitation (5) *Open only to students in distance learning Au.D. program.* State-of-the-art information on current philosophies and practice patterns for audiologic habitation/rehabilitation.
SPA 7348—Principles of Amplification (5) *Open only to students in distance learning Au.D. program.* Recent information regarding amplification systems.
SPA 7353—Environmental Hearing Conservation (5) *Open only to students in distance learning Au.D. program.* Recent information regarding causes of hearing loss, prevention strategies, and basic mechanisms underling noise-induced hearing loss.
SPA 7354—Seminar in Audiology: Hearing Conservation and Noise Control (3)
SPA 7500—Public School Practicum (1-3; max:10) *Prereq: majority of preprofessional courses.* Experience in partial fulfillment of department's clinical requirements.
SPA 7523—Practicum in Speech Pathology in a Medical/Dental Setting (1-6; max: 6) *Prereq: SPA 6521, 6524, and consent of department.*
SPA 7566—Counseling Individuals with Hearing Losses (5) *Open only to students in distance learning Au.D. program.* Recent information about counseling.
SPA 7979—Advanced Research (1-12) 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. S/U.
SPA 7980—Research for Doctoral Dissertation (1-15) S/U.

Communicative Disorders

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chair: J. Rosenbek. *Graduate Coordinator:* A. E. Holmes. *Professors:* A. E. Holmes; M. Crary; F. J. Kemker*(Emeritus)*. *Clinical Professors:* J. Hall; J. Rosenbek. *Assistant Professor:* H. K. Seung.

The Department offers the Doctor of Audiology (Au.D.) degree in conjunction with the Department of Communication Sciences and Disorders in the College of Liberal Arts and Sciences. A complete descriptions of the requirements for this degree is provided in the *General Information* section of this catalog.

The Department of Communicative Disorders also participates in the College of Public Health and Health Profession's Ph.D. program in rehabilitation science by offering a specialization in communication neuroscience. In addition, the Department offers advanced clinical training for interns and practicum students

through the Speech and Hearing Center, a clinical service unit of Shands Hospital at the University of Florida.

The Department has academic ties with other colleges and departments within the University and with the training and service programs of the Shands Health Care System and the Veterans Administration Medical Center, including the Brain Rehabilitation Research Center and the Rehabilitation Outcomes Research Center.

Admission to degree granting programs is via application to the respective faculty committees. The graduate coordinator may be contacted for further information.

CAS 5348—Amplification II (2) *Prereq: SPA 5347.* Digital and programmable technology in hearing aids.

CAS 6191—Medical Audiology (2) differential diagnosis of hearing impairment.

CAS 6195—Medical Aspects of Speech-Language Pathology (1) *Prereq: CAS 7946.* Overview of speech pathologist's role in medical environment.

CAS 6291—Cochlear Implants (2) *Prereq: CAS 5348.* Principles and procedures for implant management from pre-candidacy evaluations through postoperative therapies.

CAS 6294—Advanced Audiology and Neuro-Otology (2) *Prereq: CAS 6191.* Medical description, case presentation, and management of hearing loss.

CAS 6295—Communication Disorders in Medically Complex Pediatric Populations (3) *Prereq: CAS 6195.* Clinical research.

CAS 6299—Dysphagia Management (3) *Prereq: anatomy and physiology, and basic neuroanatomy.* Introductory. Focus on management of swallowing disorders in adults.

CAS 6390—Professional Issues: Hearing Care Delivery (2) Federal and state regulations, audiologic jurisprudence, audiological management, and interfacing with other professionals.

CAS 6430—Clinical Evaluation in Medical Speech-Language Pathology (3) *Prereq: CAS 6195.* Framework for evaluating communication and swallowing skills of patients at all levels of care across many types of disorders.

CAS 6437C—Management of Acquired Sensorimotor Communication Disorders in a Medical Setting (3) *Prereq: basic course in neurogenic communications disorders and CAS 6195.* Review of neuroanatomy, cognitive and information processing theories of speech/language production and impaired processing system. Patient interaction in terms of theoretically based diagnostic evaluation, treatment plan, and case presentation.

CAS 6630—Specific Clinical Topics (1-9; max: 12) Advanced study in specific areas of clinical process.

CAS 6780—Supervised Clinical Research (1-9; max: 9) Research on clinical topics with intended outcome focused on improved knowledge of clinical process. S/U.

CAS 7308—Business and Professional Issues in Audiology (5) *Open only to students in distance learning Au.D. program.* Overview of healthcare system, place of audiology in system, current issues facing profession, ethics of audiologic practice, provision of reimbursement for services, and personnel management.

CAS 7391—Audiologic Assessment in a Medical Setting (5) *Open only to students in distance learning Au.D. program.* Information on audiologic and medically related aspects of hearing disorders.

CAS 7393—Cochlear Implants and Assistive Devices (5) *Open only to students in distance learning Au.D. program.* Fitting practices and future directions.

CAS 7435C—Clinical Instrumentation for Evaluation of Upper Aerodigestive Tract Functions (3; max: 3) Introduction to instrumentation used in clinical evaluation and treatment and clinical research. Experiential component.

CAS 7770—Audiology Research Project (3-6; max: 6) S/U.

CAS 7780—Advanced Clinical Research (1-12; max: 12) Advanced clinical research topics in speech-language pathology and audiology. S/U.

CAS 7945—Graduate Practicum in Audiology (3-6; max:15) Intermediate clinical practicum in for Au.D. students.

CAS 7946—Clinical I: Practicum in Medical Speech Pathology (1-10; max: 10) *Prereq: minimum 50 clock hours of graduate clinical practicum* S/U.

CAS 7947—Clinical II: Practicum in Advanced Medical Speech-Language Pathology (1-10; max: 10) *Prereq: minimum 5 hours of CAS 7946 or equivalent* S/U.

CAS 7958—Clinical Externship (3-12; max: 36) *Prereq: 12 hours of CAS 7945.*

CAS 7959—Clinical III: Internship in Medical Speech-Language Pathology (1-12; max: 24) S/U.

CAS 7980—Research for Doctoral Dissertation (1-15) S/U.

HSC 6905—Independent Study (1-3; max: 12)

SPA 6436—Issues in Autism Spectrum Disorders (3) Review of related issues including diagnosis, intervention, and current research.

Comparative Law

Fredric G. Levin College of Law

Graduate Faculty 2004-2005

Director and Graduate Coordinator: D. M. Hudson. *Associate Dean for Academic Affairs:* M. K. Friel. *Associate Dean for International Studies:* S. R. Cohen. *Eminent Scholars:* J. H. Israel; L. A. Lokken. *Stephen C. O'Connell Distinguished Professor:* W. O. Weyrauch. *Stephen C. O'Connell Professors:* J. L. Harrison; C. Slobogin. M. J. Macmahon Jr. *Chesterfield Smith Professors:* F. N. Baldwin; N. E. Dowd; M. W. Gordon. *Levin Mabie and Levin Professor:* B. E. Hernandez. *Irving Cypen Professor:* S. E. Rush. *Samuel T. Dell Research Scholars:* T.R. Hurst; W. P. Nagan. *Gerald A. Sohn Scholar:* J. Davis. *Alumni Research Scholars:* D. A. Calfee; J. W. Little. *Professors:* G. L. Dawson; P. E. Dilley; A. C. Flournoy; D. M. Hudson; M. A. Oberst; D. Peters; D. M. Richardson; S. J. Willis. *Assistant Professor:* S. L. Russell-Brown.

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. A complete description of the requirements for this degree is provided in the *General Information* section of this catalog.

The program begins with Introduction to American Law, a four-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 prior to the start of the academic year. During the fall and spring semesters, 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. A special curriculum for students enrolled in this program can result in the simultaneous award of the Certificate of Specialization in International Tax Studies. For admission information consult the *College of Law Prospectus* or write to the

Comparative Law Office P.O. Box 117643, University of Florida, Gainesville, FL 32611-7643 USA.

LAW 7906—Directed Research for LL.M. in Comparative Law (1-2; max: 2) Legal research to be completed under supervision of faculty member conversant with topic selected and culminating in a paper.

LAW 7932—Introduction to American Law (4) Intensive five-week introduction to American legal education, the legal system, and legal writing as well as to the resources in the Legal Information Center.

Computer and Information Sciences and Engineering

College of Engineering

Graduate Faculty 2004-2005

Chair: S. Sahni. *Associate Chair:* S. M. Thebaut. *Graduate Coordinator:* J. K. Peir. *Distinguished Professors:* S. K. Sahni; S. Y. W. Su. *Professors:* S. S. Chen; Y. C. Chow; P. A. Fishwick; J. A. Fortes; L. M. Fu; P. D. Gader; S. Helal; S. Ranka; G. X. Ritter; F. J. Taylor; C. Vemuri. *Associate Professors:* M. E. Bermudez; T. A. Davis; J. Hammer; H. Lam; J. C. L. Liu; J. K. Peir; J. Peters; A. Rangarajan; B. Sanders; M. Sitharam. *Assistant Professors:* A. Banerjee; S. Chen; D. D. Dankel; A. Dobra; C. Jermaine; P. Livadas; B. Lok; R. E. Newman; M. Schneider; S. M. Thebaut; J. N. Wilson; Y. Xia.

The Department of Computer and Information Science and Engineering (CISE) offers the Master of Engineering, Master of Science, Engineer, and Ph.D. degrees in computer engineering through the College of Engineering, the Master of Science degree in digital arts and sciences through the College of Engineering, and the Master of Science degree in computer science through the College of Liberal Arts and Sciences. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

There are five broad areas of specialization in the Department: **computer systems**, which include 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**, which include 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**, which include 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**, which include modeling methodology, simulation, virtual reality, aesthetic computing, computer arts, animation, real-time rendering, medical modeling, digital media, and musical acoustics; and **intelligent systems and computer vision**, which include artificial intelligence, machine learning, visualization, image analysis and processing, pattern recognition, signal processing, biomedical imaging, and image databases.

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 four specified graduate level courses (12 credits) or their approved equivalents. No more than one of the core courses may have a grade lower than B. A grade of D or below in any core course will necessitate retaking that course. Students can select a thesis or nonthesis option for the master's degree. Both options require a minimum of 30 credit hours. The thesis degree requires an additional 12 credits of course work beyond the core (a minimum of 6 graduate level credits in CISE and at most 6 credits in some other department in the student's college), and a written thesis. A minimum of 6 credit hours must be taken in CIS 6971. The nonthesis option requires an additional 12 letter-graded credits of course work in CISE beyond the core and 6 letter-graded credits from either CISE or some other department in the student's college. Each nonthesis master's student is required to pass an oral comprehensive examination.

To be admitted to the Engineer degree program, students must have completed a master's degree in engineering. To earn the degree of engineer, a student must obtain at least a 3.0 GPA in at least 30 graduate credit hours beyond the master's degree, within five calendar years of enrollment. These credit hours may include CIS 6972, Research for Engineer's Thesis. Both thesis and nonthesis options exist for the Engineer degree. Note that credits counted toward the degree are not credited toward any other degree__including the Ph.D. if a Ph.D. is subsequently pursued.

To demonstrate breadth and proficiency, all Ph.D. students must take five required core courses plus five optional courses from a prescribed list. Students must maintain an average of at least 3.0 in the core courses with no more than one of the courses receiving a letter grade below B.

Ph.D. students are required to take a minimum of 90 credit hours. Of these, at least 42 hours must be graduate level CISE course work. A minimum of 15 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.

CAP 5416—Computer Vision (3) *Prereq: 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 (3) *Prereq: 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 (3) 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 (3) *Prereq: 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 (3) *Prereq: COP 3530.* Display device characteristics; system considerations, display algorithms. Curve and surface generation. Lighting models and image rendering.

CAP 5805—Computer Simulation Concepts (3) *Prereq: COP 3530.* Introduction to concepts in continuous and discrete simulation. Empasis on fundamental concepts and methodology, using practical examples from a wide variety of disciplines.

CAP 6402—Aesthetic Computing (3) *Prereq: CAP 5705, 5805* Principles of artistically motivated, personalized representations of formal model structures in computing and mathematics.

CAP 6516—Medical Image Analysis (3) *Prereq: 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 (3) *Prereq: CAP 5635.* Review of attempts, within the artificial intelligence community, to construct computer programs that learn. Statistical pattern recognition with its applications to such areas as optical character recognition. Inductive learning, automated discovery.

CAP 6615—Neural Networks for Computing (3) *Prereq: 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 6685—Expert Systems (3) *Prereq: 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 (3) *Prereq: CAP 4730 or 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 6836—Advanced Concepts in Computer Simulation (3) *Prereq: CAP 5805.* Elements of simulation modeling and analysis. Discrete and continuous simulation methodology. Incorporation of computer animation and physically based modeling techniques.

CDA 5155—Computer Architecture Principles (3) *Prereq: 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 6159—High Performance Computer Architecture (3) *Prereq: 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.

CEN 5035—Software Engineering (3) *Prereq: CIS 3020 and COT 3100.* Topics in projects organization, specification techniques, reliability measurement, documentation.

CEN 5531—Mobile Computing (3) *Prereq: CEN 4500C.* 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.

CEN 5540—Computer and Network Security (3) *Prereq: COP 3530, COT 5405; coreq: COP 4600.* Issues, analysis, and solutions. Viruses, worms, logic bombs, network attacks, covert channels, steganography, cryptology, authentication, digital signatures, electronic commerce.

CEN 6070—Software Testing and Verification (3) *Prereq: 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 (3) *Prereq: CEN 5035.* Concepts, principles, and methods for practical specification. System modeling, requirements exploration, validation and prototyping, and documentation techniques.

CEN 6505—Advanced Computer Networks (3) *Prereq: COP 5615, 5536, and CEN 5501C.* Computer network architecture, including topologies, media, switching, routing, congestion control, protocols, and case studies.

CIS 6905—Individual Study (1-3; max: 6) *Prereq: consent of faculty member supervising the study.* S/U option.

CIS 6910—Supervised Research (1-5; max: 5) *Prereq: graduate status in CIS.* S/U.

CIS 6930—Special Topics in CIS (3; max: 9) *Prereq: vary depending on topics.*

CIS 6940—Supervised Teaching (1-5; max: 5) *Prereq: graduate status in CIS.* S/U.

CIS 6971—Research for Master's Thesis (1-15) S/U.

CIS 7979—Advanced Research (1-12) 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. S/U.

CIS 7980—Research for Doctoral Dissertation (1-15) S/U.

COP 5255—Concurrent Programming (3) *Prereq: COP 3100, 3530.* Overview of principles and programming techniques. Reasoning about concurrency, synchronization, program structuring, multi-threaded server applications.

COP 5536—Advanced Data Structures (3) *Prereq: 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 (3) *Prereq: 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—Operating System Principles (3) *Prereq: COP 4600.* The concepts and techniques of efficient management of computer system resources.

COP 5625—Programming Language Translators (3) *Prereq: COP 5555.* Anatomy of translators for high-level programming languages.

COP 5725—Database Management Systems (3) *Prereq: COP 3530, 4600, or equivalent.* An introduction to systems and procedures for managing large computerized databases.

COP 6726—Database System Implementation (3) *Prereq: COP 4600 and 4720 or 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 (3) *Prereq: COP 5615, 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 5xxx—Computational Geometry (3) *Prereq: COP 3530.* Design, analysis, and implementation of algorithms and date 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 5405—Analysis of Algorithms (3) *Prereq: COP 3530.* Introduction and illustration of basic techniques for designing efficient algorithms and analyzing algorithm complexity.

COT 6315—Formal Languages and Computation Theory (3) *Prereq: COP 3530 and familiarity with discrete mathematics and data structures.* Introduction to theoretical computer science including formal languages, automata theory, Turing machines, and computability.

Counselor Education

College of Education

Graduate Faculty 2004-2005

Chairperson: M. H. Daniels. *Graduate Coordinator:* P. A. D. Sherrard. *Professors:* E. S. Amatea; J. A. Archer; M. H. Daniels; L. C. Loesch; J. L. Resnick; P. G. Schauble. *Clinical Professor:* M. Fukuyama. *Associate Professors:* S. Echevarria-Doan; J. H. Pitts; P. A. D. Sherrard. *Clinical Associate Professor:* W. D. Griffin. *Assistant Professors:* M. A. Clark; S. Smith-Adcock.

Programs leading to the Master of Arts in Education, Master of Education, Specialist in Education, Doctor of Education, and Doctor of Philosophy degrees are offered through this department. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

In all programs, the Master of Education degree (identified below by an asterisk) is awarded only upon completion of the Specialist in Education degree; however, course work toward the Specialist in Education degree completed after 60 semester hours is considered post-master's level work. Program areas include (1) school counseling and guidance (M.A.E., M.Ed.,* Ed.S., Ed.D., or Ph.D.) for positions in elementary, middle, and secondary schools; (2) mental health counseling (M.A.E., M.Ed.,* Ed.S., Ed.D., or Ph.D.); and (3) marriage and family counseling (M.A.E., M.Ed.,* Ed.S., Ed.D., or Ph.D.) for positions in community, private, educational, or business and industry counseling agencies or settings.

The entry and advanced-level school counseling and guidance; mental health counseling; and marriage and family counseling programs are accredited by the Council for the Accreditation of Candidates for admission are urged to complete a course in basic statistics before entering a program.

MHS 5005—Introduction to Counseling (3)

MHS 6xxx—Assessment and Treatment of Violence in Families (3) *Prereq: MHS 6401.* Clinically oriented, research-based overview of assessing and treating family violence.

MHS 6020—Counseling in Community Settings (3) *Prereq: MHS 7800; coreq: current enrollment in mental health counseling practicum or internship.*

MHS 6061—Spiritual Issues in Multicultural Counseling (3) Spiritual/religious/transpersonal issues expressed in counseling from both client and counselor perspective.

MHS 6071—Diagnosis and Treatment of Mental Disorders (3) *Prereq: MHS 6400, 6401.*

MHS 6200—Assessment in Counseling and Development (3) *Prereq: course in basic statistics.*

MHS 6340—Career Development (3)

MHS 6401—Counseling Theories and Applications (3) *Prereq: MHS 5005.*

MHS 6421—Play Counseling and Play Process with Children (3) *Prereq: MHS 6401.*

MHS 6428—Multicultural Counseling (3) *Prereq: MHS 6401.*

MHS 6430—Introduction to Family Counseling (3) *Prereq: MHS 6401, 7800.*

MHS 6440—Marriage Counseling (3)

MHS 6450—Substance Abuse Counseling (3)

MHS 6471—Sexuality and Mental Health (3) *Prereq: MHS 6400, 6401.*

MHS 6480—Developmental Counseling Over the Life Span (3)

MHS 6500—Group Counseling: Theories and Procedures (3) *Prereq: MHS 6401.*

MHS 6602—Educational Mediation (3) Negotiation and mediation in educational and other settings.

MHS 6705—Professional, Ethical, and Legal Issues in Marriage and Family Counseling (3)

MHS 6720—Professional Identity and Ethics in Counseling (3)

MHS 6831—Supervision for a Split Internship (3; max: 6) *Prereq: permission of adviser, completion of practicum sequence, and written application to internship coordinator at least six weeks in advance of registration; coreq: MHS 7804, 7807, SDS 7820, or 7802.* Required first enrollment for students participating in internship over two semesters. S/U.

MHS 6905—Individual Work (1-4; max: 12) *Prereq: consent of instructor and graduate coordinator; approval of proposed project.*

MHS 6910—Supervised Research (1-5; max: 5) S/U.

MHS 6940—Supervised Teaching (1-5; max: 5) S/U.

MHS 6971—Research for Master's Thesis (1-15) S/U.

MHS 7402—Brief Therapy (3) *Prereq: 24 graduate-level credits in counseling and/or psychology, successful completion of practicum.* Examination of contemporary theories of brief counseling and psychotherapy. Survey of theories with emphasis on application and research.

MHS 7431—Advanced Family Counseling (4) *Prereq: MHS 6430.*

MHS 7600—Consultation Procedures (2) *Prereq: MHS 7800; coreq: registration in practicum or internship.*

MHS 7610—Practicum in Counseling Supervision (4; max: 8) *Prereq: MHS 6401, permission of adviser, and written application to practicum coordinator at least six weeks in advance of registration. Open only to advanced doctoral students.* S/U.

MHS 7730—Seminar in Counseling Research (3) *Prereq: satisfactory completion of EDF 6403.* Issues in designing and implementing counseling and psychotherapy dissertation research.

MHS 7740—Research in Counseling and Development (3) *Prereq: MHS 6200.*

MHS 7800—Practicum I in Counseling-150 Hours (3) *Prereq: MHS 6401, permission of adviser, and written application to practicum coordinator at least six weeks in advance of registration.* S/U.

MHS 7804—Group Supervision in Agency Counseling (1; max: 5) *Prereq: written application to practicum/internship coordinator at least six weeks in advance of registration; coreq: MHS 7800, 7805, SDS 7830, or MHS 6831.* S/U.

MHS 7805—Practicum II in Agency Counseling (3) *Prereq: MHS 7800, permission of adviser, and written application to practicum coordinator at least six weeks in advance of registration; coreq: MHS 7804.* S/U.

MHS 7806—Practicum II in Marriage and Family Counseling (3) *Prereq: MHS 7800, permission of adviser, and written application to practicum coordinator at least six weeks in advance of registration; coreq: MHS 7807.* S/U.

MHS 7807—Group Supervision in Marriage and Family Counseling (1; max: 5) *Prereq: written application to practicum/internship coordinator at least six weeks in advance of registration; coreq: MHS 7800, 7806, SDS 7830, or MHS 6831.* S/U.

MHS 7830—Internship in Counseling and Development-600 Hours (5; max: 15) *Prereq: permission of adviser, completion of all practica required for M.Ed. or Ed.S degree, and written application to internship coordinator at least six weeks in advance of registration.* S/U.

MHS 7840—Internship in Counselor Education (6; max: 12) *Prereq: written application to internship coordinator at least six weeks in advance of registration. Open only to advanced doctoral students.* S/U.

MHS 7946—Internship in Agency Program Management (6; max: 12) *Prereq: written application to internship coordinator at least six weeks in advance of registration. Open only to advanced doctoral students.* S/U.

MHS 7979—Advanced Research (1-12) *Prereq: 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. S/U.

MHS 7980—Research for Doctoral Dissertation (1-15) S/U.

SDS 6401—Counseling Skills for Non-Counselors (3) Counseling skills in dyadic communication and in small groups.

SDS 6411—Counseling with Children (3) *Prereq or coreq: MHS 6401.*

SDS 6413—Counseling Adolescents (3) *Prereq: MHS 6401.*

SDS 6520—Family, Student Development and Role of Teacher as Adviser (3) Learning to be advisers to small groups of middle school students concerning personal and academic development.

SDS 6620—Organization and Administration of Guidance and Personnel Programs (3) *Prereq: SDS 6411.*

SDS 6831—Supervision for a Split Internship (3; max: 6) *Prereq: permission of adviser, completion of practicum sequence and written application to internship coordinator at least six weeks in advance of registration; coreq: MHS 7804, 7807, SDS 7820, or 7802. Required first enrollment for students participating in internship over two semesters.* S/U.

SDS 6905—Individual Work (1-4; max: 12) *Prereq: consent of instructor and graduate coordinator; approval of proposed project.*

SDS 6936—Seminar in Counselor Education (3) *Prereq: permission of instructor. Open to doctoral students in department.*

SDS 6938—Special Topics (1-4; max: 12) *Prereq: consent of department chair.*

SDS 7800—Practicum II in School Counseling (3) *Prereq: MHS 7800, SDS 6411; permission of adviser; and written application to practicum coordinator at least six weeks in advance of registration; coreq: SDS 7820.* S/U.

SDS 7820—Group Supervision in School Counseling (1; max: 5) *Prereq: written application to practicum/internship coordinator at least six weeks in advance of registration; coreq: MHS 7800, SDS 7800, 7830, or MHS 6831.* S/U.

SDS 7830—Internship in Counseling and Development-600 Hours (5; max: 15) *Prereq: permission of adviser, completion of all practica required for M.Ed. or Ed.S. degree, and written application to internship coordinator at least six weeks in advance of registration; coreq: SDS 7802, MHS 7804, 7807, or SDS 7820.* S/U.

Criminology, Law, and Society

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: L. Lanza-Kaduce. *Graduate Coordinator:* K. F. Parker. *Professors:* J. Adler; R. Akers; C. Frazier; R. Hollinger; L. Lanza-Kaduce; P. Magnarella; A. Piquero. *Associate Professors:* A. Gover; J. Lane; K. Parker; F. Shenkman; J. Spillane. *Assistant Professors:* E. M. Brank; N. Piquero; B. Stults.

Criminology, Law, and Society is an interdisciplinary department that offers a Master of Arts (M.A.) degree with both a thesis and nonthesis option, a joint M.A./J.D. degree program, and the Doctor of Philosophy (Ph.D.) degree. Complete descriptions of the requirements for the M.A. and Ph.D. degrees are provided in the *General Information* 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. Students planning to apply for admission should take the Graduate Record Examination at the earliest possible date. Admission is made on a competitive basis. More information about this program can be found by examining the website (http://web.crim.ufl.edu/), reviewing information published by the Graduate School (http://gradschool.rgp.ufl.edu/) and by written request to Criminology, Law, and Society, ATTN: Graduate Secretary, P.O. Box 115950, University of Florida, Gainesville, FL 32611-5950).

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 (e.g., 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 the thesis and nonthesis M.A. options require satisfactory completion of at least 36 credit hours. In addition to graduate courses in the major, a statistics course (STA 6126—Statistical Methods in Social Research I or its equivalent) is required for the M.A. degree.

Joint M.A./J.D. Program—This 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 four 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 Criminology, Law, and Society. These requirements include both the LSAT and GRE. Students

are encouraged to announce their intent to seek a joint degree as soon as possible. Criminology, Law, and Society allows 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 graduate coordinator upon 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.

Ph.D. 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 within the last seven 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.

CCJ 5934—Contemporary Issues in Criminology and Law (3; max: 12) Variety of policy, theory, and research issues in crime, criminal justice, and law.

CCJ 6001—Proseminar in Crime, Law, and Justice (3) Interdisciplinary examination of relationship between legal and social orders. Focus on various functions of law, different forms of legal thought, development of law, and impact of law/sanctions on society.

CCJ 6038—Law and Society (3) Interdisciplinary examination of relationship between legal and social orders. Focus on various functions of law, different forms of legal thought, development of law, and impact of law/sanctions on society.

CCJ 6092—Drugs, Crime, and Policy (3) Interdisciplinary introduction to study of drugs, drug use, and drug control.

CCJ 6285—Criminal Justice Process (3) Police, courts, and correction system.

CCJ 6619—Crime and the Life Course (3) Intensive examination of crime and life course, or more generally how criminal activity is patterned over time.

CCJ 6643—White Collar Crime (3) White collar and corporate crime.

CCJ 6657—Sociology of Alcohol and Drug Behavior (3) Research and perspectives on drug and alcohol use.

CCJ 6669—Crime, Gender, and Race (3) Linkages between social characteristics and crime, with special emphasis on gender, race, age, and social class.

CCJ 6705—Research Methods in Crime, Law, and Justice (3) 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 (3) Overview of data sources and research methods applied to study of delinquency, crime, and deviance.

CCJ 6905—Independent Study (1-3; max: 6) Reading or research areas in criminology, law, and society. Topics not available in current courses.

CCJ 6910—Supervised Research (1-3; max: 3) S/U.

CCJ 6920—Seminar in Criminology (3) Classic and contemporary explanations of criminal activity.

CCJ 6971—Research for Master's Thesis (1-9) S/U.

CCJ 7742—Research Methods in Crime, Law, and Justice II (3) *Prereq: CCJ 6705.* Both quantitative and qualitative methods.

CCJ 7921—Professional Development in Criminology (3) Professional aspects of being a criminologist. S/U.

CCJ 7979—Advanced Research (1-12) 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. S/U.

CCJ 7980—Research for Doctoral Dissertation (1-15) S/U.

CJC 6120—Corrections and Public Policy (3) Issues associated with corrections and public policy. Incarceration, community corrections, and probation.

CJL 6089—Humanitarian Law (3) Concepts and rules dealing with human rights law of armed conflict.

CJL 6090—Law and Social Science (3) Focus on interface between law and knowledge from various social scientific disciplines, including psychology, sociology, history, and anthropology.

CJL 6091—Anthropology of Law (3) Nature of law cross-culturally and cross-nationally, focus on relationships with various forms of socioeconomic and political organization.

CJL 6095—Human Rights in Cultural Context (3) Nature of human rights cross-culturally, focus on history of concept, its development, universalism vs. cultural particularism, religion, gender, human rights in peace and in war.

Decision and Information Sciences

Warrington College of Business Administration

Graduate Faculty 2004-2005

Chairman: A. J. Vakharia. *Graduate Coordinator:* A. J. Vakharia. *John B. Higdon Eminent Scholar:* G. J. Koehler. *PriceWaterhouseCoopers Professor:* S. S. Erenguc. *Beall Professor:* A. J. Vakharia. *Professor:* H. P. Benson. *Associate Professors:* H. K. Cheng; S. Piramuthu. *Assistant Professors:* A. Agarwal; H. Aytug; S. Bandyopadhyay; J. E. Carrillo; J. Feng; P. Pathak; A. A. Paul. *Lecturer:* P. A. Thompson.

The Decision and Information Sciences (DIS) Department offers graduate courses leading to the Master of Science (M.S.) degree in decision and information sciences and the Ph.D. degree in business administration, and concentrations in the Master of Business Administration (M.B.A.) program. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The M.S. program is designed to provide students with computing, analytical, and application skills to be used in a business setting. The primary areas of emphasis in the M.S. program are 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. nonthesis program consists of a minimum of 36 credit hours, normally requiring three semesters of study, which may include a summer. Students without the prerequisite course work may need another semester.

All M.S. candidates must take a set of required courses: GEB 5214—Professional Writing; GEB 5215—Professional Communication; ISM 6128/6129—Advanced Business Systems

Design and Development I and II; ISM 6215—Business Database Systems I; ISM 6222/6223—Business Telecom Strategy and Applications I and II; ISM 6257—Intermediate Business Programming; ISM 6258—Advanced Business Programming; QMB 6358—Statistical Analysis for Managerial Decisions I; QMB 6755/6756—Managerial Quantitative Analysis I and II; intermediate and advanced business programming.

These required courses total 22 credit hours. In addition, each M.S. student must take a minimum of 14 additional hours of approved electives.

Admission requirements for the Ph.D. include (a) a minimum grade point average of 3.2, (b) a minimum GMAT score of 650, and (c) for nonnative speakers of English, a minimum score of 600 on the paper-based TOEFL. Students come from a variety of backgrounds, with the most common being engineering computer sciences, mathematics, and statistics.

Students admitted for the Ph.D. choose to either specialize in information systems/information technology or 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. A typical program of study assuming that the student has the required background in business, calculus, and Java programming is as follows.

Common methodological and substantive courses (regardless of specialization) taken by most students are COT 5405—Analysis of Algorithms, ECO 7404—Game Theory for Economics, ECO 7408—Mathematical Methods and Applications to Economics, ESI 6417—Linear Programming and Network Optimization, ESI 6912—Stochastic Optimization, ISM 6257—Intermediate Business Programming, ISM 6258—Advanced Business Programming, MAR 7626—Multivariate Statistical Methods in Marketing; MAS 4105—Linear Algebra, MHF 5207—Foundations of Mathematics, STA 5325—Mathematical Methods of Statistics, STA 5328—Mathematical Methods of Statistics II.

In addition to these courses, doctoral students are also required to attend doctoral seminar courses as and when they are offered, attend the DIS Workshop series, and take any additional courses in their chosen field.

The Department also offers a combined B.S.B.A./M.S. program. This program allows qualified students to earn both the bachelor's and master's degrees, using up to 16 credit hours of graduate level courses for both degrees.

ISM 5021—Information Systems in Organizations (3) *Prereq: 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 (2) 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 6128—Advanced Business Systems Design and Development I (2) 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 (2) *Prereq: ISM 6128 or consent of instructor.* Continuation of ISM 6128. Focus on object-oriented design of systems. How to translate business requirements into specific task and component requirements.

ISM 6215—Business Database Systems I (2) *Prereq: 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 (2) *Prereq: ISM 6215.* Continuation of ISM 6215. Focus on implementation and programming issues.

ISM 6222—Business Telecom Strategy and Applications I (2) *Prereq: procedural programming language and microcomputer working knowledge.* Survey of networking technologies used in WWW and e-commerce. TC[/IP networks and related security, networking hardware, and Internet software standards.

ISM 6223—Business Telecom Strategy and Applications II (2) *Prereq: ISM 6222 or consent of instructor.* Both introduction of traditional telephony and discussion of issues companies face upon consolidation of voice and data networks. Technological developments, product announcements, and market activity, with ultimate focus on strategy of voice/data integration.

ISM 6224—Business Telecom Strategy and Applications III (2) *Prereq: ISM 6223 and 6129.* Telecommunications analysis and design. Both tactical and strategic issues concerning integration.

ISM 6236—Business Objects I (2) *Prereq: ISM 6223 and 6216.* Overview of main tools for business objects in enterprise programming and illustrated with hands-on experiences. Distributed object models, component architectures, design methodologies and patterns, languages and development environments, and databases and repositories.

ISM 6239—Business Objects II (2) *Prereq: ISM 6236.* Extension of concepts and tools of ISM 6236 to include practical aspects of using business objects in enterprise systems. Focus on overview of ERP systems, proxies, wrapping legacy systems with objects and proxy repositories.

ISM 6257—Intermediate Business Programming (2) *Prereq: CGS 2414 or 3022 or consent of instructor.* Focus on application in business systems. Concepts such as classes, inheritance, polymorphism, interfaces, error handling, multi-threading, database connectivity, etc., and their use in business information systems.

ISM 6258—Advanced Business Programming (2) *Prereq: 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 6423—Data Analysis and Decision Support (2) 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 (2) Underlying technologies that herald innovations. How to capitalize on new electronic commerce and logistics in business.

ISM 6486—eCommerce Technologies (2) 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 (2) 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 (2) Projects such as developing e-commerce business plans, constructing e-commerce sites, etc.

ISM 7166—Advanced Business Systems Design and Development III (2) *Prereq: 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.

MAN 5501—Operations Management (3) *Prereq: MAR 5621. Designed for MBA students.* Purpose of course is to introduce the student to the general class of problems associated with managing production facilities.

MAN 5502—Production and Operations Management (2) *Prereq: MAR 5621. Core course designed for traditional MBA students.* Introduction to POM, which focuses on design and control of productive systems within organizations.

MAN 6508—Management of Service Operations (2) Case studies and problems, including systems design, operation, and control; emphasis on waiting-line systems.

MAN 6511—Production Management Problems (2) 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 (2) Logistics management in current business environment.

MAN 6573—Purchasing and Materials Management (2) Industrial/institutional purchasing cycle for operating supplies, raw materials, components and capital equipment within context of materials management organizational concepts. Basic principles, policies, and procedures involved in requirement determination; procurement decision process; purchasing function; and materials management concept, organization, and philosophy.

MAN 6581—Project Management (2) Role of manager in organization and ways of structuring project organizations; fundamentals of scheduling; time/cost tradeoffs, budgeting, and cost estimation; and monitoring.

MAN 6599—Tactical Logistics Planning (3) Focus on distribution value chain planning, tactical logistics decisions in vehicle routing, inventory management, and value chain contracts.

MAN 6617—International Operations/Logistics (2) 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 (3) Strategic issues in managing international supply chains, managing of exchange rate and operating risks in global supply chains.

QMB 6358—Statistical Analysis for Managerial Decisions I (2) *Prereq: consent of instructor.* Data application techniques with broad application to managerial problems. Emphasis on difficulties which can arise in the application of the techniques and in the interpretation of results. Experience in use of computerized procedures; may require substantial amount of case analysis.

QMB 6359—Statistical Analysis for Managerial Decisions II (2) *Prereq: 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 (2) *Prereq: 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 (3) Critical business analytical approaches, including linear programming, project scheduling, waiting-line theory, and time-series analysis.

QMB 6693—Quality Management and Control Systems (2) *Prereq: MAR 5621 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 (2) *Prereq: 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 (2) *Prereq: consent of instructor.* Survey of deterministic models for managerial decision making; emphasis on mathematical programming.

QMB 6756—Managerial Quantitative Analysis II (2) *Prereq: QMB 6755 or consent of instructor.* Use of 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 Decision and Information Sciences (1-5; max: 10) *Prereq: consent of department.* Reading and/or research.

QMB 6910—Supervised Research (1-5; max: 5) S/U.

QMB 6930—Special Topics in Decision and Information Sciences (1-4; max: 16) Variable content. In-depth study of topics not offered in other courses or topics of special current significance.

QMB 6940—Supervised Teaching (1-5; max: 5) S/U.

QMB 6957—International Studies in Quantitative Methods (1-4; max: 12) *Prereq: admission to an approved study abroad program and permission of department.* S/U.

QMB 6971—Research for Master's Thesis (1-15) S/U.

QMB 7931—Special Topics in Decision and Information Sciences (1-4; max: 9) *Prereq: 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 Decision and Information Sciences (1-4; max: 9) *Prereq: consent of instructor.* Historical foundations and evolutionary development of concepts in decision and information sciences, emerging problems and future trends.

QMB 7979—Advanced Research (1-12) 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. S/U.

QMB 7980—Research for Doctoral Dissertation (1-15) S/U.

Dental Sciences

College of Dentistry

Graduate Faculty 2004-2005

Endodontics Chair and Graduate Coordinator: F. J. Vertucci. *Orthodontics Chair and Graduate Coordinator:* T. T. Wheeler. *Periodontology Chair:* H. Towle. *Graduate Coordinator:* G. Horning. *Prosthodontics Chair:* A. Nimmo. *Graduate Coordinator:* G. Turner. *Eminent Scholar:* I. Mjor. *Graduate Research Professor:* A. S. Bleiweis. *Distinguished Professor:*

K. J. Anusavice. *Professors:* T. A. Brown; R. A. Burne; F. A. Catalanotto; A. E. Clark; D. M. Cohen; B. Y. Cooper; T. A. Dolan; C. H. Gibbs; J. Gu; M. W. Heft; J. D. Hillman; N. Javid; J. Katz; H. N. Logan; S. B. Low; N. I. Magnusson; W. P. McArthur; A. Nimmo; R. E. Primosch; A. Progulske-Fox; J. D. Ruskin; K. J. Soderholm; S. L. Tomar; H. Towle; F. J. Vertucci; C. B. Walker; T. T. Wheeler; C. G. Widmer; W. N. Williams; R. P. Yezierski. *Associate Professors:* C. S. Bates; L. Britto; R. M. Caudle; C. Dolce; R. B. Fillingim; H. A Gremillion; N. J. Grimaudo; G. Horning; K. A. Karpinia; A. P. Mauderli; D. Morton; C. Shen; M. F. Stavropoulos; G. E. Turner. *Clinical Associate Professor:* F. H. Brown. *Assistant Professors:* L. J. Brady; L. Britto; M. Handfield; L. S. Holiday; J. Jiang; J. K. Neubert; J. Riley. *Assistant Scientist:* J. A. Morris-Wiman. *Research Assistant Professor:* M. Belanger.

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. Satisfactory completion of all course work, the requirements for clinical certification in the respective dental specialty, and a thesis or project based on research are requirements for the master's degree. Prerequisites for admission, in addition to those of the Graduate School, include a D.D.S. or D.M.D. degree and completion of Parts I and II of the American Dental Association's National Board of Dental Examinations. Application deadline for Endodontics and Periodontics is September 1, Orthodontics and Prosthodontics is October 1. Address applications to Master of Science Program, College of Dentistry, P.O. Box 100402, Health Science Center, University of Florida, Gainesville, FL 32610-0402.

A complete description of the University's minimum requirements for the M.S. degree is provided in the *General Information* section of this catalog.

The following courses are part of the core curriculum required for all specializations: DEN 6674—Oral Pathology/Oral Radiology; GMS 6160 and GMS 6161—Introduction to Oral Biology I and II; GMS 6609—Advanced Gross Anatomy; VME 6767—Issues in the Responsible Conduct of Research. Those not in Dentistry are given in-department graduate credit. GMS 6176 and GMS 6177—Biology of Tooth Supporting Structures I and II are given in-department graduate credit for students in the orthodontic specialization.

Registration in the courses listed below is restricted to students currently admitted to a program in the College of Dentistry.

General

DEN 6674—Advanced Oral Pathology (1) 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 (1) *Prereq: 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 (2) *Prereq: consent of instructor. Designed for dental specialty and general practice residents.* Emphasis on understanding medications available to practicing dentists.

DEN 6905—Individual Study (1-3; max: 6)

DEN 6910—Supervised Research (1-5; max: 5) S/U.

DEN 6935—Special Topics in Dentistry (1-3; max: 6)

DEN 6936—Practice Management (1) Fundamental management principles and practices. Emphasis on establishing dentist in practice without making major business mistakes. Consideration to selecting associate, developing association contract, and understanding associate relationship. S/U.

DEN 6940—Supervised Teaching (1-5; max: 5) S/U.

DEN 6941—Clinical Teaching in Dentistry (1) To assess recall factors that influence learning in clinical situations and to access relevant learning and factors while in clinical situations thus providing effective instructional decisions. Designed to aid participant in recalling and using this information. S/U.

DEN 6971—Research for Master's Thesis (1-6) S/U.

DEN 6973—Project in Lieu of Thesis (1-9; max: 9) *Prereq: consent of instructor.* Project or research acceptable to candidate's supervisory committee and Graduate School. S/U.

Endodontics

DEN 6642—Introduction to Advanced Endodontics (1) *Prereq: 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 (1) *Prereq: 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 (1) *Prereq: 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 (1) *Prereq: DEN 6644.* Continuation of DEN 6644.

DEN 6646—Surgical Endodontics I (1) *Prereq: 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 (1) *Prereq: DEN 6646.* Continuation of DEN 6646.

Orthodontics

DEN 6602—Orthodontic Treatment_Appliance Management and Effect of Treatment Part 1: Class I Treatment (1) *Prereq: consent of instructor.* Survey of all methods and techniques utilized to treat various malocclusions and their basic biologic principles.

DEN 6603—Orthodontic Treatment_Appliance Management and Effect of Treatment Part 2: Class II Treatment (1) *Prereq: 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 (1) *Prereq: 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 (1) *Prereq: 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 (1) *Prereq: consent of instructor.* Continuation of DEN 6605.

DEN 6607—Orthodontic Treatment_Appliance Management and Effect of Treatment Part 6: Impactions, Transplantations and Stability (1) *Prereq: consent of instructor.* Continuation of DEN 6606.

DEN 6608—Analysis, Diagnosis, and Treatment Planning: Part I (1; max: 2) *Prereq: 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 (1; max: 2) *Prereq: 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 (1; max: 2) *Prereq: consent of instructor.* Review of literature related to biology of orthodontic tooth movement.

DEN 6611—Biology of Tooth Movement: Part II (1; max: 2) *Prereq: consent of instructor.* Review of literature related to biology of orthodontic tooth movement.

DEN 6612—Orthodontic Biomechanics: Part I (1; max: 2) *Prereq: consent of instructor.* Biomechanical principles, biomechanics in certain treatment approaches, methods of research in biomechanics.

DEN 6613—Orthodontic Biomechanics: Part II (1; max: 2) *Prereq: consent of instructor.* Biomechanical principles, biomechanics in certain treatment approaches, methods of research in biomechanics.

DEN 6614—Ortho-Perio Relationships: Part I (1; max: 2) *Prereq: consent of instructor.* Understanding effects of orthodontics on periodontal tissue, treatment of periodontally compromised patient, and literature on various periodontal procedures.

DEN 6615—Ortho-Perio Relationships: Part II (1; max: 2) *Prereq: 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 (1; max: 2) *Prereq: consent of instructor.* Principles involved in correction of skeletal problems by orthodontics and oral and maxillofacial surgery.

DEN 6617—Orthognathic Surgery: Part II (1; max: 2) *Prereq: consent of instructor.* Principles involved in correction of skeletal problems by orthodontics and oral and maxillofacial surgery.

DEN 6618—Postnatal Growth and Development (1; max: 2) *Prereq: consent of instructor.* Review of topics in postnatal growth and development pertinent to orthodontics. Emphasis on basic concepts of facial growth.

DEN 6670—Craniofacial Anomalies (1; max: 2) *Prereq: consent of instructor.* Etiology, development, treatments, and treatment outcomes of craniofacial anomalies.

DEN 6671—Prenatal Growth and Development (1; max: 2) *Prereq: consent of instructor.* Selected topics in cellular and molecular aspects of craniofacial development.

DEN 6672—Materials in Orthodontics (1; max: 4) *Prereq: consent of instructor.* Evaluation of basics and applicability of materials normally used in orthodontia to enable practioner to evaluate new materials commonly introduced in today's market.

DEN 6676—TMD and Orofacial Pain: Part I (1; max: 2) *Prereq: consent of instructor.* Principles involved in epidemiology, evaluation, diagnosis, and management of temporomandibular disorders (TMD) and orofacial pain.

DEN 6677—TMD and Orofacial Pain: Part II (1; max: 2) *Prereq: consent of instructor.* Principles involved in epidemiology, evaluation, diagnosis, and management of temporomandibular disorders (TMD) and orofacial pain.

Periodontics

DEN 6652—Review of Periodontics Literature I (1) 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 (1) *Prereq: 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 (1) *Prereq: DEN 6653.* Principles of periodontal surgery and wound healing.

DEN 6655—Review of Periodontics Literature IV (1) *Prereq: 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 (1) 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 (1) Survey of histology and histopathology of periodontium, utilizing light and electron microscopy.

DEN 6658—Treatment Planning in Periodontal Therapy (1) Interdisciplinary seminar. Students present findings of examination of patients with advanced dental diseases and discuss diagnosis and treatment planning for these patients.

Prosthodontics

DEN 6622—Principles of Occlusion (2) Chronological history of gnathology and developing treatment philosophies. In-depth biomechanical and neuro-physiological study of human dental occlusion. Role sound occlusion plays in oral health and current methods of treatment.

DEN 6623—Maxillofacial Prosthetics (1) Art and science of anatomic, functional, and cosmetic reconstruction by means of nonliving substitutes for structures missing as a result of surgical intervention, trauma, or congenital malformation.

DEN 6624—Dental Implant Restoration (1) *Prereq: D.M.D. or D.D.S. degree.* Diagnostic and laboratory principles involved with restoration of dental implants.

DEN 6625—Fixed Prosthodontic Ceramics (1) *Prereq: 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 (1) *Prereq: 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 (1) *Prereq: 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.

Economics

Warrington College of Business Administration

Graduate Faculty 2004-2005

Chairman: J. H. Hamilton. *Graduate Coordinator:* S. M. Slutsky. *Lanzillotti-McKethan Eminent Scholar:* D. Sappington. *Distinguished Service Professors:* S. V. Berg; D. Denslow. *Gerald Gunter Professor:* R. E. Romano. *Huber Hurst Professor:* R. D. Blair. *R. Perry Frankland Professor:* E. Dinopoulos. *Professors:* J. H. Hamilton; L. W. Kenny; M. Rush; S. M. Slutsky; S. K. Smith; C. T. West. *Associate Professors:* C. Ai; W. A. Bomberger; D. N. Figlio; D. G. Waldo; B. Xu.

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.

M.A. Requirements—A minimum of 36 credits of course work is required for the M.A. with and the M.A. 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, ECO 7206.

Ph.D. Requirements—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. Students in the Ph.D. program must complete the following core courses: ECO 7113, ECO 7115, ECO 7120, ECO 7206, ECO 7272, ECO 7404, ECO 7406, ECO 7408, ECO 7415, ECO 7424, and ECO 7452. 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.

Complete descriptions of the minimum requirements for the M.A. and Ph.D. degrees are provided in the *General Information* section of this catalog.

ECO 5715—Open Economy Macroeconomics (2) *Prereq: 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 6407—Game Theory and Competitive Strategy: Theory and Cases (3) *Prereq: 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 (2) *Prereq: ECP 5702 or equivalent. Designed primarily for M.B.A. 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 6505—Public Economics: Tax Analysis and Policy (3) *Prereq: permission of instructor. Designed primarily for M.B.A. students.* Introduction to welfare analysis and its application to tax policy: incidence and efficiency cost of taxes; overview of federal and state tax systems.

ECO 6705—Managing International Trade and Investment (2) *Prereq: ECP 5702 or permission of instructor. Designed primarily for M.B.A. students.* Exploiting international competitive advantage in exports and foreign investment. Managing competition with imports and foreign investors. Understanding rules and regulations of international trade and investments implemented by governments and international organizations.

ECO 6708—International Macroeconomics (3) *Prereq: 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 (1-4; max: 8)

ECO 6910—Supervised Research (1-5; max: 5) S/U.

ECO 6936—Special Topics (1-4; max: 16)

ECO 6940—Supervised Teaching (1-5; max: 5) S/U.

ECO 6957—International Studies in Economics (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

ECO 6971—Research for Master's Thesis (1-15) S/U.

ECO 7113—Information Economics (1-2; max: 2) *Prereq: ECO 7115 and 7408; coreq: 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 (3) *Coreq: ECO 7408 or equivalent.* Analysis of optimization applied to consumer and product theory including comparative statistics and duality.

ECO 7117—Markets and Institutions (1-2; max: 2) 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 (3) *Prereq: 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 (1-2; max: 2) *Prereq: ECO 7115; coreq: ECO 7406.* Introduction to general equilibrium analysis, including existence of equilibrium, core convergence, and fundamental theorems of welfare economics.

ECO 7206—Macroeconomic Theory I (3) *Coreq: ECO 7115, 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 (1 or 2) *Prereq: ECO 7115 and 7415; coreq: ECO 7406.* Introduction and overview of theoretical and empirical developments in determinants of long-run standards of living.

ECO 7273—Economic Growth II (1 or 2) *Prereq: ECO 7272.* Extensions of theory and empirical analysis of growth with emphasis on microfoundations of growth.

ECO 7404—Game Theory for Economists (1-2; max: 2) *Prereq: ECO 7115 and 7408.* Introduction to modern game theory as used in economics. Emphasis on use of techniques in simple applications.

ECO 7405—Mathematical Economics: Game Theory (3) *Prereq: ECO 7404 and 7408 or permission of instructor.* Advanced game theory including incomplete information games with application to economics.

ECO 7406—Dynamic Economics: Theory and Applications (1-2; max: 2) *Prereq: ECO 7115 and 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 (1-2; max: 2) 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 (3) *Coreq: ECO 7408.* Introduction to fundamental statistical concepts: estimation, hypothesis testing, linear regression, and analysis of variance.

ECO 7424—Econometric Models and Methods (3) *Prereq: ECO 7415.* Introduction to classical econometric theory, linear models, and estimation methods.

ECO 7426—Econometric Methods I (3) *Prereq: ECO 7424 or permission of department.* 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 (3) *Prereq: ECO 7424 or AEB 6571.* 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 (1-2; max: 2) Analysis of empirical papers to develop skills for evaluating and conducting empirical testing of economic theory.

ECO 7453—Practicum in Empirical Research (1) *Prereq: Ph.D. student.* Practical training for first-year Ph.D. students through all stages of research process culminating in generation of first draft of original research paper. H.

ECO 7506—Empirical Public Economics II (1-2; max: 2) Education, welfare policy, health policy, and environmental policy.

ECO 7516—Tax Theory and Public Policy (1-2; max: 2) *Prereq: 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 (1-2; max: 2) *Prereq: 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 (1-2; max: 2) *Prereq: ECO 7424 and 7525.* Taxation, expenditures, marketplace of local governments, federalism and sources of inefficiency in government, voter turnout.

ECO 7536—Theoretical Public Economics (1-2; max: 2) *Prereq: ECO 7115.* Topics related to externalities, public expenditure, optimal taxation, and social choice.

ECO 7706—Theory of International Trade (3) 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 7716—International Economic Relations (3) 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 (3) *Prereq: 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. S/U.

ECO 7938—Advanced Economics Seminar (1-4; max: 8) *For advanced graduate students in economics. Student must have completed graduate core program and have preliminary dissertation topic.*

ECO 7979—Advanced Research (1-12) 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. S/U.

ECO 7980—Research for Doctoral Dissertation (1-15) S/U.

ECP 5415—Antitrust Policy and Managerial Decisions (2) *Prereq: 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 (2) *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 influence of firm's competitive environment.

ECP 5705—Economics of Business Decisions (3) *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 6416—Business Strategies for Regulation (2) *Prereq: ECP 5702 or equivalent. Designed primarily for M.B.A. students.* Examination of how firms respond to regulation and can influence their regulatory environment, focusing on environmental, workplace, and product safety regulation

ECP 6417—Public Policy and Social Control (3) *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 6429—Strategies for Deregulating Industries (2) *Designed primarily for M.B.A. students.* Cases from the United States and other countries illustrate sound strategies for managing under economic regulation/deregulation.

ECP 6708—Cases in Competitive Strategy (2) *Prereq: 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 6709—Economics for Managing Information for Electronic Commerce (2) 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 7405—Industrial Organization and Social Control (3) Economic and other characteristics of modern industrial structures. Relationships between industrial structure, business conduct, and economic performance. Measurement of concentration and evaluation of performance. Public policies toward monopoly, conspiracy, and competition.

ECP 7408—Empirical Industrial Organization (1-2; max: 2) *Prereq: ECO 7424 required; 7426 recommended or permission of instructor.* Empirical examination of current issues. Returns to scale, market structure, entry and exit, technological progress, and examination of particular regulated industries.

ECP 7426—Economics of Regulation (1-2; max: 2) Theory and practice of regulatory institutions, with focus on pricing and incentive issues. Analysis of alternatives to traditional regulatory policy.

ECS 6423—Latin American Business Economics (2) Review of political, economic and cultural background of region including trade patterns and policies; direct foreign investment and multinational firms; determination of foreign exchange rate risk; effects of currency crises and monetary policies on business environment; corporate strategies relevant for Latin America; international marketing and finance strategies appropriate for region; and role of government policies affecting operations of firms.

Educational Leadership, Policy, and Foundations

College of Education

Graduate Faculty 2004-2005

Chairman: J. L. Doud. *Graduate Coordinator:* K. K. Gratto. *Distinguished Service Professor (Emeritus):* J. L. Wattenbarger. *Professors:* L. S. Behar-Horenstein: D. F. Campbell; P. A. Clark; J. L. Doud; J. W. Hensel *(Emeritus);* D. S. Honeyman; L.W. Tyree; R. C. Wood. *Assistant Professor:* L. Flowers. *Assistant Scholar:* K. K. Gratto.

The Department offers programs leading to the Master of Education (nonthesis) and Master of Arts in Education (thesis) in curriculum and instruction with courses in curriculum and instructional leadership; in educational leadership with specializations in elementary and secondary administration and in school business management; and in student personnel in higher education. The Department also offers the Specialist in Education, Doctor of Education, and Doctor of Philosophy degrees in educational leadership with specialization in elementary and secondary administration; in higher education administration with specializations in community college leadership and university leadership.

Complete descriptions of the requirements for the M.Ed., M.A.E., Ed.S., Ed.D., and Ph.D. degrees are provided in the *General Information* section of this catalog.

A candidate for admission to the Department will be judged not only on the basis of quantitative criteria (listed elsewhere in this catalog) but also in relation to prior experience, especially as it relates to career goals.

EDA 5938—Special Topics (1-3; max: 6) Exploration of current topics of special interest.

EDA 6061—Educational Organization and Administration (3) Basic concepts and practices in local, state, and federal organizations and administration.

EDA 6192—Educational Leadership: The Individual (3) The individual as a leader and the role of educational leaders in group development.

EDA 6193—Educational Leadership: Instruction (3) Examination and analysis of role in curriculum change and school improvement.

EDA 6195—Educational Policy Development (3) Contemporary research on political power in policy decision making and role of educational leaders in policy development.

EDA 6215—Communications in Educational Leadership (3) School/community relations and communication implications for educational leaders.

EDA 6222—Administration of School Personnel (3) Problems of the professional school staff and administration of staff personnel in public schools.

EDA 6225—Labor Relations in Public Education (3) Various aspects of employee, union, and management relationships in public education.

EDA 6232—Public School Law (3) The law as it affects the 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 (3) State, local, and federal financing of education.

EDA 6271—Utilization of Computers in Educational Leadership (3) Application of computer technology to leadership and management of educational enterprise.

EDA 6503—The Principalship (3) 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 (1-6; max: 12 including EDG 6905) Students must have approval of proposed project prior to registration. For advanced students who wish to study individual problems under faculty guidance.

EDA 6931—Special Topics (1-5; max: 10)

EDA 6935—Problems in School Administration and Supervision (1-15; max: 15) 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. S/U.

EDA 6948—Supervised Practice in School Administration (1-15; max: 15) *Only advanced graduate students are permitted to enroll.* Students are given an opportunity to perform administrative duties under supervision. S/U.

EDA 6971—Research for Master's Thesis (1-15) S/U.

EDA 7206—Organizational Leadership in Education (3) *Prereq: EDA 6192.* Development of concepts and refinements of skills associated with planning and organizing in educational institutions.

EDA 7945—Practicum in Supervision and Administration (1-15; max: 15) A seminar and an internship in administration and supervision. S/U.

EDA 7979—Advanced Research (1-12) 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. S/U.

EDA 7980—Research for Doctoral Dissertation (1-15) S/U.

EDA 7990—Research Design in Educational Administration (3) *Prereq: EDF 7486 or equivalent. Open only to advanced students.* Problems in administration conceptualized and appropriate research procedures determined.

EDF 5552—Role of School in Democratic Society (3) Common conceptions of democracy, equality, freedom, liberty, and equality and what these conceptions imply for educational aims and practice.

EDF 6520—History of Education (3) Salient issues in education from the Reformation to the present.

EDF 6525—Ancient and Medieval Education (3) Pedagogical practice and thought in China, India, Semitic nations, Greece, Rome, Islam, and Medieval and Renaissance Europe.

EDF 6544—Philosophical Foundations of Education (3) Philosophical bases for democracy and education.

EDF 6606—Socioeconomic Foundations of Education (3) Sociological analysis of democratic educational aims, the school as a social system, interest groups, the teaching profession, and economic stratification in America.

EDF 6630—Educational Sociology (3) Sociological theory and research with direct relevance to the study of education.

EDF 6812—Comparative Education (3) Relationships of school and society in different cultural areas of the world.

EDF 6820—Education in Latin America (3) Traditions and contemporary social, political, and cultural aspects.

EDF 7555—Values and Ethics in Education (3) The conception and role of values in education, with special emphasis on moral values (ethics).

EDF 7934—Seminar in Educational Foundations (3; max: 12) Advanced study in historical, philosophical, social, and comparative foundations.

EDG 6250—The School Curriculum (3) *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 (3) Procedures and techniques of evaluation in school programs, with particular emphasis on needs assessment, school self-study, and course evaluation.

EDG 6905—Individual Work (1-6; max: 12 including EDA 6905) *Student must have approval of proposed project prior to registration in course.* For advanced students who wish to study individual problems under faculty guidance.

EDG 6910—Supervised Research (1-5; max: 5) S/U.

EDG 6931—Special Topics (1-4; max: 12 including EDA 6905) *Prereq: consent of instructor.*

EDG 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of adviser.* For graduate students serving as teaching assistants under the supervision of a faculty member. S/U.

EDG 6971—Research for Master's Thesis (1-15) S/U.

EDG 6973—Project in Lieu of Thesis (1-9) Development, testing, and evaluation of original educational technology, curricular materials, or intervention program. S/U.

EDG 7665—Bases of Curriculum and Instruction Theory (3) *Prereq: EDG 6250 or equivalent.* Application of theory and research in the behavioral sciences to the development of curriculum and instruction theory. Topics include social forces, human development, learning theories.

EDG 7941—Field Experience in Curriculum and Instruction (1-4; max: 10) *Prereq: admission limited to advanced graduate students.* Supervised experiences appropriate to the student's professional goals.

EDG 7979—Advanced Research (1-12) 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. S/U.

EDG 7980—Research for Doctoral Dissertation (1-15) S/U.

EDH 6040—Theory of College Student Development (3) *Prereq:* Examiniation of theories describing patterns of growth and development during college years.

EDH 6046—Diversity Issues in Higher Education (3) Models, theories, and skills for understanding multicultural students at postsecondary level.

EDH 6051—Educational Outcomes of American Colleges and Universities (3) Exploration of impact of postsecondary educational institutions and barriers to student development.

EDH 6053—The Community Junior College in America (3) Programs, issues, and problems.

EDH 6066—American Higher Education (3) History, philosophy, and policies, with emphasis on current practices and problems.

EDH 6067—Seminar: International Higher Education (3) 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 6100—Enrollment Management in Higher Education (3) Fundamental concepts, practices, and techniques utilized in successful programs.

EDH 6305—College and University Teaching (3) 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 (3) Introduction to history, roles, and functions.

EDH 6361—Theories and Assessment of Higher Educational Environments (3) Examination of theoretical approaches that define and describe various elements of higher educational environments.

EDH 6503—Resource Development in Higher Education (3) Exploration of financial resource development in higher education institutions and organizations.

EDH 6931—Special Topics in Higher Education (1-3; max: 10)

EDH 6935—Seminar in College Student Personnel Administration (3) *Prereq: permission of instructor.* Culminating seminar integrating core curriculum and practitioner experience.

EDH 6945—Practicum in College Teaching I (3) *Prereq: 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 (3) *Prereq: 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 (3; max: 6) *Prereq: permission of adviser, and written application to practicum coordinator.* S/U.

EDH 7225—Seminar: Curriculum in Higher Education (3) Issues and problems in college and university curricula. Curriculum planning, implementation, and evaluation.

EDH 7405—The Law and Higher Education (3) 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 (3) 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 (3) Skills and knowledge for current and future college leaders.
EDH 7634—Student Affairs Administration in Higher Education (3) Major issues. Purposes, structure, program evaluation, and budgeting.
EDH 7635—Higher Education Administration (3) Educational policies, functions, and practices.
EDH 7916—Contemporary Research on Higher Education (3) 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 (1; max: 5) *Prereq: written application to practicum/internship coordinator in advance of registration.* S/U.
EDH 7948—Internship in Student Personnel (5) *Prereq: permission of adviser and written application to internship coordinator in advance of registration.* S/U.
EDS 6140—Supervision of Instruction (3) Systematic approaches to supervision of instructional personnel including observation and programs of continuing professional development.
SDS 7930—Seminar in Higher Education Student Personnel (1-2; max: 4)

Educational Psychology

College of Education

Graduate Faculty 2004-2005

Chairman: M. D. Miller. *Graduate Coordinator:* B. A. Franks. *Professors:* J. J. Algina; P. T. Ashton; C. Emihovich; J. H. Kranzler; M. D. Miller; T. D. Oakland; R. B. Webb. *Associate Professors:* J. M. Asmus; J. K. Bengston; B. A. Franks; T. M. Smith-Bonahue; N. L. Waldron. *Assistant Professors:* M. Koro-Ljungberg; T. A. Linderholm; R. Penfield; A. E. Seraphine.

The Department offers the Master of Education, the Master of Arts in Education (with thesis), the Specialist in Education, the Doctor of Education, and the Doctor of Philosophy degrees with programs in educational psychology, research and evaluation methodology, and school psychology. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

Specific areas of specialization include human development, personality theory, learning theory, and general educational psychology within the program in educational psychology; and research methodology, education statistics, and measurement and evaluation within the program in research and evaluation methodology.

Co-major—The Department offers two co-major programs in conjunction with the Department of Psychology leading to the Doctor of Philosophy degree in educational psychology and psychology or research and evaluation methodology and psychology.
EDF 5441—Assessment in General and Exceptional Student Education (3) *Prereq: STA 3122.* Basic measurement concepts, design of classroom assessments, and interpretation of results from traditional or alternative assessments, and their application in instructional planning and evaluating student performance.
EDF 6113—Educational Psychology: Human Development (3) Current research and theories in the area of human development.
EDF 6189—Psycho-Social-Educational Aspects of Death and Dying (3) Attitudes toward death, dying process, funeral practices, and grieving. Role of education for better understanding and coping with death.
EDF 6211—Educational Psychology: General (3) 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 (3) *Prereq: consent of instructor.* Logic and methodologies of theories of learning.
EDF 6232—Principles of Learning and Instructional Practice (3) Topics include transfer of training, reinforcement, forgetting, and problem solving.
EDF 6355—Educational Psychology: Personality Dynamics (3) Dynamics of behavior and their implications for education, counseling and guidance, administration, family relationships, and social action.
EDF 6401—Educational Statistics (3) *Prereq: STA 2023. Primarily for Ed.D. candidates.* Application to educational data and problems.
EDF 6403—Quantitative Foundations of Educational Research (6) *Prereq: 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 (3) *Prereq: undergraduate statistics course.* Overview of educational measurement and testing with emphasis on cognitive ability and achievement testing.
EDF 6436—Theory of Measurement (4) *Prereq: STA 2023; EDF 4430.* Introductory study of true score models, reliability, validity, norms, scaling, item analysis, and basic elements of instrument construction.
EDF 6471—Survey Design and Analysis in Educational Research (3) *Prereq: 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 (4) Introduction to philosophical, historical, sociological, and other methodologies as aspects of qualitative educational research.
EDF 6481—Quantitative Research Methods in Education (4) *Prereq: STA 2023, 2122 or equivalent.* Design and data analysis for educational research.
EDF 6905—Individual Study (1-3; max: 12) *Prereq: consent of department chairman.* 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 (1-5; max: 5) *Prereq: consent of department chairman.* S/U.
EDF 6938—Special Topics (1-3; max: 12) *Prereq: consent of department chairman.*

EDF 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of department chairman.* S/U.

EDF 6941—Practicum in Educational Research (2-9; max: 9) *Prereq: EDF 6403. Arrangements must be made with instructor prior to registration.* Experience in conducting various phases of quantitative or qualitative educational research under individual supervision.

EDF 6971—Research for Master's Thesis (1-15) S/U.

EDF 7117—Affective Development and Education (3) *Prereq: EDF 6113 or equivalent.* Application of theory and research.

EDF 7146—Educational Psychology: Cognition in the Educative Process (3) *Prereq: EDF 6113.* Cognitive development as applied to curriculum development and teaching procedures.

EDF 7405—Advanced Quantitative Foundations of Educational Research (4; max: 8) *Prereq: 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 (3) *Prereq: EDF 6436, EDF 7405.* Confirmatory factor analysis and causal models.

EDF 7435—Rating Scale Design and Analysis in Educational Research (3) *Prereq: EDF 6403 and 6434 or 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 (3) *Prereq: EDF 6436.* Psychometric models for test scores; estimation of ability and item parameters; applications of and current issues in IRT.

EDF 7474—Multilevel Models (3) *Prereq: EDF 6403 or 6481 and 7405.* Models and methods for analysis of multilevel data.

EDF 7479—Qualitative Data Analysis: Approaches and Techniques (3) *Prereq: EDF 6475.* Theories, approaches, and techniques of qualitative data analysis.

EDF 7483—Qualitative Data Collection: Approaches and Techniques (3) *Prereq: EDF 6475.*

EDF 7486—Methods of Educational Research (3) *Prereq: 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 (3) *Prereq: EDF 6403 or equivalent.* Models and methods for formative and summative evaluation of educational products and programs.

EDF 7639—Research in Educational Sociology (3) Research techniques in educational sociology, emphasis on ethnography.

EDF 7931—Seminar in Educational Research (3; max: 6) *Prereq: EDF 6403.* In-depth examination of specific methodological approaches to educational research.

EDF 7932—Multivariate Analysis in Educational Research (3) *Prereq: EDF 6403.* Review of selected studies with focus on methods of data analysis. Emphasis on use of multivariate techniques.

EDF 7979—Advanced Research (1-12) 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. S/U.

EDF 7980—Research for Doctoral Dissertation (1-15) S/U.

SPS 6052—Issues and Problems in School Psychology (3) *Coreq: SPS 6941.* History and foundations of school psychology; legal, ethical. Overview of role and functions of school psychologist.

SPS 6191—Psychoeducational Assessment I (3) *Coreq: SPS 6941.* Techniques for assessing intelligence, adaptive behavior, and achievement of children and school-aged adolescents. Emphasis on standardized instruments.

SPS 6192—Psychoeducational Assessment II (3) *Prereq: SPS 6191; coreq: SPS 6941.* Techniques for assessing social and emotional functioning of the school-aged child; supervised experience in assessment and report writing.

SPS 6197—Psychoeducational Assessment III (3) *Prereq: SPS 6191; coreq: 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 (3) *Coreq: SPS 6941.* Theory and research of applied behavior analysis for school psychologists to provide systematic assesssment and treatment.

SPS 6707—Interventions in School Psychology II: Cognitive Behavioral Interventions (3) *Prereq: SPS 6410.* Theory and practice of cognitive behavior.

SPS 6708—Interventions in School Psychology III: System Level Interventions for Children and Youths (3) *Prereq: SPS 6707.* Theory, empirical research, and clinical issues related to primary prevention and crisis intervention.

SPS 6941—Practicum in School Psychology (1-4; max: 8) *Prereq: consent of instructor.* S/U.

SPS 7205—School Psychology Consultation (3) *Prereq: Coreq: 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 (1-3; max: 3) *Prereq: consent of instructor.* Issues pertinent to the professional practice of school psychology.

SPS 7949—Internship in School Psychology (6 [3 Summer A or B]; max: 18) *Prereq: consent of instructor.*

Electrical and Computer Engineering

College of Engineering

Graduate Faculty 2004-2005

Chair: M. E. Law. *Associate Chair:* R. M. Fox. *Graduate Coordinator:* J. Hammer. *Graduate Research Professor and Pittman Eminent Scholar:* C. T. Sah. *BellSouth Eminent Scholar:* J. Fortes. *Distinguished Professors:* J. C. Principe; S. Y. W. Su; M. A. Uman. *Professors:* G. Bosman; T. E. Bullock *(Emeritus);* D. P. Carroll *(Emeritus);* E. R. Chenette *(Emeritus,* GERC*);* L. W. Couch II *(Emeritus);* J. G. Fossum; A. D. George; J. Hammer; H. Latchman; M. E. Law; J. Li; S. S. Li; F. A. Lindholm *(Emeritus);* A. Neugroschel; K. D. T. Ngo; K. K. O; P. Z. Peebles, Jr. *(Emeritus);* V. A. Rakov; V. Ramaswamy *(Emeritus);* M. H. Rashid (UWF); J. R. Smith *(Emeritus);* R. Srivastava; F. J. Taylor; P. Zory. *Engineer:* J. L. Kurtz. *Associate Professors:* A. Arroyo; A. Domijan, Jr.; W. R. Eisenstadt; Y. Fang; R. M. Fox; J. G. Harris; H. Lam; J. Lin; T. Nishida; T. F. Wong; H. Zmuda (GERC). *Assistant Professors:* R. Bashirullah; P. O. Boykin; R. Figueiredo; J. Gao;J. Guo; J. McNair; J. M. Shea; K. C. Slatton; E. Sutton (GERC); A. Ural; D. O. Wu; H. Xie; L. Yang.

The Department of Electrical and Computer Engineering offers the Master of Engineering, Master of Science, Engineer, 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 Department offers graduate study and research in computers, 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 areaselectrical engineering, other engineering disciplines, mathematics, physics, chemistry, 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 5905 and 6905 (Individual Work), 6910 (Supervised Research), 6932 (Graduate Seminar), 6940 (Supervised Teaching), and 6971 (Research for Master's Thesis). No more than six hours of Individual Work (5905 or 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 (5905 or 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 5905 and 6905 (Individual Work), 6910 (Supervised Research), 6932 (Graduate Seminar), 6940 (Supervised Teaching), and 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 savings 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/graduate/academic/acadinfomain.html) 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.

EEL 5182—State Variable Methods in Linear Systems (3) *Prereq: EEL 4657.* Linear algebra and state variable methods for design and analysis of discrete and continuous linear systems.

EEL 5219—Analysis of Power Transmission Lines (3) *Prereq: EEL 3211, MAS 3114 or equivalents.* Calculation of multiphase transmission line parameters for typical power line configurations. Modal analysis of wave propagation. Line models and computer applications for transient analysis.

EEL 5225—Principles of Micro-Electro-Mechanical Transducers (3) *Prereq: EEL 3396 or permission of instructor.* Introduction to principles of micro-electro-mechanical devices and systems.

EEL 5317C—Introduction to Power Electronics (3) *Prereq: EEL 3304, 3396; coreq: EEL 4657.* Components and circuits for power applications. Switched-mode power supplies.

EEL 5320—Bipolar Analog IC Design (3) *Prereq: EEL 3304.* Amplifier stages, active loads, output stages, op-amps, feedback, frequency response, compensation.

EEL 5322—VLSI Circuits and Technology (3) *Prereq: EEL 3396, 3304.* Introduction to VLSI circuit technology and manufacturing. Fabrication, device models, layout, parasitics, and simple gate circuits.

EEL 5336L—Solid-State Technology Laboratory (1) Solid-state device fabrication. Safety issues.

EEL 5441—Fundamentals of Photonics (3) *Prereq: EEL 3472 and 3396.* 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 5451L—Photonics Laboratory (2) *Prereq: EEL 4440 or 4445 or 5441.* Experiments in wave optics, acousto-optics, lasers, fiber optics, planar wave guides, and coherent optics.

EEL 5490—Lightning (3) *Prereq: EEL 3472.* Introduction to lightning discharge processes. Electromagnetics relevant to lightning measurements. Applications for determining lightning charge, current, location, and characteristics. Lightning protection.

EEL 5544—Noise in Linear Systems (3) Passage of electrical noise and signals through linear systems. Statistical representation of random signals, electrical noise, and spectra.

EEL 5546—Electronic Countermeasures (3) *Prereq: EEL 4516 or 5544.* Analysis of electronic countermeasures for radar systems. Pulsed and spread spectrum detection; barrage, incoherent, and coherent jammers; burn through analysis; autocorrelation receiver structures.

EEL 5547—Introduction to Radar (3) *Prereq: EEL 4516 or 5544.* Basic principles of cw and pulsed radar; angle, range, and doppler tracking; accuracy and resolution; signal design.

EEL 5666C—Intelligent Machines Design Laboratory (4) *Prereq: EEL 4744C.* Design simulation, fabrication, assembly, and testing of intelligent robotic machines.

EEL 5701—Foundations of Digital Signal Processing (3) Analysis and design of digital filters for discrete signal processing; spectral analysis; fast Fourier transform.

EEL 5718—Computer Communications (3) *Prereq: EEL 4514.* Design of data communication networks: modems, terminals, error control, multiplexing, message switching, and data concentration.

EEL 5745C—Microcomputer Hardware and Software (4) *Prereq: EEL 3701C and 3304 or 3003.* Functional behavior of microprocessors, memory, peripheral support integrated circuit hardware; microcomputer system and development software; applications.

EEL 5764—Computer Architecture (3) *Prereq: 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 (3) Engineering and hardware concepts pertaining to design of intelligent computer systems.

EEL 5905—Individual Work (1-4; max: 6) *Prereq: consent of adviser.* Selected problems or projects.

EEL 5934—Special Topics in Electrical Engineering (1-3; max: 8)

EEL 6171—Advanced System Theory (4) Structural analysis of linear dynamical systems. Invariance, F and G invariance, constrained reachability, pole assignment and stability, advanced topics in linear algebra useful in mathematical system theory.

EEL 6264—Advanced Electric Energy Systems I (3) *Prereq: consent of instructor.* Energy systems planning and operation with emphasis on advanced analysis methodologies and computer simulation.

EEL 6265—Advanced Electric Energy Systems II (3) *Prereq: EEL 6264.* Continuation of EEL 6264 with additional emphasis given to the new electric energy technologies.

EEL 6321—MOS Analog IC Design (3) *Prereq: EEL 5320 or 6311.* Design of analog circuits in CMOS IC technology. MOS switches, MOS op amp circuits, circuit simulation using SPICE.

EEL 6323—Advanced VLSI Design (3) *Prereq: EEL 5322.* Advanced very large scale integrated circuit design, testability, and performance evaluation. Use of industrial VLSI software. Building an advanced CMOS VLSI circuit.

EEL 6324—Silicon Fabrication Processes (3) *Prereq: EEL 5322.* Advanced modeling of physics of silicon fabrication. Lithography, deposition, etching, oxidation, implantation, and diffusion. Oriented toward silicon device fabrication.

EEL 6325—Computer Simulation of Integrated Circuits and Devices (3) *Prereq: 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.

EEL 6328C—Microwave IC Design (3) Fundamentals of microwave integrated circuit design. Use of computer software to design simple microwave circuits. Microwave circuit testing.

EEL 6374—Radio Frequency (RF) Integrated Circuits and Technologies (3) *Prereq: EEL 5322, 4306, or equivalent.* Requirements for RF integrated circuits. Design and implementation. Interdependence of RF circuit performance wit devices, parasitics, packages, and process technology.

EEL 6382—Semiconductor Physical Electronics I (3) Crystal structures; imperfections; statistics; lattice dynamics; energy band theory. Equilibrium properties of electrons and holes in semiconductors. Electronic transport phenomena. Boltzmann's equation and transport coefficients in semiconductors.

EEL 6383—Semiconductor Physical Electronics II (3) *Prereq: EEL 6382.* Scattering mechanisms. Recombination-generation and trapping processes; optical properties. Excess carrier phenomena. Photoelectric effects in semiconductors. Metal-semiconductor contacts. Opto-electronic devices. Junction and MOS devices. Superconductors and Josephson Junction devices.

EEL 6390—VLSI Device Design (3) *Prereq: EEL 3396.* Criteria and tradeoffs involved in design of high-performance semiconductor devices in scaled (VLSI) Si-based integrated-circuit technologies.

EEL 6397—Semiconductor Device Theory I (3) *Prereq: EEL 3396.* Semiconductor material properties, equilibrium and nonequilibrium processes, quasi-Fermi levels, pn junctions; charge-control modeling; high level injection, heavy doping effects.

EEL 6398—Semiconductor Device Theory II (3) *Prereq: EEL 6397.* Basic mechanisms in bipolar junction transistors, low- and high-current effects; fundamental principles of the MOS system, surface effects on pn junctions, MOS field-effect transitors.

EEL 6443—Integrated and Fiber Optics (3) *Prereq: EEL 5441.* Review of electromagnetic waves. Dielectric interfaces, propagation in graded-index media, slab waveguides, coupled waveguides, waveguide fabrication and characterization.

EEL 6447—Laser Electronics (3) *Prereq: EEL 3473 and 5441 or equivalent.* Study of lasers from basic principles to operational characteristics.

EEL 6486—Electromagnetic Field Theory and Applications I (3) *Prereq: undergraduate course in fields and waves.* Advanced electrostatics, magnetostatics, time-varying electromagnetic fields, wave propagation, waveguides.

EEL 6487—Electromagnetic Field Theory and Applications II (3) *Prereq: EEL 6486.* Electromagnetic radiation, antennas, wave propagation in anisotropic media.

EEL 6502—Adaptive Signal Processing (3) *Prereq: EEL 5701, 5544.* Theory of adaptation with stationary signals; performance measures. LMS, RLS algorithms. Implementation issues and applications.

EEL 6503—Spread Spectrum (3) *Prereq: EEL 5544 and 6535.* Techniques and applications; spreading sequence design; code division multiple access; multi-user detection.

EEL 6507—Queueing Theory and Data Communications (3) *Prereq: EEL 5544.* Introduction to basic queueing models; performance analysis of multiple access protocols; error control strategies.

EEL 6509—Wireless Communication (3) *Prereq: EEL 5544.* Introduction. Satellite and cellular systems, propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EEL 6524—Statistical Decision Theory (3) *Prereq: EEL 5544.* Hypothesis testing of signals in the presence of noise by Bayes, Neyman-Pearson, minimax criteria; estimation of signal parameters.

EEL 6535—Digital Communications (3) *Prereq: EEL 5544.* Digital modulation techniques; analysis of digital communication systems in presence of noise; optimum principles; synchronization; equalization.

EEL 6537—Spectral Estimation (3) *Prereq: EEL 5544, 5701.* Measurement and analysis of signals and noise. Digital filtering and spectral analysis; fast Fourier transform.

EEL 6548—Radar I (3) *Prereq: EEL 5544.* Basic concepts, wave propagation, antennas, radar equation, cross section, radar signals, detection.

EEL 6550—Error Correction Coding (3) *Prereq: EEL 5544 or equivalent; coreq: EEL 5544 or 4516.* Introduction to abstract algebra, block coding and decoding, convolutional coding and decoding, trellis coded modulation, run-length-limited codes.

EEL 6562—Image Processing and Computer Vision (3) 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.

EEL 6586—Automatic Speech Processing (3) *Prereq: EEL 5701.* Various models of speech production and perception. Operation of speech synthesizers. Discussion of speech recognition. Mathematical models of speech signals.
EEL 6591—Wireless Networks (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: EEL 5182.* Analysis and design of multivariable control systems in presence of uncertainties.
EEL 6667—Kinematics and Dynamics of Robot Manipulators (3) Algebraic formulation of robot manipulator motion. Homogeneous matrices. Methods for computing forward and reverse kinematic solutions of robot manipulators. Robot differential displacements and Jacobians. Newton-Euler and Lagrangian derivations of manipulator dynamics.
EEL 6668—Intelligent Robot Manipulator Systems (3) *Prereq: EEL 6667.* Trajectory planning and computation for robot manipulators. Splines. Force compliance and hybrid control. Machine perception and intelligence: touch, vision, collision avoidance, automatic task planning. Modeling a robotic manufacturing work cell. Robot computer languages.
EEL 6702—Digital Filtering (3) *Prereq: 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.
EEL 6706—Fault-Tolerant Computer Architecture (3) *Prereq: 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 6763—Parallel Computer Architecture (3) *Prereq: 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 6767—Database Engineering (3) *Prereq: EEL 4713C.* Architecture of database management system, data models and languages, design, integrity, security, concurrency control, distributed database management.
EEL 6769—Hardware-Software Interactions: Nonnumeric Processing (3) *Prereq: 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 6785—High-Performance Computer Networks (3) *Prereq: EEL 5718 or CEN 6505.* Design and quantitative analysis of high-speed networks and interconnects including protocols, hardware and software interfaces, switching, light-weight communication layers, flow and error control, and quality of service.
EEL 6814—Neural Networks for Signal Processing (3) *Prereq: EEL 6502.* 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 (3) 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 (3) *Prereq: EEL 5840.* Theory of machine intelligence applied to general problem of engineering intelligent computer systems and architecture. Applications emphasized.
EEL 6892—Virtual Computers (3) *Prereq: 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) virtual networks (tunneling, virtual private networks).
EEL 6905—Individual Work (1-4; max: 6) *Prereq: consent of adviser.* Selected problems or projects.
EEL 6910—Supervised Research (1-5; max: 5) S/U.
EEL 6935—Special Topics in Electrical Engineering (1-4; max: 12, including EEL 5905 and EEL 6905)
EEL 6940—Supervised Teaching (1-5; max: 5) S/U.
EEL 6971—Research for Master's Thesis (1-15) S/U.
EEL 6972—Research for Engineer's Thesis (1-15) S/U.
EEL 7936—Advanced Topics in Electrical Engineering (1-4; max: 6)
EEL 7979—Advanced Research (1-12) 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. S/U.
EEL 7980—Research for Doctoral Dissertation (1-15) S/U.

Engineering–General

College of Engineering

Dean: P. P. Khargonekar. *Associate Dean:* C. R. Abernathy.

EGN 5949—Practicum/Internship/Cooperative Work Experience (1-6; max: 6) *Prereq: graduate student.* Practical cooperative engineering work under approved industrial and faculty supervision. S/U.
EGN 6640—Entrepreneurship for Engineers

English

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: J. P. Leavey. *Graduate Coordinator:* K. Kidd. *Graduate Research Professor:* J. Seelye. *Marston/Milbauer Professor of English:* N. N. Holland. *Professors:* D. D. Ault; R. E. Brantley; R. Burt; R. H. Carpenter; J. O. Cech; J. Ciment; I. G. Clark; D. Greger; S. R. Homan; R. B. Kershner, Jr.; J. P. Leavey; D. Leavitt; D. Leverenz; W. Logan; K. McCarthy; B. McCrea;

M. New; P. Powell; R. B. Ray; M. A. Reid; M. Robison; P. L. Rudnytsky; M. J. Schueller; P. Schmidt; R. A. Shoaf; C. G. Snodgrass; M. C. Turim; J. B. Twitchell; G. L. Ulmer; S. E. Wade; J. Wolfreys. *Associate Professors:* M. C. Bryant; S. Dobrin; K. L. Emery; P. Gilbert; A. M. Gordon; T. Hedrick; S. Hegeman; K. B. Kidd; D. W. King; W. A. Losano; S. Nygren; J. Page; J. Paxson; J. M. Perlette; S. A. Smith; R. M. Thompson; R. S. Thomson; P. E. Wegner. *Assistant Professors:* A. Amoko; R. Beebe; T. Harpold; L. Horton-Stallings; B. Mennel; A. Ongiri; L. Rosenberg. *Lecturer:* M. Hofmann.

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, and 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 *General Information* 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, 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.

AML 6017—Studies in American Literature Before 1900 (3; max: 12)
AML 6027—Studies in 20th-Century American Literature (3; max: 12)
CRW 6130—Fiction Writing (3; max: 12)
CRW 6166—Studies in Literary Form (3; max: 12) *Prereq: permission of instructor.* Formal aspects of literature.
CRW 6331—Verse Writing (3; max: 12)
CRW 6906—Individual Work (1-3; max: 12) Individual study in reading literature and criticism, required for MFA specialization in creative writing.
ENC 5236—Advanced Business Writing for Accounting (4) Practice in and examination of theories of professional writing.
ENC 6428—Digital English (3) Digital technologies, media, and programs as they relate to discipline of English. Production of work in such media (web, MOO) as well as scholarship and theory about them.
ENG 6016—Psychological Approaches to Literature (3; max: 6)
ENG 6075—Literary Theory: Issues (3; max: 12)
ENG 6076—Literary Theory: Theorists (3; max: 12)
ENG 6077—Literary Theory: Forms (3; max: 12) Forms of theory studies (e.g., "schools," writing practices, assemblages of theoretical issues).
ENG 6137—The Language of Film (3)
ENG 6138—Studies in the Movies (3; max: 12)
ENG 6906—Individual Work (1-3; max: 12)
ENG 6910—Supervised Research (1-5; max: 5) S/U.
ENG 6971—Research for Master's Thesis (1-15) S/U.
ENG 7939—Seminar in Variable Topics (1-5; max: 12)
ENG 7979—Advanced Research (1-12) 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. S/U.
ENG 7980—Research for Doctoral Dissertation (1-15) S/U.
ENL 6206—Studies in Old English (3; max: 12)
ENL 6216—Studies in Middle English (3; max: 12)
ENL 6226—Studies in Renaissance Literature (3; max: 12)
ENL 6236—Studies in Restoration and 18th-Century Literature (3; max: 12)
ENL 6246—Studies in Romantic Literature (3; max: 12)
ENL 6256—Studies in Victorian Literature (3; max: 12)
ENL 6276—Studies in 20th-Century British Literature (3; max: 12)
LAE 6940—Supervised Teaching (1-5; max: 5) S/U.
LAE 6947—Writing Theories & Practices (3; max: 6) *Prereq: English major.*
LIT 5335—Approaches to Children's and Adolescent Literature (3; max: 6) *Prereq: at least 1 upper-division survey in children's or adolescent literature.* Exploration of controversies, trends, and critical problems.
LIT 6037—Studies in Verse (3; max: 12)
LIT 6047—Studies in Drama (3; max: 12)
LIT 6309—Communications and Popular Culture (3) Study of the origins and qualities of the popular arts in modern society.
LIT 6327—Studies in Folklore (3; max: 12)
LIT 6357—Studies in African American or African Diaspora Literatures and Cultures (3; max: 12)
LIT 6358—Theoretical Approaches to Black Cultural Studies (3; max: 9) Explorations of theory and black writing and the variety of theoretical approaches.
LIT 6855—Issues in Cultural Studies (3; max: 12)
LIT 6856—Cultural Studies: Interventions (3; max: 12) Praxes, perspectives, and limitations of cultural and theoretical studies within the multiple contexts of their production.
LIT 6857—Cultural Studies: Movements (3; max: 12) Theories and histories of cultural groups, classification, or communities in various media.
LIT 6934—Variable Topics (1-5; max: 12) 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).
SPC 6239—Studies in Rhetorical Theory (3; max: 9) Examination of ancient, medieval, renaissance, and modern writers who have influenced rhetorical thought, criticism, speaking, and writing.

Entomology and Nematology

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: J. L. Capinera. *Graduate Coordinator:* D. W. Hall. *Fischer, Davies, and Eckes Eminent Scholar:* M. Hoy. *Sapp Endowed Professor*: P. G. Koehler. *Professors:* A. Ali; R. M. Baranowski; C. S. Barfield; D. Borovsky; D. G. Boucias; H. W. Browning; J. F. Butler; J. L. Capinera; R. H. Cherry; C. C. Childers; J. F. Day; D. W. Dickson; L. W. Duncan; T. C. Emmel; R. W. Flowers; J. H. Frank; J. E. Funderburk; C. J. Geden; E. J. Gerberg; R. Giblin-Davis; D. W. Hall; F. A. Johnson; W. Klassen; P. O. Lawrence; N. C. Leppla; J. E. Lloyd; L. P. Lounibos;

C. W. McCoy, Jr.; R. McSorley; L. D. Miller; R. F. Mizell, III; J. L. Nation; H. N. Nigg; J. W. Noling; G. S. Nuessly; L. S. Osborne; R. S. Patterson; J. Pena; M. L. Pescador; J. R. Rey; J. R. Rich; R. H. Scheffrahn; D. J. Schuster; J. P. Shapiro; F. Slansky, Jr.; G. C. Smart; P. A. Stansly; B. J. Smittle; R. K. Sprenkel; J. L. Stimac; N.-Y. Su; W. J. Tabachnick; P. E. A. Teal; J. H. Tsai; V. H. Waddill; H. Weems; R. F. Woodruff; S. J. Yu. *Associate Professors:* D. R. Barnard; D. A. Carlson; J. P. Cuda; J. L. Foltz; H. G. Hall; F. W. Howard; M. D. Hubbard; D. L. Kline; G. L. Leibee; C. C. Lord; J. E. Maruniak; H. J. McAuslane; C. W. O'Brien; J. F. Price; J. A. Seawright; D. L. Silhacek; L. A. Stange; S. E. Webb. *Assistant Professors:* M. A. Branham; J. J. Becnel; E. A. Buss; B. J. Cabrera; R. D. Cave; W. Crow; G. B. Edwards; D. A. Focks; A. M. Handler;. J. B. Heppner; G. S. Hodges; J. A. Hogsette; W. H. Kern; O. E. Liburd; C. M. Mannion; R. L. Meagher; R. Nguyen; D. H. Oi; F. M. Oi; W. A. Overholt; F. L. Petitt; S. D. Porter; M. E. Rogers; P. D. Shirk; J. M. Sivinsky; P. E. Skelley; G. J. Steck; M. C. Thomas; R. K. Vander Meer; D. P. Wojcik.

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. Complete descriptions of the minimum requirements for the M.S. and Ph.D. degrees are provided in the *General Information* section of this catalog. The Department also offers a cooperative Doctor of Philosophy degree with Florida A&M University.

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.

In addition to the University's admission requirements, the Department requires the GRE Advanced Test in biology. New graduate students should have backgrounds in biology, chemistry, physics, and mathematics and knowledge of basic entomology or nematology. 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.

ALS 5136—Agricultural Ecology Principles and Applications (3) Introduction to agroecosystems. Ecological principles with examples and applications from agriculture.

ALS 6046—Grant Writing (2) *Prereq: admitted to doctoral program.* Preparation, submission, and management of competitive grants, including operations of national review panels and finding sources of extramural funding.

ENY 5006—Graduate Survey of Entomology (2) *Coreq: ENY 5006C.* Insect structure, function, development, classification, ecological niches, and control of those harmful to plants and animals.

ENY 5006L—Principles of Entomology Laboratory (1) *Coreq: ENY 5006.* Practical experience working with insects, using laboratory equipment, dissecting insects, and preparing laboratory reports. Collection required.

ENY 5031C—Insect Field Biology (3) *For nonmajors.* Role of insects in nature. Field exercises and experiments.

ENY 5151C—Techniques in Insect Systematics (2) *Prereq: ENY 3005C.* Procedures and techniques used to study systematics of insects and related organisms.

ENY 5160C—Survey of Science with Insects (3) Interactions of insects with man and environment.

ENY 5164—Graduate Survey of Invertebrate Field Biology (3) Field-oriented survey of invertebrate biodiversity and conservation.

ENY 5223C—Biology and Identification of Urban Pests (3) Biology, behavior, identification. Damage recognition of species that infest houses, damage structures, and affect pets and humans.

ENY 5225—Urban Pests That Bite and Sting (2) *Coreq: ENL 5224L.* Knowledge base to solve pest management problems in real-life situations.

ENY 5225L—Urban Pests That Bite and Sting Laboratory (1) *Coreq: ENY 5225.* Identify, recognize, diagnose, and solve biting and stinging urban pest problems through site visits and problem solving videos.

ENY 5226C—Principles of Urban Pest Management (3) Methods of controlling household, structural, and occasional pests. Chemical and nonchemical control of cockroaches, termites, and fleas.

ENY 5228—Graduate Survey of Urban Vertebrate Pest Management (2) Biology, ecology, health risks, exclusion, and control of vertebrate pests in urban environment.

ENY 5228L—Urban Pests That Invade Structures Laboratory (1) *Coreq: ENY 5229.*

ENY 5229—Urban Pests That Invade Structures (2) *Coreq: ENY 5228L.* How pest management is done in urban environment. Range of management strategies using variety of tools in industry.

ENY 5241—Biological Control (4) *Prereq: ENY 3005C.* Principles involved in the natural and biological control of insects.

ENY 5245—Agricultural Acarology (2) *Prereq: ENY 3005C or ZOO 2203C* Introduction to mites of agricultural importance, their biology, behavior, and control.

ENY 5564L—Tropical Entomology Field Laboratory (2) *Prereq: ENY 5566* Field experience observing natural history, ecology, and behavior of insects in natural ecosystems and agroecosystems in tropics.

ENY 5566—Tropical Entomology (3) *Prereq: ENY 3005C.* Natural history, ecology, behavior, natural ecosystems, and agroecosystems of tropics.

ENY 5611—Immature Insects (4) *Prereq: ENY 4161.* Structure and identification of immature forms of insects, especially the Holometabola.

ENY 5820—Insect Molecular Genetics (3) Basics of DNA, RNA, gene transcription and translation, and tools used in molecular genetics of insects.

ENY 6166—Insect Classification (3) *Prereq: ENY 3005C or equivalent.* Classification of adult insects to family and of some to species level. Habitat, niche, and relationship to environment.

ENY 6203—Insect Ecology (3) Advanced course on concepts in ecology with emphasis in insects' relationships with their biotic and physical environments and basics of ecological research.

ENY 6261C—Insect Resistance in Crop Plants (3) Principles of plant resistance to insects.

ENY 6401C—Insect Physiology (4) Physiology and biochemistry of insect development and adaptation for survival.

ENY 6454—Behavioral Ecology and Systematics of Insects (3) Survey of concepts, theory, and practice of biosystematics, teleonomy, and cladistics.

ENY 6651C—Insect Toxicology (3) *Prereq: ENY 3005C.* 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 (3) *Prereq: ENY 3005C.* 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 (1) *Prereq: ENY 6665.* Identification of mosquitoes, ticks, lice, fleas, and other disease vectors. Collection required.
ENY 6821—Insect Pathology (4) *Prereq: consent of instructor.* Interrelationship of insects and pathogenic micro-organisms; history, classification, morphology, mode-of-action, and epidemiology of entomogenous bacteria, viruses, protozoa, and fungi.
ENY 6822C—Molecular Biology Techniques with Invertebrates and Their Pathogens (4) *Prereq: 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 (1-4; max: 12) Individual study under faculty guidance. Student and instructor to agree on problem and credits prior to registration.
ENY 6910—Supervised Research (1-5; max: 5) S/U.
ENY 6931—Entomology Seminar (1; max: 8) Presentation and discussion of current research topics. S/U option.
ENY 6932—Special Topics in Entomology (1-2; max: 4) Reports and discussions on selected topics announced in advance. S/U.
ENY 6934—Selected Studies in Entomology (1-4; max: 8) Current issues. Subject matter variable, may be repeated with different subject each time.
ENY 6940—Supervised Teaching (1-5; max: 5) S/U.
ENY 6942—Insect Diagnostics (1-3; max: 6) Identifying insects and diagnosing plant damage caused by insects.
ENY 6943—Entomology Internship (1-3; max: 6) Diagnosing plant disorders caused by complex of insects and other factors. S/U.
ENY 6944—Entomology Extension Internship (1-3; max: 6) Diagnosing insect damage to plants in field and greenhouse. Learning to make control recommendations. S/U.
ENY 6971—Research for Master's Thesis (1-15) S/U.
ENY 7979—Advanced Research (1-12) 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. S/U.
ENY 7980—Research for Doctoral Dissertation (1-15) S/U.
NEM 5002C—Graduate Survey of Nematology (3) 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 (3) 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 (2) *Prereq: NEM 3002.* Morphology, anatomy, and function of structures, organs, and systems.
NEM 6102C—Nematode Taxonomy and Systematics (3) *Prereq: NEM 6101C.* Collection, preparation, and identification of plant and soil nematodes; review of pertinent literature; drawing techniques and preparation of keys.
NEM 6103—Insect Parasitic Nematodes (1) Insect-parasitic nematodes in all taxons, including their pathogenicity, life cycles, etc. Steinernematidae and Heterohibditidae emphasized.
NEM 6104L—Insect Parasitic Nematodes Laboratory (1) *Prereq: NEM 6103.* Field survey and pathogenicity experiments, survival mechanisms determined, selected nematodes produced in vivo, and DNA extracted and sequenced.
NEM 6201—Nematode Ecology (3) 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 (2; max: 4) 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 (1-4; max: 8)
NEM 6931—Nematology Seminar (1; max: 6) Presentation and discussion of current research, research topics. S/U option.
NEM 6932—Special Topics in Nematology (1-4; max: 4) Reports and discussions. S/U.
NEM 6934—Selected Studies in Nematology (1-4; max: 4) Current issues with subject matter variable.
NEM 6940—Supervised Teaching (1-5; max: 5) S/U.
NEM 6942—Nematode Diagnostics (2) Diagnosing nematode problems from soil and plant samples.
NEM 6943—Nematode Internship (1-3; max: 6) Diagnosing complex plant disorders caused by nematodes and other factors. S/U.
NEM 6944—Nematode Extension Internship (1-3; max: 6) Diagnosing nematode damage to plants in field or greenhouse. S/U.
NEM 6971—Research for Master's Thesis (1-15) S/U.
NEM 7979—Advanced Research (1-12) 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. S/U.
NEM 7980—Research for Doctoral Dissertation (1-15) S/U.
PMA 5205—Citrus Pest Management (3) *Prereq: ENY 3005C.* 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 (2) Practical aspects of pest management, emphasizing sampling, diagnostics, decision making processes, and informational resources available to IPM practitioner.

Environmental Engineering Sciences

College of Engineering

Graduate Faculty 2004-2005

Chair: J. P. Heaney. *Graduate Coordinator:* J. J. Delfino. *Professors:* M. D. Annable; G. Bitton; T. L. Crisman; J. J. Delfino; B. Koopman; W. Viessman, Jr.*(Emeritus);* J. Zoltek, Jr. *Associate Professors:* J. M. Andino; M. T. Brown; P. A. Chadik; C. L. Montague; W. Properzio; T. G. Townsend; W. R. Wise; C. Y. Wu. *Assistant Professors:* J.-C. Bonzongo; A. S. Linder; D. W. Mazyck.

Graduate study is offered leading to the degrees Master of Engineering, Master of Science, Engineer, and Doctor of Philosophy in the field of environmental engineering sciences. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The Department has four broadly defined graduate research and education areas as outlined below with subspecialties shown in parentheses. Cross-fertilization among areas is encouraged as is the development of crosscutting research initiatives that involve students and faculty from multiple areas. While students may focus within an area, each graduate student works with his/her adviser to develop a unique curriculum to meet personal educational objectives.

Air and waste management (air pollution, environmental health, and solid and hazardous waste).

Environmental hydrology (contaminant transport and fate, hydrologic restoration, surface and subsurface hydrology, water chemistry, and water resources management).

Systems ecology and ecological engineering (ecological engineering, energy analysis, environmental policy, systems ecology, and wetlands, aquatic, and estuarine ecology).

Water and wastewater science and engineering (biological treatment of potable water and wastewater, nutrient control and water reuse, physico-chemical treatment of potable water and wastewater, and water chemistry and biogeochemistry).

The hydrologic sciences interdisciplinary concentration is offered through 10 departments in 3 colleges. Both are 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 upon the completion of appropriate technical courses.

Direct admission into the Master of Engineering program requires a bachelor's degree in engineering.

The 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, in part, on the research topic.

The following courses in related areas will be acceptable for graduate credit as part of the candidate's major:

Systems Ecology and Energy Analysis: CRW 6115, GLY 5827, PCB 5307C, PCB 5317C, PCB 6356C, PCB 6447C, PCB 6496C, BOT 5695, URP 6231, URP 6821, and AEB 6453.

Concurrent 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 six 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.

CWR 6xxx—Environmental Biogeochemistry of Trace Metals (3) *Prereq: permission of instructor.* Environmental impact and fate of trace metals and metalloids as they cycle through geological and biological environmental compartments. Emphasis on anthropogenic activities of metals with growing environmental concerns, including arsenic, mercury, chromium, and lead.

CWR 6115—Surface Hydrology (3) *Prereq: MAP 2302 or EGM 3311, 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.

EES 5105—Advanced Wastewater Microbiology (3) *Prereq: 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 (3) System dynamics, fundamentalmicrobiological principles, and general ecological principles and structure and function of ecosystems.

EES 5207—Environmental Chemistry (3) *Prereq: 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 (3) *Prereq: CHM 2046, EES 4201, or 6208, or consent of instructor.* Principles of analytical chemistry applied to the determination of chemical composition of natural waters and wastewaters. Emphasis on methods used in routine determinations of water and wastewater quality and interpretation of data.

EES 5305C—Ecological and General Systems (3) *Prereq: MAP 2302 or equivalent.* Systems ecology, including examples, languages, theoretical formulations and models for design, synthesis and prediction of systems of man and nature.

EES 5306—Energy Analysis (3) 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 (3) Principles and practices in design and management of environment with society; systems concepts for organization of humanity, technology, and nature.

EES 5315—Ecology and the Environment (2) Application of ecological principles to environmental problems and management.

EES 5415—Environmental Health (3) Effects of environment pollution upon health. Methods of evaluation, treatment, and prevention of pollutants of health significance.

EES 6007—Advanced Energy and Environment (3) Energy basis for system of humanity and nature, including principles of systems ecology, ecological economics, and public policy.

EES 6009—Ecological Economics (2) Consideration of new research areas; models and mathematical theories common to ecology and economics, interfaces between ecology and economics, relationships of energy and money.

EES 6026C—Environmental Systems Dynamics (3) *Prereq: 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 (3) Advanced applications of GIS and principles of spatial analysis and modeling in environmental engineering sciences.

EES 6051—Advanced Environmental Planning and Design (3) Sustainable communities and regions. Quantitative methods for evaluation of environmental impacts and carrying capacity. Theories of spatial and temporal organization of systems of humanity and nature.

EES 6135—Aquatic Microbiology (3) Behavior of microorganisms in freshwater, marine and soil environments. Stress of pollution on microbial communities. Adsorption of microorganisms to surfaces.

EES 6136—Aquatic Autotrophs (3) 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 (3) The role of zooplankton, benthic invertebrates and fish in freshwater systems. Emphasis is placed on trophic-level interactions, nutrient cycling and the potential of each group for predicting water quality.

EES 6140—Biology of Exotic Species (3) *Prereq: EES 4103.* Examination of case histories of species' introduction worldwide and the mechanisms responsible for establishment and dominance of native communities by exotic taxa.

EES 6145—Environmental Meteorology and Oceanography (3) *Prereq: MAP 2302 or EGM 3311 and PHY 2049.* Principles of meteorology and oceanography and interactions of atmosphere and oceans with human economy.

EES 6208—Principles of Water Chemistry I (3) *Prereq: CHM 2046 or consent of instructor.* Application of chemical principles to aqueous reactions; emphasis on thermodynamics, kinetics, and aqueous equilibria including acid-base, solubility, complexation, precipitation and redox.

EES 6209—Principles of Water Chemistry II (3) *Prereq: EES 4201 or 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 (3) *Prereq: 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 (3) *Prereq: EES 4200, 5245, or consent of instructor.* Advanced chemical procedures used in water chemistry research. Application of instrumental methods for determination of trace inorganic and organic natural water constituents.

EES 6301—Comparative Approaches in Systems Ecology (3) Alternative approaches for understanding ecological interactions, prediction after ecosystem perturbations, and optimal design with nature are evaluated within 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 (3) *Prereq: BSC 2005 or EES 4103.* Defining and classifying major wetland ecosystems, formation of wetlands, wetland functions and values; wetlands ecological engineering and management; integrating wetlands into developing landscape. Emphasis on several field trips to natural and altered wetlands.

EES 6356—Estuarine Systems (3) Coastal ecosystems, their components, processes, systems, models and management including tropical, arctic and man-affected types, field trip and literature review.

EES 6405—Environmental Toxicology (3) *Prereq: BSC 2005 or EES 4102, or consent of instructor.* Effects of environmental toxicants on humans, animals, and the environment.

ENV 5072—Pollution Control and Prevention (3) *Prereq: 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 sustainable environment.

ENV 5075—Environmental Policy (3) Policy analysis, policy making, and policy implementation. Analytical methods for evaluating alternative policies. Legal, social, political, and economic patterns and processes which shape the climate within which environmental policy is made.

ENV 5105—Foundations of Air Pollution (3) Principal types, sources, dispersion, effects, and physical, economic and legal aspects of control of atmospheric pollutants.

ENV 5305—Advanced Solid Waste Treatment Design (3) Review of solid and hazardous waste treatment processes, including thermal, biological, chemical, and mechanical treatment. Analysis of existing operations.

ENV 5306—Municipal Refuse Disposal (3) 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 (3) *Prereq: CWR 5125 or equivalent.* Field methods for characterizing sites for environmental and hydrologic evaluation. Focus on subsurface systems and ground water interactions.

ENV 5520—Fluid Flow in Environmental Systems (3) *Prereq: CHM 2046, PHY 2005.* Introduction to fundamentals of fluid flow and its relation to environmental systems such as surface water, ground water, and engineer systems.

ENV 5555—Wastewater Treatment (4) *Prereq: ENV 4514C or equivalent.* In depth study of the physical, chemical and biological processes utilized in the treatment of wastewater, with special emphasis on cause and effect of physical and biological actions.

ENV 6050—Advanced Pollutant Transport (3) *Prereq: ENV 3040, 4501, or consent of instructor.* Quantification of physical, biological, and chemical processes occurring in natural freshwater ecosystems. Mathematical analysis of the effects due to 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 (3) *Prereq: consent of instructor.* Mechanics of immiscible fluids in porous media. Static fluid distributions, steady and unsteady multiphase flow. Remediation of sites contaminated with nonaqueous phase liquids.

ENV 6116—Air Pollution Sampling and Analysis (3) *Prereq: ENV 4101 or consent of instructor.* Determination of the concentration of normally encountered ambient pollutants. Practical experience in ambient air and indoor sampling.

ENV 6126—Air Pollution Control Design (3) *Prereq: 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 (3) Generation, collection, and measurement of aerosols. Theory of the fluid dynamic, optical, electrical, inertial and thermal behavior of gas-borne particles.

ENV 6215—Health Physics (3) 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 (3) Source, treatment and disposal. Emphasis on prevention of environmental contamination.

ENV 6301—Advanced Solid Waste Containment Design (3) Current practice in design of solid and hazardous waste landfills, waste piles, monofills, surface impoundments. Regulations, siting, sizing, liners, leachate and gas management, operations, closure, post-closure.

ENV 6435C—Advanced Water Treatment Process Design (4) *Prereq: CHM 2046, EES 4201 or 6208, ENV 4514C.* Design of water treatment processes including air stripping disinfection, activated carbon adsorption, ion exchange, membrane processes, and ozonation. Predesign laboratory studies to select appropriate process parameters.

ENV 6437—Advanced Wastewater System Design (3) *Prereq: ENV 4514C or equivalent; coreq: ENV 4561 or equivalent.* Layout and design of sanitary sewage systems, pumping stations, force mains, wastewater treatment plants, and methods of effluent disposal. Emphasis is placed on the preparation of design drawings and estimating costs.

ENV 6438—Advanced Potable Water Systems Design (3) *Prereq: EES 4201, 6208, ENV 4514C.* Design of water treatment operations, including coagulation, flocculation, mixing, sedimentation, filtration, softening, corrosion control, and sludge management. Design costs.

ENV 6508—Wetland Hydrology (3) *Prereq: basic fluid flow course or consent of instructor.* Water flow and chemical transport in wetlands. Surface water, ground water interaction in wetlands. Constructed wetlands for water treatment.

ENV 6510—Groundwater Restoration (3) Design of water treatment systems employing aeration, activated carbon, reverse osmosis, and in situ bioremediation to restore contaminated groundwater.

ENV 6511—Biological Wastewater Treatment (3) Theory and current research associated with biological treatment processes.

ENV 6556—Advanced Waste Treatment Operations (3) *Prereq: ENV 5555, 6511.* Biological, physical, and chemical processes used in the advanced treatment of domestic and industrial wastewater. Reuse application and guidelines.

ENV 6905—Individual Work (1-4; max: 8) Faculty-supervised individual research or study of material not covered in formal courses.

ENV 6910—Supervised Research (1-5; max: 5) S/U.

ENV 6916—Nonthesis Project (1-3; max: 3)

ENV 6932—Special Problems in Environmental Engineering (1-4; max: 8)

ENV 6935—Graduate Environmental Engineering Seminar (1; max: 6) S/U option.

ENV 6971—Research for Master's Thesis (1-15) S/U.

ENV 7979—Advanced Research (1-12) 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. S/U.

ENV 7980—Research for Doctoral Dissertation (1-15) S/U.

Epidemiology and Health Policy Research

Graduate Faculty 2004-2005

Chair: E. Shenkman. *Graduate Coordinator:* N. R. Asal. *Professors:* N. R. Asal; G. Casella; A. Hartzema; M. K. Miller; M. P. Pevonka; E. Shenkman; L. Young. *Associate Professors:* R. A. Davidson; J. G. Reiss; S. L. Tomar; B. Vogel; H. N. Yarandi; L. M. Youngblade. S. Aydede. *Associate Scholar:* J. Nogle. *Assistant Professor:* S. E. Johnatty.

The Department of Epidemiology and Health Policy Research offers a 36 credit hour, including a thesis, Master of Science (M.S.) degree program in epidemiology in the College of Medicine with concentrations in biostatistics and health policy.

Training in this program will provide a strong base for students wanting to pursue Ph.D. programs in epidemiology and health policy. Three general programs of study are available.

The general epidemiology degree program is designed to produce graduates specializing in epidemiology with an emphasis on research methodology. The requirements consist of 12 credits of epidemiology core courses, including one course each in the fundamentals of epidemiology, intermediate epidemiology methods, epidemiology and control of infectious diseases, and epidemiology and control of chronic diseases; 9 credits of appropriate biostatistics courses; 6 credits of epidemiology electives; 5 credits of public health policy electives; and 4 credits of thesis research.

The epidemiology program with a concentration in health policy is designed to produce graduates who have a broad background in epidemiology with emphasis on health policy, outcomes, and evaluation research. The requirements consist of 12 credits of epidemiology core course; 12 credits of health policy courses including health outcomes, health policy, and health services research; 6 credits of biostatistics courses; 2 credits of public health electives or advanced epidemiological/evaluation methods; and 4 credits of thesis research.

The epidemiology program with a concentration in biostatistics is designed to produce graduates who have a broad background in epidemiology with an expertise in biostatistics. This concentration is a joint endeavor between the College of Medicine, Department of Epidemiology and Heath Policy Research and the College of Liberal Arts and Sciences Department of Statistics. It includes 12 credits of epidemiology core courses; 12 credits of biostatistical courses encompassing introduction to biostatistics, statistical methods, and other courses in biostatistics offered through the Department of Statistics in the College of Liberal Arts and Sciences; 8 credits of electives courses in epidemiology and biostatistics; and 4 credits of thesis research.

One program strength is its flexibility. The epidemiologist may chose general epidemiology or epidemiology with a concentration in either biostatistics or health policy. This exposure to health policy and biostatistical concepts and applications will enable the epidemiologist to bridge the gap between the health field and the analytic process, providing functional interactions with other health professionals in solving complex health issues.

GMS 6800—Fundamentals of Epidemiology (3) *Prereq: 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 (3) *Prereq: GMS 6800 or permission of instructor.* Detailed review of epidemiology, prevention, and control of major infectious diseases and methodology used.

GMS 6802—Epidemiology, Prevention, and Control of Chronic Diseases (3) *Prereq: GMS 6800 or permission of instructor.* Detailed review of epidemiology, prevention, and control of major chronic diseases, risk factors, and methodology.

GMS 6803—Data Management for Epidemiological and Clinical Research (3) *Prereq: permission of instructor.* Introduction to use of data management and analysis encountered in epidemiological and clinical research including software.

GMS 6804—Medical Informatics (2) *Prereq: GMS 6800, basic statistics, permission of instructor.* Issues associated with use of computerized epidemiological and medical data sources and systems.

GMS 6810—Intermediate Epidemiology Methods (3) *Prereq: GMS 6800 or permission of instructor.* Methodological issues important to design of epidemiological studies of all diseases covered at intermediate level.
GMS 6811—Grant Writing Skills in Epidemiology and Clinical Research (2) *Prereq: GMS 6800, 6810, permission of instructor.* Problems and processes encountered in design and execution of epidemiological studies and clinical trials used in grantsmanship.
GMS 6812—Cancer Epidemiology, Prevention, Early Detection, and Control (3) *Prereq: GMS 6800 or permission of instructor.* Detailed review of epidemiology, early detection, prevention, and control strategies of major cancer sites.
GMS 6813—Clinical Trials (2) *Prereq: GMS 6800 or permission of instructor.* Principles for design and conduct. Emphasis on protocol preparations, randomization, sample size, trial monitoring, ethical issues, and data analyses.
GMS 6814—Molecular and Genetic Epidemiology (2) *Prereq: GMS 6800 or permission of instructor.* Description of use of human genetics and molecular biology in studying host susceptibility to disease. Mendelian and non-Mendelian genetics.
GMS 6815—Cardiovascular Disease Epidemiology (2) *Prereq: GMS 6800, permission of instructor* Survey of major cardiovascular diseases including review of design and methods used to study natural history, prevention, and treatment process.
GMS 6816—Pediatric Epidemiology (2) *Prereq: GMS 6800, permission of instructor.* Overview of selected causes of morbidity and mortality in infants and children. Risk factors and methods used to study disease in this age group.
GMS 6817—Epidemic Investigation (2) *Prereq: GMS 6800, 6801, permisssion of instructor.* Principles of infectious disease investigation and features of all types of outbreaks. Problem solving exercises of classic and current epidemics.
GMS 6820—Advanced Epidemiology Methods (3) *Prereq: GMS 6800, 6810, permission of instructor.* Design of epidemiological studies including biases, confounding, misclassification, and concept of causal models covered in depth.
GMS 6830—Epidemiology and Health Policy (3) *Prereq: GMS 6800 or permission of instructor.* General principles and methods of epidemiology and health policy reviewed. Use of data to establish health policy and legislation. Examples from literature.
GMS 6832—Cost Effectiveness and Cost-Benefit Analysis in Health (3) *Prereq: permission of instructor.* Economic approaches for health care issues including basic cost-benefit and other analyses of limitations.
GMS 6833—Health Care Policy and Vulnerable Populations (3) *Prereq: permission 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 (3) *Prereq: permission of instructor.* Policy tools used to analyze payment mechanisms. Emphasis on understanding provider reimbursement in health care.
GMS 6835—Health Policy Issues in Children's Health (3) *Prereq: permission of instructor.* Analysis of critical issues in child health policy such as early intervention programs, new morbidities, health care, and insurance status for children in U.S.
GMS 6882—Directed Readings in Epidemiology and Health Policy (2) *Prereq: GMS 6800 or permission of instructor.* Student selects advanced or specialized topic in epidemiology or health policy with approval of instructor.
GMS 6883—Practicum Experience in Epidemiology and Health Policy (2) *Prereq: GMS 6800 or permission of instructor* Student selects state or federal health agencyor research project in epidemiology and health policy with approval of instructor. S/U.
GMS 6884—Research in Epidemiology and Health Policy (2) *Prereq: GMS 6800, permission of instructor.* Individual, approved research topic or project in epidemiology and health policy.
GMS 6971—Research for Master's Thesis (1-15) S/U.

Family, Youth, and Community Sciences

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chair: N. I. Torres. *Graduate Coordinator:* M. Swisher. *Professors:* L. Beaulieu; E. Bolton; M. Spranger; J. Turner. *Associate Professors:* L. Bobroff; G. Culen; G. Evans; M. Ferrer; J. Jordan; M. Norman; S. Smith; M. Swisher; C. Wilken. *Assistant Professors:* R. Barnett; L. Guion; A. Simmone.

The Department of Family, Youth, and Community Sciences offers two graduate social science degrees. The Master of Science in Family, Youth, and Community Sciences is a research degree that prepares students to conduct original research about problems, issues, and policies affecting families, youths, and communities. The Master of Family, Youth, and Community Sciences prepares students for mid-level leadership positions in public and private organizations, agencies, and businesses that address the needs of families, youths, and communities. Complete descriptions of the requirements for the M.S. and M.F.Y.C. degrees are provided in the *General Information* section of this catalog.

A minor in this discipline provides students from other areas with knowledge about the theories and body of research that explain how families, youths, and communities develop and interact. The programs emphasize an ecological model in which the interactions and relationships among the individual, the family, and the community form the framework for addressing the issues, problems, and policies that affect youths, families, and communities in the United States and globally.

Prospective graduate students need not have majored in family, youth, and community sciences as an undergraduate. Students with an insufficient background in relevant social sciences will need to include basic courses in their programs of study. Students are encouraged to complete course work outside the Department in relevant areas, selecting appropriate courses in close consultation with their supervisory committees.

The Department offers a combined bachelor's/master's program and a joint degree program with the Levin College of Law. Contact the graduate coordinator for information.
FYC 6131—Ethics for FYCS Practitioners (3) Basic elements of ethics, professional ethics, and professionals as ethical "agents. "
FYC 6207—Adolescent Problematic Behavior (3) *Prereq: 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 (3) Skills needed to develop funding proposals to support community-based projects and organizations.
FYC 6222—Parenting and Child Relationships (3) *Prereq: core courses.* Relationships affecting child development outcomes.
FYC 6230—Theories of Youth and Family Development (3) *Prereq: SYG 2430 or FYC 3101 and 3201.* Historical and contemporary theories of youth and family development.

FYC 6302—Sustainable Community Development (3) Focus on relationships among economic, social, and environmental aspects of sustainability, analytic and professional skills to build sustainable communities. Community study and in-depth analysis.

FYC 6330—Theories of Community Development (3) Sociological concept of community and its application in public development policies.

FYC 6331—Involving Youths in Community Issues (3) Overview of methods of investigating community issues and how to engage youths in scientific, technological, and social issues at community level.

FYC 6421—Nonprofit Organizations (3) Community nonprofit organizations, including governance, policy and decision making, and planning.

FYC 6422—Policy Issues and Case Studies in Nonprofit Organizations (3) *Prereq: FYC 6241.* Study and analysis of policy and cases related to development and operation of nonprofit organizations.

FYC 6620—Program Planning and Evaluation for Human Service Delivery (3) *Prereq: core FYCS courses.* Contemporary theories and process of planning and evaluating human service education and delivery programs.

FYC 6660—Public Policy and Human Resource Development (3) Current policies and laws impacting youths, families, and communities, and strategies to change these policies and laws.

FYC 6801—Scientific Reasoning and Research Design (3) Scientific reasoning, scientific method, and quantitative and qualitative research design.

FYC 6802—Advanced Research Methods for Family, Youth, and Community Sciences (3) *Prereq: FYC 6801 or equivalent.* Research tools and techniques appropriate for ecological model. Multi-method approach emphasis.

FYC 6901—Problems in Family, Youth, and Community Sciences (1-3; max: 6) Advanced students select and study problem related to family, youth, and community sciences.

FYC 6912—Nonthesis Project in Family, Youth, and Community Sciences (1-3; max: 6) Development of 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 (1-3; max: 6) Critical review of selected topics.

FYC 6933—Seminar in Human Resource Development (1) Exploration of current topics, trends, and research findings in human resource development. S/U option.

FYC 6934—Professional Inernship/Practicum in Family, Youth, and Community Sciences (1-3; max: 6) Directed work experience or internship in professional capacity.

FYC 6971—Research for Master's Thesis (1-6) S/U.

Finance, Insurance, and Real Estate

Warrington College of Business Administration

Graduate Faculty 2004-2005

Chairman: M. D. Ryngaert. *Graduate Coordinator:* J. Karceski. *Barnett Banks Eminent Scholar:* M. J. Flannery. *Joe B. Cordell Eminent Scholar:* J. R. Ritter. *SunBank Eminent Scholar:* C. M. James. *Professors:* W. R. Archer; R. L. Crum; A. A. Heggestad; J. F. Houston; J. Kraft; D. C. Ling; M. B. Livingston; W. A. McCollough; M. Nimalendran; D. J. Nye; M. D. Ryngaert. *Associate Professors:* D. T. Brown; A. Naranjo; R. C. Radcliffe. *Assistant Professor:* J. Karceski. *Lecturer:* T. C. Tapley.

The Department of Finance, Insurance, and Real Estate offers graduate work leading to the Master of Science degree in finance, the Master of Science degree in business administration with concentrations in entrepreneurship or real estate (nonthesis option), and the Doctor of Philosophy degree in business administration with a concentration in finance or real estate. Complete descriptions of the minimum requirements for the M.S. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Both finance and real estate 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 *General Information* section.

The Doctor of Philosophy 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. Detailed information about the finance and real estate concentrations is provided below.

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 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. Other requirements are listed in the *General Information* section of this catalog.

Master of Science Degree in Finance, Nonthesis 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 with an undergraduate background in finance for positions in commercial banking, money management, investment banking, and securities markets.

M.S. Degree in Finance/J.D. Joint Degree program–This joint degree program culminates in the Master of Science and Juris Doctor 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.

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.

M.S. Degree in Business Administration with a Concentration in Real Estate, Nonthesis Option–This Master of Arts 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 estatereal estate finance and investment, real estate development, real estate law and institutions, real estate asset management, and international real estateand 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.

M.S .Degree in Business Administration with a Concentration in Real Estate/J.D. Joint Program–This joint degree program culminates in the Master of Science and Juris Doctor 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.

Entrepreneurship—*M.S. Degree in Business Administration with a Concentration in Entrepreneurship, Nonthesis Option*This M.S. program option consists of at least 30 credits in letter-graded courses. It is designed to provide students with the entrepreneurial and innovation skills needed for the cultivation and development of entrepreneurial practice and innovation management. Development of skills in idea generation, feasibility analysis, business plan creation, and management of early-stage and high-growth ventures are an integral part of the program. Students are not required to have an undergraduate degree in business; however, at least one year of professional work experience is required. The concentration includes a comprehensive examination administered during the final term

FIN 5405—Business Financial Management (3) *Prereq: 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 (2) *Prereq: 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 (2) *Prereq: FIN 5437. Required of all M.B.A. students.* Continuation of FIN 5437. Focus on corporate financial decision making.

FIN 6246—Money and Capital Markets (3) *Prereq: FIN 5405, college-level mathematics, and statistics.* Financial markets, with emphasis on flow of funds, interest rate determination, and allocation of resources.

FIN 6306—Investment Banking (2) *Prereq: 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 6419—International Cash Flow Management (2) Working capital management and cash management with emphasis on international applications.

FIN 6425—Corporation Finance (3) *Prereq: FIN 5405 or consent of instructor. Designed for MBA students.* The application of business finance problems. Students prepare written solutions to case problems.

FIN 6427—Measuring and Managing Value (2) *Prereq: FIN 5439. Designed for MBA Students.* Application of basic financial theory to valuing companies and creating value through sound financial decision making.

FIN 6429—Financial Decision Making (2) *Prereq: FIN 5439. Designed for M.B.A. students.* Application of basic financial theory to assist managers in determining how to finance their businesses. Optimal debt policy, distribution of firm cash flow policies, equity issuance strategies, risk management, and use of hybrid securities in financing business.

FIN 6438—Study in Valuation (2) 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 (2) Examination of fundamental analysis of corporate financial statements. Identification of reliable estimates of fundamental corporate earning power and earning risks.

FIN 6476—Venture Finance (2) *Prereq: FIN 5439. Designed for M.B.A. students.* Capital structure and financing needs of start-up company as well as valuation of nonpublicly traded companies, intellectual property.

FIN 6518—Investment Concepts (2) *Prereq: FIN 5439. Designed for M.B.A. 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 (1; max: 2) 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 (2) *Prereq: FIN 5439. Designed for M.B.A. 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 6537—Derivative Securities (2) *Prereq: FIN 5439. Designed for M.B.A. 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 (2) *Prereq: 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 (2) *Prereq: FIN 5439. Designed for M.B.A. students.* Basic tools. Concepts of duration, immunization, and hedging with financial futures.

FIN 6549—Special Topics in Fixed Income Securities (2) Municipal bond markets and timing strategies; performance attribution and tracking error; and asset allocation for pensions and endowments.

FIN 6608—Financial Management of the Multinational Corporation (2) *Prereq: FIN 5439. Designed for M.B.A. 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 (3) Financial markets and institutions, and problems by corporations operating in the international environment.

FIN 6638—International Finance (2) *Prereq: FIN 5439. Designed for M.B.A. students.* Introduction to markets. Focus on foreign exchange markets, international bond markets, and international equity markets.

FIN 6642—Global Entrepreneurship (2) *Designed for master's students in business.* Consideration of global market context in starting entrepreneurial ventures internationally.

FIN 6643—Project Analysis in a Global Environment (2) Evaluation of long-term investment decisions. Analysis of foreign direct investment.

FIN 6727—Economic Organizations and Markets (2) *Prereq: 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 6729—Economics Organizations and Markets (3) 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 6905—Individual Work in Finance (1-4; max: 7) *Prereq: 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 (1-4; max: 16) Selected topics in financial research, theory, or of special current significance.

FIN 6940—Supervised Teaching (1-5; max: 5) S/U.

FIN 6957—International Studies in Finance (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

FIN 6971—Research for Master's Thesis (1-15) S/U.

FIN 7446—Financial Theory I (4) The first in a two-course sequence. Emphasis on the theory of the firm's investment and financing decisions.

FIN 7447—Financial Theory II (4) Emphasis on the theory of the financial intermediary system.

FIN 7808—Corporate Finance (4) Theory and empirical analyses of corporate financial decisions in a world of risk with both perfect and imperfect markets.

FIN 7809—Investments (4) Theory and empirical analyses of security investment decisions in a world of risk with both perfect and imperfect markets.

FIN 7848—Marketing Microstructure (2) Empirical research in finance, focused on the application of econometric and statistical techniques to address research problems in finance.

FIN 7938—Finance Research Workshop (1-4; max: 7) Analysis of current research topics. Paper presentation and critiques by doctoral students, faculty, and visiting scholars.

FIN 7979—Advanced Research (1-12) 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. S/U.

FIN 7980—Research for Doctoral Dissertation (1-15) S/U.

GEB 5114—Entrepreneurship and Venture Finance (3) Entrepreneurial processes. Exploration of boom in world economies. Participation in entrepreneurial culture.

GEB 5118—New Venture Creation (4) *Prereq: GEB 5114.* Classroom lectures, panels of leading entrepreneurs, and team project. Background and tools necessary to develop investment grade business plan for new venture, wether intracorporate or stand alone.

GEB 5146—Family Business Management (2) *Prereq: GEB 5114.* Exploration of crucial aspects in managing small business enterprises. Emphasis on identification and analysis of characteristic operating problems of small firms and techniques for their solution. Strategic operating and psychological issues associated with running family and/or privately held firm.

GEB 5506—Corporate Intrapreneurship (2) *Prereq: GEB 5114.* Examination, definition, and characterization of role of intrapreneur in corporation. Transition from entrepreneurship to intrapreneurship. Skills and methodology for successful intrapreneurship.

GEB 6115—Entrepreneurship (2) *Designed for M.B.A. students.* Practical, hands-on understanding of stages of entrepreneurial process. Focus on decision-making process within start-up company.

GEB 6116—Business Plan Formation (2) *Prereq: GEB 6115. Designed for M.B.A. students.* Professional development and preparation of company business plan. Full analysis of plan and outside evaluation and ranking.

GEB 6119—Technology Venture Sequence (2) Background and tools needed to participate in new venture creation process. Development of business plans.

GEB 6366—Fundamentals of International Business (2) *Designed for M.B.A. students.* Complexities of extending 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.

REE 5105—Real Estate Appraisal (3) Tools and techniques used in fee appraiser business to estimate market value of real property. Emphasis on commercial business.

REE 6045—Introduction to Real Estate (2) Real estate finance, appraisal, and law.

REE 6206—Primary Mortgage Markets and Institutions (2) 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 (2) High-level overview of secondary markets for mortgage debt and mortgage securities in U.S. Considers instruments, decisions, problems, and current issues.

REE 6315—Real Estate Market and Transaction Analysis (2) 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 (2) Introduction to major concepts, principles, analytical methods, and tools useful for investment and finance decisions regarding real estate assets. Property acquisition analysis, leasing, effects of debt financing and taxes, risk and return considerations.

REE 6397—Real Estate Securities and Portfolios (2) Securitized equity real estate investment topics. Emphasis on multiple property valuation and decision making.

REE 6705—Geographic Information Systems and Location Analysis (2) 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 6905—Individual Work in Real Estate (1-6; max: 7) *Prereq: permission of department and Director of Graduate Studies.* Reading and/or research in real estate.

REE 6910—Supervised Research (1-5; max: 5) S/U.

REE 6930—Special Topics in Real Estate (1-4; max: 16) Selected topics in real estate research, theory, or of special current significance.

REE 6940—Supervised Teaching (1-5; max: 5) S/U.

REE 6948—Capstone Seminar and Applied Project (2) *Prereq: REE 6092 and 6208.* Establishes direct link between concepts developed in prior courses and current industrial practices. Presentations by professionals on current issues and industry practices. Development by students of applied project case.

REE 6957—International Studies in Real Estate (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

REE 7979—Advanced Research (1-12) 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. S/U.

REE 7980—Research for Doctoral Dissertation (1-15) S/U.

RMI 6905—Individual Work in Risk Management and Insurance (1-4; max: 7) *Prereq: permission of department and Director of Graduate Studies.*

RMI 6910—Supervised Research (1-5; max: 5) S/U.

RMI 6935—Special Topics in Insurances (1-4; max: 16) Selected topics in insurance research, theory, or of special current significance.

RMI 6957—International Studies in Insurance (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

RMI 6971—Research for Master's Thesis (1-15) S/U.

Fisheries and Aquatic Sciences

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: K. E. Havens. *Graduate Coordinator:* C. E. Cichra. *Professors:* D. E. Canfield, Jr.; C. E. Cichra; R. Francis-Floyd; E. J. Phlips; W. Seaman, Jr. *Associate Professors:* M. S. Allen; F. A. Chapman; T. K. Frazer; W. J. Lindberg; R. P. Yanong. *Assistant Professors:* S. M. Baker; C. A. Jacoby; D. J. Murie. *Research Assistant Professor:* P. K. Baker.

The Department of Fisheries and Aquatic Sciences conducts research, teaching, and extension programs in four broad areas: (1) sustainable fisheries, (2) aquaculture, (3) aquatic animal health, and (4) conservation and management of aquatic environments.

The Department offers graduate study leading 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.. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Research programs of faculty encompass water quality and chemistry, fish ecology, marine and estuarine ecology, paleolimnology, crustacean biology, fish and shellfish genetics, fish and shellfish reproduction and endocrinology, fish health management, phycology/microbiology, and aquatic plant science and management. Research associations exist with the Whitney Marine Laboratory, College of Veterinary Medicine, National Biological Survey, National Marine Fisheries Service, Harbor Branch Oceanographic Institute, and several state agencies.

Graduate study in the Department of Fisheries and Aquatic Sciences emphasizes the needs and interests of individual students. Graduate students in the Department work very closely with their faculty advisers to develop comprehensive programs of study. Admission to graduate study is based on the individual merits and interests of the applicant, fulfillment of the general admission requirements of the Graduate School, and acceptance by a faculty adviser in the Department. Prospective applicants should request an application packet from the Program Assistant, Department of Fisheries and Aquatic Sciences, University of Florida, 7922 NW 71st St., Gainesville, FL 32653-3372.

Some courses in the Departments of Agricultural and Biological Engineering, Agronomy, Animal Sciences, Biochemistry and Molecular Biology, Botany, Civil and Coastal Engineering, Environmental Engineering Sciences, Food and Resource Economics, Food Science and Human Nutrition, Geography, Geological Sciences, Horticultural Sciences, Molecular Genetics and Microbiology, Pharmacology and Therapeutics, Physiology and Functional Genomics, Recreation, Parks, and Tourism, Soil and Water Science, Urban and Regional Planning, Wildlife Ecology and Conservation, and Zoology will be acceptable for graduate credit as part of the candidate's major. Please consult the FAS graduate coordinator or program assistant for specific courses that apply.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

FAS 5203C—Biology of Fishes (4) *Prereq: BSC 2011/2011L or consent of instructor.* Emphasis on trends in evolution, integrative and sensory biology, physiology, feeding ecology, reproduction, growth, and population dynamics as they relate to fisheries.

FAS 5255C—Diseases of Warmwater Fish (3) *Prereq: consent of instructor.* Intensive, 2-week course (80 contact hours) in methodology of diagnosis and treatment of parasitic, bacterial, viral, nutritional, and environmental diseases of warmwater food fish and aquarium species. Offered summer term.

FAS 5265—Reproductive Biology of Fish and Shell Fish (3) *Prereq: courses in ecology and biochemistry, or consent of the instructor.* Ecological, behavioral, and physiological control mechanisms/models of reproduction, and how they may be manipulated in fisheries and aquaculture. Offered spring semester.

FAS 5276C—Field Ecology of Aquatic Organisms (4) *Prereq: 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. Extensive field trips required. Offered summer semester.

FAS 5335C—Applied Fisheries Statistics (4) *Prereq: FAS 5276C or consent of instructor.* Population sampling and estimation, statistical assumptions and robustness, mark-recapture, growth, and empirical modeling of populations. Offered fall semester of even-numbered years.

FAS 5901—Aquatic Research and Science (2) General philosophical foundations of science and specific critiques and perspectives found in ecology and aquatic sciences. Offered spring semester of even-numbered years.

FAS 6171—Applied Phycology (3) *Prereq: undergraduate chemistry or biochemistry.* Ecology, management, utilization, and control of freshwater and marine algae and aquatic microorganisms. Overview of associated products, processes, and problems and economic implications. Offered fall semester of even-numbered years.

FAS 6337C—Fish Population Dynamics (4) *Prereq: STA 6166.* Analysis of fish populations for management purposes. Methods for estimating population parameters (e.g., growth, recruitment, and mortality. Use of population parameters and computer models to predict yield and catch composition, and bioenergetics approaches for fisheries management problems. Offered spring semester of odd-numbered years.)

FAS 6355C—Fisheries Management (4) *Prereq: FAS 5276C or consent of instructor.* Integration of scientific, social, political, and legal factors in fisheries management. Offered fall semester of odd-numbered years.

FAS 6905—Individual Study (1-6; max: 10) Contemporary problem or topic. H.

FAS 6910—Supervised Research (1-5; max: 5) S/U.

FAS 6932—Special Topics in Fisheries and Aquatic Sciences (1-4; max: 10) Fisheries biology, aquaculture, and associated aquatic sciences.

FAS 6933—Seminar (1; max: 3) S/U.

FAS 6935—Contemporary Problems in Fisheries and Aquatic Sciences (2; max: 10) *Prereq: graduate student standing.* Library research, oral reports, and discussions of scientific problem or topic announced in advance. Offered fall and spring semesters.

FAS 6940—Supervised Teaching (1-5; max: 5) S/U.

FAS 6971—Research for Master's Thesis (1-15) S/U.

FAS 7979—Advanced Research (1-12) 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. S/U.

FAS 7980—Research for Doctoral Dissertation (1-15) S/U.

Food and Resource Economics

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chair: T. H. Spreen. *Graduate Coordinator:* R. J. Burkhardt. *Ben Hill Griffin, Jr., Professor of Agricultural Marketing:* A. Schmitz. *Distinguished Service Professor:* C. G. Davis. *Professors:* C. M. Adams; J. Alvarez; R. P. Beilock; R. J. Burkhardt; R. R. Carriker; J. C. Cato; R. L. Clouser; R. L. Degner, J. K. Dow; H. E. Drummond; R. D. Emerson; G. F. Fairchild; J. J. Haydu; T. D. Hewitt; C. F. Kiker; R. L. Kilmer; J. Y. Lee; B. F. Long; C. B. Moss; W. D. Mulkey; M. T. Olexa; J. L. Seale; T. H. Spreen; T. G. Taylor; P. J. van Blokland; J. J. VanSickle; R. W. Ward. *Associate Professors:* M. G. Brown; D. J. Lee; R. N. Weldon; F. W. Wirth; A. F. Wysocki. *Assistant Professors:* L. M. House; S. L. Larkin; J. A. Sterns.

The degrees of Master of Agribusiness (nonthesis), Master of Science (thesis and nonthesis option), and Doctor of Philosophy are offered with a program in food and resource economics. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Areas of specialization include agricultural business management, marketing, production, economic development, econometrics, and resource and environmental economics. The Department participates in programs with the Centers for Latin American Studies, African Studies, Tropical Agriculture, the School of Natural Resources and Environment, the College of Law, the Florida Sea Grant College Program, and International Trade and Policy Center.

Students who hold a bachelor's degree with their major fields of study in areas other than food and resource economics should consult with the graduate coordinator concerning acceptance for graduate study.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

In addition to the courses listed, there are seminars for organized discussion of current topics and for review of graduate student research.

AEB 5167—Economic Analysis in Small Farm Livelihood Systems (3) 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 (3) *Prereq: AEB 3103 or ECO 2023.* Comprehensive treatment of microeconomic theory and its use in managerial decision making.

AEB 5316—Using Futures and Options in Agribusiness (3) Hedging and speculating in agribusiness. How hedging reduces business risk of owning commodities. Fundamental and technical tools. Risk and reward relationship in speculating.

AEB 5326—Agribusiness Financial Management (3) *Prereq: 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 5345—Advanced Agribusiness and Food Industry Sales Strategies (3) *Prereq: AEB 3341.* Specific strategies for each segment of agribusiness and food distribution industry. Preparation and presentation of sales prospectus, as well as developing time management optimization model.

AEB 5387—Advanced Agribusiness and Food Marketing Mangement (3) *Prereq: FIN 3408, AEB 3343 or MAR 3023; AEB 3133 or MAN 3025.* Advanced decision-making skills for marketing situations, deductive reasoning, quantitative analysis, and marketing skills stressed in case studies.

AEB 5516—Quantitative Methods in Agribusiness Decisions (3) *Prereq: STA 2023.* Introduction to variety of quantitative methods with application to business decision-making contexts.

AEB 5757—Strategic Agribusiness Human Resource Management (3) 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 (3) *Prereq: 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 6108—Microeconomic Theory II (3) *Prereq: 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 6145—Agricultural Finance (3) *Prereq: 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 6182—Agricultural Risk Analysis and Decision Making (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 6184—Economics of Agricultural Production (3) *Prereq: AEB 6182.* Producer decisions including theoretical and empirical problems of multi-factor, multi-product, and poly-period cases. Input demand and product supply functions at commodity and industry levels.

AEB 6225—The U.S. and World Food Systems (3) Economic policy process at national and international levels. Issues include structure of food system, food safety, and environmental impacts.

AEB 6240—Macroeconomic Theory in Open Economies II (3) Essential elements of macroeconomic theory and policy in world of interdependent nations.

AEB 6301—Food Wholesale and Retail Marketing (3) 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 (3) *Prereq: 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 6383—Industrial Organizations of Agricultural Markets (3) *Prereq: ECO 3100 or 3101.* Market structure, conduct, and performance. Evaluation of current public policy and institutional arrangements.

AEB 6385—Management Strategies for Agribusiness Firms (3) *Prereq: ECO 3101.* Planning, organizing, implementing, and evaluating the agribusiness management functions of strategic planning, finance, marketing, and personnel.

AEB 6413—Ecological Economics: Theory and Applications (3) Introduction to integration of economics and ecology with practical problem identification and analysis. Emphasis on student participation and projects.

AEB 6453—Natural Resource and Environmental Economics (3) *Prereq: ECO 3101 and 3203, or consent of instructor.* Resource use, management, development, and conservation. Institutional and market performance in providing socially desired outcomes.

AEB 6483—Seminar in Natural Resource and Environmental Economics (3) *Prereq: AEB 6453.* Application of economic methods to problems of environmental and regional development; input-output models, cost-benefit analysis, economic valuation, and development planning.

AEB 6533—Static and Dynamic Optimization Models in Agriculture (3) *Prereq: ESI 4567.* Classical optimization models with emphasis on mathematical programming and applications. Introduction to dynamic optimization models.

AEB 6553—Elements of Econometrics (3) *Prereq: AEB 3103, 4511; STA 3023.* Econometric problem solving and determining quantitative relationships among economic variables in agriculture and related industries.

AEB 6571—Econometric Methods I (3) *Prereq: MAS 2103, STA 4322.* Linear and nonlinear econometric models, serial correlation, heteroscedasticity, errors in variables, qualitative variables, specification errors, and simultaneous equation models.

AEB 6572—Econometric Methods II (3) *Prereq: AEB 6571.* Topics in econometrics including single equation and multiple equation linear and nonlinear models.

AEB 6592—Mathematical Programming for Economic Analysis (3) 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 6634—Agricultural Development Administration (3) Administration of public agricultural research and extension systems for developed and developing countries.

AEB 6645—Economic Development and Agriculture (3) *Prereq: ECO 3100 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 6651—Agriculture's Role in Latin America and Africa (3) Socioeconomic development and strategies at the national, regional, and village level. Underdevelopment and cultural ecology.

AEB 6675—International Agribusiness Marketing (3) *Prereq: 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 (1-2; max: 3) Role of science, philosophy, and scientific methods in food and resource economics research.

AEB 6817—Survey Research Methods for Economists (3) Process of creating, validating, implementing, coding, and interpreting results from economic surveys.

AEB 6905—Problems in Food and Resource Economics (1-3; max: 8) *Prereq: consent of instructor.* Individual study. Problems of interest to the student and agreeable to the instructor.

AEB 6910—Supervised Research (1-5; max: 5) S/U.

AEB 6921—Workshop in Food and Resource Economics I (1) *Prereq: AEB 6533.* Empirical applications of concepts developed in the microeconomic core.

AEB 6933—Special Topics (1-6; max: 6)

AEB 6934—Workshop in Food and Resource Economics II (1) Developing and understanding how to apply food and resource economic concepts to agricultural and resource related problems.

AEB 6942—Advanced Applications in Agribusiness Experience (1-3; max: 6) Applications of marketing, management, and finance principles to workplace station. Applications developed from approved internship.

AEB 6971—Research for Master's Thesis (1-15) S/U.
AEB 7979—Advanced Research (1-12) 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. S/U.
AEB 7980—Research for Doctoral Dissertation (1-15) S/U.

Food Science and Human Nutrition

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chair: C. A. Sims. *Graduate Coordinator:* H. S. Sitren. *Boston Family Professor of Human Nutrition:* R. J. Cousins. *Professors:* D. L. Archer; L. B. Bailey; M. O. Balaban; R. P. Bates; L. B. Bobroff; P. R. Borum; R. J. Braddock; J. F. Gregory III; G. P. A. Kauwell; M. R. Marshall; O. N. Nesheim; W. S. Otwell; M. E. Parish; S. S. Percival; G. E. Rodrick; R. L. Rouseff; R. H. Schmidt; C. A. Sims; H. S. Sitren; A. A. Teixeira. *Associate Professors:* R. D. Brown, Jr.; B. J. Langkamp-Henken; R. E. Turner. *Assistant Professors:* R. G. Goodrich; M. D. Knutson; H. G. Kristinsson; K. R. Schneider; A. Simmone; S. T. Talcott; A. C. Wright.

Programs leading to degrees of Master of Science and Doctor of Philosophy in food science and human nutrition are offered. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The Ph.D. program includes concentrations in either food science or nutritional sciences. The M.S. program offers a concentration in nutritional sciences. The Institute of Food Technologists and the American Society for Nutritional Sciences recognize these concentrations. Ph.D. programs can also be arranged with a specialization in toxicology through the interdisciplinary toxicology concentration or in food engineering through a cooperative arrangement with the Agricultural and Biological Engineering Department. The Department also offers the American Dietetics Association Approved Dietetics Internship leading to the M.S. degree and eligibility for the registration examination.

Specific areas of study include nutritional biochemistry/molecular biology, nutrient function/metabolism, nutritional status assessment and dietetics, food processing/engineering, food chemistry/biochemistry, and food safety/microbiology/toxicology.

Entering graduate students should have an adequate background in physical and biological sciences and food science or nutritional sciences. Students with inadequate backgrounds will be required to take prerequisite courses.

DIE 6241—Advanced Medical Nutrition Therapy I (2) *Prereq: admission to master's/dietetic internship program.* Opportunity to integrate theories and principles of medical nutrition therapy into clinical practice.
DIE 6242—Advanced Medical Nutrition Therapy II (4) *Prereq: admission to master's/dietetic internship program.* Opportunity to integrate principles of medical nutrition therapy into clinical practice.
DIE 6905—Problems in Dietetics (1-3; max: 4) *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 (1) *Prereq: admission to master's/dietetic internship program; coreq: enrollment in DIE 6942.* Problem-solving, leadership, and analytical skills.
DIE 6942—Dietetic Internship I (8-12; max: 12) *Prereq: DIE 6242/6938.* Internship in dietetics in affiliated institutions offering core rotations in community nutrition, food systems management, and clinical dietetics. Emphasis on application of theory to practice. S/U.
DIE 6944—Dietetic Internship II (4-8; max: 12) *Prereq: DIE 6942.* Internship in affiliated institutions offering elective and/or specialty rotations, e.g. nutrition support, diabetes, pediatrics, wellness, advanced food systems, and staff experience. Emphasis on skill development for entry-level practice. S/U.
FOS 5205—Current Issues in Food Safety and Sanitation (3) Microbial, chemical, and biological safety of food; principles of sanitation for food processing and retail food industries.
FOS 5225C—Principles in Food Microbiology (4) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: undergraduate course in food processing.* Grading, inspection, sampling, extraction and concentration of citrus products emphasizing manufacturing and quality assurance. Taught at Lake Alfred Citrus Research and Education Center.
FOS 5732—Current Issues in Food Regulations (3) *Prereq: permission of instructor.* Governmental laws and regulations affecting the food industry.
FOS 6126C—Psychophysical Aspects of Foods (3) *Prereq: FOS 4311C and 4722C.* Physical and chemical stimuli controlling human sensory perception of texture, color, and flavor of foods.
FOS 6226C—Advanced Food Microbiology (4) *Prereq: 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 (4) *Prereq: 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 (3) *Prereq: 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 (5) *Prereq: 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 (4) *Prereq: FOS 4427C.* Reaction kinetics, heat transfer mechanics, and process design, optimization and economics.
FOS 6455C—Industrial Food Fermentations (3) *Prereq: FOS 4222/4222L.* Microbiological, chemical, and physical principles and practices in fermentation of foods and constituents.

FOS 6646—Proteins and Enzymes in Food Systems (4) *Prereq: FOS 6315C.* Structure, function, and analytical techniques for proteins and enzymes in food systems.
FOS 6648—Carbohydrates in Food Systems (2) *Prereq: FOS 6315C or equivalent.* Structure, physical and chemical properties of carbohydrates, and their analysis, function, and reactivity in food systems.
FOS 6905—Problems in Food Science (1-3; max: 4) *Prereq: 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 (1-5; max: 5) S/U.
FOS 6915—Research Planning (2) *Required of first-year graduate students.* Planning and initiating research, experimental techniques, analysis of data, reporting of results.
FOS 6936—Topics in Food Science (1-4; max: 8) Special aspects or current developments in food science.
FOS 6938—Food Science Seminar (1; max: 4) Preparation and presentation of reports on specialized aspects of research and technology in food science.
FOS 6940—Supervised Teaching (1-5; max: 5) S/U.
FOS 6971—Research for Master's Thesis (1-15) S/U.
FOS 7979—Advanced Research (1-12) 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. S/U.
FOS 7980—Research for Doctoral Dissertation (1-15) S/U.
HUN 5246—Current Issues in Dietary Supplements (2) *Prereq: HUN 2201 or permission of instructor.* Federal laws and regulations covering definition, marketing, and labeling of dietary supplements. Discussion of specific vitamins, minerals, herbs, and ergogenic aids. Review of scientific literature and public information.
HUN 5441—Metabolic Response to Enteral and Parenteral Nutrition (2) *Prereq: BCH 3025, HUN 2201, and PET 2350 or equivalents.* Response of body's organ systems to nutritional support by enteral and parenteral route, with emphasis on physiological and biochemical adaptations.
HUN 5447—Nutrition and Immunity (3) *Prereq: PCB 4713C.* Role of nutrition in immunity. Effect of nutrients, foods, and dietary supplements on regulation of immune system.
HUN 6245—Advanced Human Nutrition (3) *Prereq: BCH 4024 or 3025, and a nutrition principles course.* Ingestion, digestion, absorption, transport, metabolism, and excretion of nutrients; metabolic and neuroendocrine controls.
HUN 6255—Clinical Nutrition (2-12; max: 12) 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 (3) Role of lipids in nutrition, with emphasis on energy metabolism and derangements in chronic diseases.
HUN 6305—Nutritional Aspects of Carbohydrates (3) 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 (4) *Prereq: 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 (3) *Prereq: BCH 4024 or 3025.* Biochemical and physiological functions; nutrient requirements and interactions; response to deficiencies and excesses.
HUN 6356—Minerals in Nutrition (3) *Prereq: BCH 4024 or equivalent.* Biochemical and physiological aspects of mineral absorption, metabolism, and function.
HUN 6812C—Analytical Techniques in Nutritional Biochemistry (1) *Prereq: BCH 4024 or 3025 and permission 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 (1-3; max: 4) *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 (1-5; max: 5) S/U.
HUN 6936—Topics in Nutritional Sciences (1-4; max: 8) Special aspects or current developments in nutritional sciences.
HUN 6938—Nutritional Sciences Seminar (1; max: 4) Presentation of reports on research in nutrition.
HUN 6939—Advanced Clinical Nutrition (2-12 ; max: 12) Application of normal and therapeutic nutrition principles to specific clinical topics based on cases from health center environment.
HUN 6940—Supervised Teaching (1-5; max: 5) S/U.
HUN 6971—Research for Master's Thesis (1-15) S/U.
HUN 7979—Advanced Research (1-12) 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. S/U.
HUN 7980—Research for Doctoral Dissertation (1-15) S/U.

Forest Resources and Conservation

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Director: T. L. White. *Graduate Coordinator and Associate Director:* G. M. Blakeslee. *Distinguished Professor:* P. K. Nair. *Professors:* L. G. Arvanitis; G. M. Blakeslee; N. B. Comerford; M. L. Duryea; D. M. Flinchum; E. J. Jokela; F. Putz; D. L. Rockwood; T. L. White. *Associate Professors:* J. Alavalapati; G. Barnes; D. R. Carter; J. M. Davis; B. A. Dewitt; J. L. Foltz; A. J. Long; M. C. Monroe; G. J. Peter; S. E. Smith; T. V. Stein; R. Williams; D. J. Zarin. *Assistant Professors:* M. E. Bannister; W. P. Cropper; J. Jose; K. A. Kainer; T. A. Martin; J. Nowak; T. V. Stein. *Associate in:* D. A. Huber.

The School offers programs leading to the Master of Forest Resources and Conservation (professional, nonthesis), Master of Science (with thesis), and Doctor of Philosophy degrees in forest resources and conservation. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Specializations include agroforestry, biometrics, biotechnology, ecology, forest economics, ecotourism, environmental education, genetics, geographic information systems, hydrology, resource

management, forest nutrition, management operations, pathology, physiology, policy, reforestation, silviculture, soils, tropical forestry, and urban forestry.

Graduate students should have appropriate undergraduate training in biological, social, and physical sciences. Students with inadequate backgrounds may still be admitted but will be required to take appropriate undergraduate courses to support their fields of study.

All graduate students are required to develop teaching skills by assisting with one course during their programs.

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 one semester. Ph.D. students may pursue a co-major with the Department of Statistics.

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 special information and includes such fields as surveying, mapping, land tenure, cadastral systems, geographic information systems, and remote sensing.

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 administered 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, visit the School's web page at http://www.sfrc.ufl.edu. For details on what terms courses will be offered, visit, http://www.sfrc.ufl.edu/gradsched.html.

FNR 5072C—Environmental Education Program Development (3) Comprehensive approach, from needs assessment to evaluation, applied to youth-based, nonformal environmental education. Required field trip and group project. Offered fall semester of odd-numbered years.

FNR 5335—Agroforestry (3) 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 semester.

FNR 5608—Research Planning (3) *Prereq: 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 semester.

FOR 5161—Forest Productivity and Health (3) *Prereq: 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 semester of odd-numbered years.

FOR 5435—Forest Information Systems (3) *Prereq: consent of instructor.* Sampling methodology for natural resource inventories, involving remote sensing, geographic information systems (GIS), and global positioning system (GPS). Offered spring semester of even-numbered years.

FOR 5615—Forest Conservation and Management Policies and Issues (3) Current policies in both North America and internationally. Historical patterns of resource use and policy response reviewed as basis for evaluating current issues. Offered fall semester.

FOR 5626—Forest Resource Management (3) *Prereq: consent of instructor.* Application of operations research and forest economics and finance to problems; harvest scheduling; forest manipulation for multiple objectives; economic decision making. Offered as requested.

FOR 6154—Analysis of Forest Ecosystems (3) *Prereq: graduate status or consent of instructor.* Energy, water, carbon and nutrient fluxes in forests; applications to forest and landscape management. Offered spring semester of even-numbered years.

FOR 6156—Simulation Analysis of Forest Ecosystems (3) Conceptual basis, evaluation, implementation, testing, analysis of forest simulation models. Students develop/present modeling projects.

FOR 6164C—Silviculture: Concepts and Application (3) *Prereq: course in ecology.* Principles governing establishment, treatment, and control of forest stands; regeneration systems; intermediate cuttings; intensive cultural practices; land use ethics; management systems.

FOR 6170—Tropical Forestry (3) *Prereq: consent of instructor.* Promise and pitfalls of production-oriented management as a conservation strategy for naturally regenerated tropical forests. Ecological constrains 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 semester.

FOR 6172C—Tropical Forestry Field Course (2) 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 6310—Forest Genetics and Tree Improvement (3) 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 wide variety of tree species. Offered fall semester of odd-numbered years.

FOR 6340—Physiology of Forest Trees (3) *Prereq: 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 semester of odd-numbered years.

FOR 6345C—Plant Water Relations Techniques (2) *Prereq: consent of instructor.* Instruments and techniques to quantify water balance/status of plants in field. Emphasis on theory, assumptions, pros, and cons of techniques.

FOR 6543—Valuation of Forest Resources (3) *Prereq: consent of instructor.* Extension of microeconomic principles to problems in forest production, supply behavior, forest valuation, multiple-use of forest lands. Offered spring semester of odd-numbered years.

FOR 6665—Landscape Planning for Ecotourism (3) Planning frameworks and techniques of large natural areas. Offered fall

semester.

FOR 6905—Research Problems in Forest Resources and Conservation (1-6; max: 10) *Prereq: consent of instructor.*

FOR 6910—Supervised Research (1-5; max: 5) *Prereq: consent of instructor.* S/U.

FOR 6933—Seminar (1; max: 2)

FOR 6934—Topics in Forest Resources and Conservation (1-4; max: 10) Selected topics in forestry and natural resources.

FOR 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of instructor.* S/U.

FOR 6971—Research for Master's Thesis (1-15) S/U.

FOR 7979—Advanced Research (1-12) 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. S/U.

FOR 7980—Research for Doctoral Dissertation (1-15) S/U.

PCB 6528—Plant Molecular Biology (3) *Prereq: BCH 6415 and PCB 5065 or equivalents.* Structure, function, and analysis of plant genomes, genes, and gene products. Lecture format with frequent discussion of recent papers. Genome structure, transformation, gene tagging, transcription, signal transduction, organelles, protein trafficking. Offered in spring semester.

SUR 5365—Digital Mapping (3) *Prereq: 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, attribute development.

SUR 5385—Remote Sensing Applications (3) *Prereq: 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 5425—Cadastral Information Systems (3) *Prereq: 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 Adjusted Computations (3) *Prereq: 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 estimation; computer programming.

SUR 5625—Geographic Information Systems Analysis (3) *Prereq: introductory GIS course.* 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.

SUR 6375—Terrain Analysis and Mapping (3) *Prereq: 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 (3; max: 6) *Prereq: consent of instructor.* Data base development, economic impact of GIS, development of standards, integration of data sets, hardware and software developments, advances in GIS technology.

SUR 6427—Land Tenure and Administration (3) *Prereq: SUR 5425 or consent of instructor.* Issues and problems. Design of project to address these problems in developing countries.

Geography

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: P. R. Waylen. *Graduate Coordinator:* A. C. Goldman. *Professors:* H. J. Armstrong; M. W. Binford; C. N. Caviedes; S. M. Golant; H. L. Popenoe; N. J. H. Smith; G. I. Thrall; P. R. Waylen. *Associate Professors:* T. J. Fik; A. C. Goldman; A. J. Lamme III; B. E. McDade; J. Mossa. *Assistant Professors:* J. Comenetz; J. Southworth.

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 Department provides three main areas of specialization for graduate research: economic and business geography and policy; resource management and land use and land cover change; and physical geography. Economic and business geography and policy concerns such topics as technological change; entrepreneurship; spatial economic theory; historic places; population change and housing patterns; housing and care of the elderly; behavioral geography; and internal urban structure. 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. Physical geography in the Department concentrates on climatology, coastal management, fluvial geomorphology, and hydrology. 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 Land Use and Environmental Change Institute (L.U.E.C.I.), which incorporates the major perspectives of geography in a multidisciplinary international scientific initiative. Prospective students should examine the research interests of the Graduate Faculty to obtain a more detailed sense of the Department's specialties (see the department website: 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 Literal Arts and Sciences, and with programs in Latin American studies, urban and regional studies, tropical agriculture, tropical ecology, gerontological studies, water resources, the College of Education, and the Warrington College of Business Administration. Certificates in certain of these fields may be obtained in addition to graduate degrees in geography.

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.

GEA 6419—Seminar: South America (3) Cultural, economic, political, and resource characteristics and development of representative areas.

GEA 6466—Seminar on Geography of Amazonia (3) Exploration of biophysical basis of natural resource management, cultural diversity, and economic development in Amazonia.

GEA 6468—Resource Utilization and Conservation in Latin America (3) Regional appraisal of human and natural resources. Analysis of role of resource utilization and conservation in development of Latin American countries.

GEA 6468L—Resource Utilization and Conservation in Latin America (3) Regional appraisal of human and natural resources. Analysis of role or resource utilization and conservation in development of Latin American countries.

GEO 5102C—Maps and Graphs (4) *Prereq: graduate standing.* General introduction to principles and techniques of thematic cartography and cartographic applications.

GEO 5105C—Advanced Cartography (3) *Prereq: GEO 4100C; CGS 3460 or consent of instructor.* Advanced methods including computer cartography and elements of cartographic reproduction.

GEO 5122C—Advanced Air Photo Interpretation (3) *Prereq: GEO 2200 or consent of instructor.* Uses of aerial photographs in geographical research.

GEO 5134C—Remote Sensing (4) *Prereq: GEO 4120C.* Uses of remote sensing imagery in geographical research.

GEO 5157—Business Geography and New Real Estate Market Analysis (3) *Prereq: GEO 3171 or equivalent, consent of instructor.* Methods that professional human economic geographers have used in business community, starting with William Applebaum and extending through contemporary period. Use of GIS and geographic analysis in business decisions. Trade zone, geographic market-area analysis, and gravity retail models.

GEO 5159—Geographic Information Systems Applications in Environmental Systems (3) *Prereq: GEO 3171 or equivalent, permission of instructor.* Advanced study of application of 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.

GEO 5177C—Geographic Information Systems in Research (4) *Prereq: GEO 3162C or equivalent.* Geographic technology for creation, modification, display, and analysis of spatial information. Geographic analysis and reasoning, computer software and hardware technology, and research applications of GIS. Geographic databases.

GEO 5186—Analysis of Thematic Data Quality (3) *Prereq: graduate standing; basic knowledge of GIS.* Evaluation and resolution of quality problems affecting thematic (non-base map) geographic attribute data.

GEO 5346—Natural Hazards (3) Multidisciplinary analysis of natural and man-induced environmental catastrophestheir perception and institutional adjustments.

GEO 5556—Geography of Innovation and Technological Change (3) Generation, development, and spread of innovations by individuals, corporations, and organizations. Emphasis on impact of innovations and technology on regional development and change.

GEO 5605—Advanced Urban Geography (3) Theoretical and planning literature that examines the locational and environmental issues confronting contemporary North American urban populations.

GEO 5809—Geography of World Agriculture (3) World distribution of crops and livestock in relation to natural and cultural conditions; discussion of problems of agriculture in terms of products, economic organization, and agricultural regions; significance of world affairs.

GEO 5905—Individual Study: Directed Reading (3; max: 12 including GEO 6905)

GEO 5920—Geography Colloquium (1; max: 6) Presentation and discussion of contemporary geographic research. S/U.

GEO 5945C—Field Course in Geography (3) 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 (3) *Prereq: admission to graduate program in geography.* A summary of major currents of intellectual thought and research orientations in contemporary geography.

GEO 6429—Seminar: Cultural Geography (3) A review of literature, theoretical frameworks, and research design formulation in contemporary cultural geography.

GEO 6435—Seminar in Population (3) Combination lecture and seminar dealing with social and population problems from spatial perspective. Major research project required.

GEO 6495—Environment and Behavior (3) *Prereq: graduate standing.* Theoretical and empirical analysis of how ordinary environments are perceived and interpreted by people and influence on their well being.

GEO 6509—Seminar in Business Geography (3) *Prereq: consent of instructor.* Selected problems in geography of economic activity.

GEO 6905—Individual Work (1-5; max: 12 including GEO 5905)

GEO 6938—Selected Topics in Geography (1-5; max: 15) *Prereq: graduate standing in geography or a related field.*

GEO 6971—Research for Master's Thesis (1-15) S/U.

GEO 7979—Advanced Research (1-12) 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. S/U.

GEO 7980—Research for Doctoral Dissertation (1-15) S/U.

Geological Sciences

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: P. A. Mueller. *Graduate Coordinator:* M. R. Perfit. *Graduate Research Professor:* D. L. Dilcher. *Distinguished Professor:* N. D. Opdyke. *Professors:* J. E. T. Channell; D. A. Hodell; D. S. Jones; B. J. MacFadden; G. H. McClellan; P. A. Mueller; M. R. Perfit; E. C. Pirkle, Jr. *(Emeritus);* A. F. Randazzo *(Emeritus);* D. L. Smith *(Emeritus);* S. D. Webb *(Emeritus)*. *Associate Professors:* M. Brenner; P. F. Ciesielski; D. A. Foster; E. E. Martin; J. B. Martin. *Assistant Professors:* J. M. Jaeger; J. Meert; P. Neuhoff; E. J. Screaton. *Associate in:* G. D. Shaak.

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. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The Department has identified five primary areas of emphasis in its research and teaching programs: environmental geology, Earth system science, tectonophysics, chemical geodynamics, marine geology, and paleontology. These areas involve many specialties including geochemistry, geophysics, petrology/mineralogy, hydrogeology, economic geology, and paleoclimatology. For more detailed information on current departmental activities, faculty, and research centers, see http://web.geology.ufl.edu/. 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.), and the hydrological sciences cluster.

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 for any of the programs in geology must have completed courses in the areas of physical geology, historical geology, mineralogy, igneous and metamorphic petrology, sedimentary geology, paleontology, and structural geology. In addition, students must have completed courses in supportive sciences, such as mathematics, physics, chemistry, computer science, statistics, and biology. A summer field course is required.

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 33 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 six hours must be in approved electives. A minor in education is required. Passage of a final oral examination is also required of all candidates.

Of the 90 semester hours required for the Ph.D., 45 must be in formal, organized graduate-level class work (excluding individual work, supervised research and teaching, advanced research, dissertation, special projects, etc.). Remaining credits will be in GLY 7979, GLY 7980, additional geology courses, or a declared minor in another field.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information

BOT 5115—Paleobotany (3) *Prereq: upper-level course in botany or geology or permission of instructor.* Comparative study of plants through geologic time with attention to morphology and evolution of major groups of land plants based on fossil record.

GLY 5020—Currrent Topics in Earth Science for Teachers (3) *Prereq: Coreq: GLY 5020L recommended. May not be taken for major credit in earth sciences.* Presentation of basic principles and overview of recent advances in earth sciences for secondary science teachers.

GLY 5020L—Current Topics in Earth Sciences Laboratory (1) *Coreq: GLY 5020 or equivalent. May not be taken for major credit in earth science.* Fundamental concepts supplemented with local and virtual field trips. Extensive use of World Wide Web.

GLY 5075—Global Climate Change: Past, Present, and Future (3) *Prereq: GLY 4552C.* Evolution of the Earth's climate through geologic time, including discussion of modern climatology and methods of paleoclimate interpretations.

GLY 5156—Geologic Evolultion of North America (3) *Prereq: 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 5241C—Geochemistry (3) *Prereq: CHM 2046, GLY 2010C.* The abundance and distribution of the elements and their behavior during various geological processes.

GLY 5245—Hydrogeochemistry (3) *Prereq: inorganic chemistry, calculus, or permission of instructor.* Geological controls on chemical and isotopic composition of natural waters, including meteoric ground water, brines, and sea water, emphasis on thermodynamic and kinetic aspects of fluid-solid reactions.

GLY 5248—Physical Geochemistry (3) *Prereq: calculus I, introductory chemistry, or consent of instructor.* Principles, theory, practice, and application of thermodynamics and kinetics to geochemical processes.

GLY 5250—Organic Geochemistry and Geobiology (3) *Prereq: one year introductory chemistry, one year introductory geology.* Theory, practice, and methods of organic geochemistry, organic biogeochemistry, and geomicrobiology.

GLY 5328—Advanced Igneous Petrology (3) *Prereq: 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 (3) *Prereq: GLY 2010C, 2026C, or 4400C and one year of college physics or permission of instructor.* Physics of the Earth. Study of gravity and magnetic fields, seismic waves, thermal history, orogenic belts, and plate tectonic theory.

GLY 5476—Principles of Exploration Geophysics (3) *Prereq: GLY 2010C or 2026C and one year of college physics or permission of instructor.* Reflection and refraction seismology, gravitational, magnetic and electrical methods of exploration; instrumentation, surveying techniques, data reduction and interpretation.

GLY 5558C—Sedimentology (3) *Prereq: GLP 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 5640—Vertebrate Paleontology (3) *Prereq: ZOO 3713C, GLY 2100C, or 3105C.* Evolutionary history of major vertebrate groups, with emphasis on principles of prehistoric investigation.

GLY 5705—Geomorphology (3) *Prereq: GLY 4400C.* Application of principles of geomorphology to origin and evolution of landscapes.

GLY 5736—Marine Geology (3) *Prereq: GLY 2010C, or 2026C, or OCE 2005.* A 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 (2; max: 6) *Prereq: graduate standing and permission of instructor.* Visits to selected sites and regions of outstanding geologic value and interest.
GLY 5827—Ground Water Geology (3) *Prereq: GLY 2010C, or 2026C.* Principles of ground water geology, with special reference to the Coastal Plain and Florida.
GLY 6195—Topics in Paleoclimatology (4; max: 12) *Prereq: undergraduate degree in geology or permission of instructor.* Studies of paleoclimates and interpretation of climate change from rock record.
GLY 6235C—Mineralogy of Clays (3) *Prereq: GLY 5230C.* Structure, composition, properties, origin, and mode of occurrence of clay minerals.
GLY 6268C—Isotope Geology (4) *Prereq: GLY 5241C.* Application of radiogenic and stable isotopes to the solution of geologic problems such as geochronology, petrogenesis, and paleoclimatology.
GLY 6297—Topics in Geochemistry (4; max: 12) *Prereq: GLY 5241C.* Problems in igneous and metamorphic petrogenesis, geochronology, radiogenic isotopes, stable isotopes, and marine geochemistry.
GLY 6351—Carbonate Sedimentology (3) *Prereq: GLY 4552C.* Limestones and dolostones, their origin, occurrence, and significance; study of recent and ancient carbonate depositional regimes.
GLY 6424—Tectonics (3) *Prereq: GLY 4400C.* Evolution and formation of mid-ocean ridges, seamounts, hot spots, island arcs, back-arc basins, passive margins, and mountain chains.
GLY 6519—Modern Stratigraphy (3) *Prereq: permission of instructor or undergraduate degree in geology.* Integration of classical stratigraphy including biostratigraphy with modern techniques such as radiometric dating, magnetic stratigraphy, astrochronology and cyclostratigraphy, and sequence stratigraphy. High precision stratigraphy to investigate problems in climatology, mammal migration, tectonics, and rates of geological processes.
GLY 6660C—Paleoecology (3) *Prereq: GLY 3603C.* Paleoautecology, paleosynecology, historical biogeography of marine invertebrates, and ecological rules as applied to fossil invertebrates.
GLY 6717L—Hydrogeologic Processes (3) *Prereq: GLY 5827, 6825, or equivalent.* Problem-solving experience in active hydrogeologic processes. Ground water and surface/ground water interactions and their roles in geologic processes, with examples from Floridan Aquifer.
GLY 6817C—Nonmetalic Geologic Materials (3) *Prereq: GLY 3200C.* The geologic occurrences, properties, and uses of limestone, shales and other nonmetalic deposits.
GLY 6826—Hydrogeologic Modeling (3) Application of computer modeling to hydrogeologic problems through use of analytical and numerical solutions.
GLY 6905—Individual Work (1-4; max: 12) For work beyond that offered in regular courses.
GLY 6931—Seminar (1; max: 2) Reading in special topics.
GLY 6932—Special Topics in Geology (1-3; max: 9) Lectures, conferences, or laboratory sessions covering selected topics of current interest in modern geology.
GLY 6940—Supervised Teaching (1-5; max: 5) S/U.
GLY 6971—Research for Master's Thesis (1-15) S/U.
GLY 7979—Advanced Research (1-12) 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. S/U.
GLY 7980—Research for Doctoral Dissertation (1-15) S/U.

Germanic and Slavic Studies

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Interim Chair: W. Hasty. *Graduate Coordinator:* F. O. Futterknecht. *Professors:* N. M. Alter; E. C. Barksdale; K. Bullivant; F. O. Futterknecht; W. R. Hasty; O. W. Johnston. *Associate Professors:* S. M. DiFino; M. S. Gorham; H. H. Rennert. *Assistant Professors:* E.M. Kligerman;B. Mennel; G. S. Rylkova.

The Department offers an M.A. (with or without thesis) and a Ph.D. in German. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

Prerequisite for admission to graduate work is an undergraduate major in the field, including advanced courses in both literature and language. Qualified candidates with B.A. degrees in related disciplines will be considered. Those students who wish to enter the Ph.D. program must have an M.A. in German. A good foundation in a second language is desirable for M.A. candidates. Ph.D. candidates should consult the Graduate Coordinator for details on the foreign language requirement. Graduate students normally teach as a part of their training.

German Language

GER 6060—Beginning German for Graduate Students I (3) For graduate students from other departments who need to acquire a reading knowledge of German. Not open to graduate students in German. S/U.
GER 6061—Beginning German for Graduate Students II (3) *Prereq: 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. S/U option.
GER 6505—German Culture (3) Interdisciplinary study of periods and major aspects of German culture from the Middle Ages to the present.
GER 6940—Supervised Teaching (1-3; max: 3) *Prereq: departmental approval.* S/U.

German Literature and Cinema

GET 6295—Weimar Cinema (3) 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 (3) "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 (3) *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 (3) 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 (3) 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 (3) Courtly and heroic epic, Volksbcher, and major genres and trends from the Medieval and Renaissance period.

GEW 6425—From Luther to Lessing: Early Modern German Literature (3) Analysis of major trends, authors, and texts from Reformation to Enlightenment.

GEW 6535—German Classical and Romantic Literature (3) Analysis of major authors and texts. Special attention to developments in culture, aesthetics, and society.

GEW 6558—Young Germany, Biedermeier, Realism, and Naturalism (3) 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 (3) 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 6726—Literature and Culture in the Third Reich (3) 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 6735—Modern German Literature (3) 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 (3) Literary trends from 1945 to present. Relation to contemporary cultural and aesthetic developments. Current developments.

GEW 6826—German Literary Theory (3) 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 (3; max: 9)

GEW 6901—Special Study in Germanic Languages and Literatures (3; max: 9) Intensive study of a selected topic.

GEW 6905—Independent Study (3; max: 9) *Available by special arrangement.* May be taken only once for M.A. credit.

GEW 6910—Supervised Research (1-5; max: 5) S/U.

GEW 6971—Research for Master's Thesis (1-9) S/U.

GEW 7979—Advanced Research (1-12) 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. S/U.

GEW 7980—Research for Doctoral Dissertation (1-15) S/U.

Gerontological Studies

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director and Graduate Coordinator: P. A. Kricos. *Professor:* P. A. Kricos. *Assistant Professors:* S. Bluck; P. Collings; C. McCrae.

The Center for Gerontological Studies offers the Graduate Certificate in Gerontology for master's, specialist, and doctoral students, which is completed in conjunction with their graduate degree programs. A partial listing of programs, departments, or colleges includes Nursing, Psychology, Clinical and Health Psychology, Occupational Therapy, Physical Therapy, Rehabilitation Counseling, Sociology, Exercise and Sport Sciences, Communication Sciences and Disorders, Audiology, and Recreation, Parks, and Tourism. Students may also minor in gerontology at the master's or doctoral level. The Center affords students in many disciplines the opportunity to concentrate in gerontology through training that incorporates multidisciplinary instruction, field experience, and research. More information is available at http://www.geron.ufl.edu. Questions may be e-mailed to info@geron.ufl.edu.

In addition to those listed below, courses with aging content are offered by affiliated faculty and listed in their primary departments. A list of approved courses for the certificate or minor may be found at http://www.geron.ufl.edu/appcours.htm.

GEY 5935—Topics in Gerontology (3; max: 12)

GEY 6220—Ethical, Legal, and Financial Foundations of Geriatric Care Management (3) *Prereq: GEY 6646.* Overview of geriatric care management in aging network.

GEY 6646—Issues and Concepts in Gerontology (3) A multidisciplinary, team-taught survey of the field.

GEY 6905—Independent Study in Gerontology (1-3; max: 4)

GEY 6936—Professional Development in Gerontology/ Geriatrics (1-2; max: 10) 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 (3) *Prereq: 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.

Health Education and Behavior

College of Health and Human Performance

Graduate Faculty 2004-2005

Chairperson: R. M. Weiler. *Graduate Coordinator:* R. M. Pigg. *Professors:* W. W. Chen; S. W. Fagerberg; R. M. Pigg; B. A. Rienzo; C. B. Stopka; J. W. Varnes. *Associate Professors:* D. C. S. James; R. M. Weiler. *Assistant Professors:* D. S. Fleming; V. J. Noland; J. J. Sheu; J. R. Todorovich.

The Department of Health Education and Behavior offers the health behavior concentration for Ph.D. program in health and human performance and a 36-credit Master of Science degree in

health education and behavior with thesis and nonthesis options. Complete descriptions of the requirements for the M.S. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Master's degree specializations include community health education, health communication, health promotion, health program planning and evaluation, pedagogy of physical activity and health, and school health education. 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 a master's degree with a savings of 12 credit hours. Applicants to graduate programs in the Department typically hold a previous degree in health education or a closely related discipline, but applications from other disciplines are considered.

Students acquire the knowledge and skills to plan interventions for individuals, families, and groups of all ages. Specialists perform activities such as advocating for health education programs in schools, communities, health care facilities, and worksites; conducting needs assessment to identify health education program priorities; planning, implementing, and evaluating health education interventions; selecting and developing printed and electronic materials for health instruction; seeking financial support to fund health education interventions; serving as a resource person for health information and referrals; conducting research evaluation and evaluation on the effectiveness of programs and strategies; writing scholarly and professional articles; and working collaboratively with public and private organizations and agencies to achieve the goal of a healthier population. Specialists hold positions in public and private organizations and agencies at the local, state, national, and international levels. For additional information, go to http://www2.hhp.ufl.edu/hse/graduate/index.html.

HLP 6515—Evaluation Procedures in Health and Human Performance (3) Evaluation and interpretation of tests and analysis of research data.

HLP 6535—Research Methods (3) Introduction to research methodology and design.

HLP 6911—Research Seminar (1; max: 6) Research presentations by graduate students and faculty in the College. S/U.

HLP 7979—Advanced Research (1-12) 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. S/U.

HLP 7980—Research for Doctoral Dissertation (1-15) S/U.

HSC 5135—Emotional Health Education (3) 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 (3) 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 (3) 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 (3) Examination of needed health education areas, lesson and unit planning, methods and innovative approaches to health instruction, and evaluation of comprehensive school health education.

HSC 5536C—Medical Terminology for the Health Professions (3) *Prereq: permission of instructor.* "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 visual format to provide interactive working knowledge of medical language.

HSC 5576—Nutrition Education for Special Populations (3) Assessment of nutrition information needs for selected population groups; planning, implementation, and evaluation of nutrition education programs for school and community settings. Not open to students who have completed HSC 3574.

HSC 5606—Spirituality and Health (3) Exploration of current research and theory about relationship of spirituality and health/disease.

HSC 5626—Minority Health Issues (3) Current health problems confronting socioeconomically disadvantaged groups and ethnic minority groups.

HSC 5925—Seminar in Health Education (1-6; max: 6)

HSC 5956—Writing for Professional Publications (3) 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 (3) 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 (3) Human interactions and the environment. How the environment, broadly defined, affects human health. Exploration of personal and local solutions to current environmental concerns.

HSC 6235—Patient Health Education (3) Health education theory and principles applied to the primary health care setting, overview of agents and processes of disease with emphasis on program development for teach protocols for specific diseases. Recent developments in patient education, e.g., out-patient programs and wellness centers.

HSC 6318—Planning Health Education Programs (3) Basic principles of health education for various community settings, and the use of communication media in joint planning for comprehensive health education.

HSC 6507—Epidemiology (3) Procedures used in study of origin, distribution, and control of chronic and communicable diseases; emphasis on role of health education interventions in disease control.

HSC 6567—Health Promotion and Programming in Gerontology (3) Planning, implementation, and evaluation of health maintenance and promotion programs for adult populations, with emphasis on aging process.

HSC 6571—Contemporary Issues in Health Promotion (3) Emotional health, value systems, stress and depression, aging and death, drug abuse, physical fitness, weight control, consumer health, chronic and communicable diseases.

HSC 6575—Women's Health Issues (3) Relevance for health promotion, prevention, education, and counseling.

HSC 6604—Theories of Health Behavior and Practice in Health Education (3) Selected health behavior theories and application of these theories to practice of health education and health promotion.

HSC 6605—Scientific Foundations of Holistic Health (3) Examination and interpretation of the holistic principles which influence and modify the health potential of the individual and the community.

HSC 6625—Trends in International Health (3) Disease patterns and prevalence, contributing factors, organizational and governmental initiatives, and model programs; emphasis on problems amenable to health education interventions. Not open to students who have completed HSC 4650.

HSC 6629—Health Promotion for Priority Populations (3) *Prereq: graduate standing.* Health issues confronting politically and socioeconomically disadvantage groups and ethnic minority groups.

HSC 6637—Social Marketing and Health (3) Current theory and knowledge in field of social marketing. Analysis of components and applications of marketing within context of health behavior.

HSC 6665—Health Communication (3) Survey of theory and research relevant to role of communication processes in health behavior, health care, and health promotion.

HSC 6667—Health Communication Programs (3) *Prereq: HSC 6665 or approval of instructor.* Theory, research, and skills for planning, implementing, and evaluating health communication programs.

HSC 6668—Interpersonal Communication and Health (3) Theory, research, and application of role of interpersonal communication in health behavior, health care, and health promotion.

HSC 6695—Worksite Health Promotion (3) 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 (3) Models and strategies for conducting formative and summative evaluations of health education programs.

HSC 6735—Research Methods in Health Education (3) Introduction to methods of health education research.

HSC 6850—Internship in Health Education (1-12; max: 12)

HSC 6904—Readings in Health Education (1-3; max: 6)

HSC 6905—Independent Study (1-3; max: 12)

HSC 6910—Supervised Research (1-5; max: 5) S/U.

HSC 6935—Current Topics in Health Education (1-3; max: 6)

HSC 6940—Supervised Teaching (1-5; max: 5) S/U.

HSC 6971—Research for Master's Thesis (1-15) S/U.

HSC 6973—Project in Lieu of Thesis (1-9) Planning, implementation, and evaluation of a health education program intervention. S/U.

HSC 7904—Advanced Readings in Health Education (1-3; max: 6)

HSC 7905—Advanced Independent Study in Health Education (1-3; max: 6)

HSC 7937—Advanced Seminar in Health Education (3)

PET 5127—Advanced Instructors of Adapted Aquatics (3) *Prereq: permission of instructor/adviser.* 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 5646—Advanced Exercise Therapy and Adapted Physical Education (3) *Prereq: permission of instructor/adviser.* Art and science of effectively teaching exercise therapy and adapted physical education. Understanding of specific medical health characteristics of common disabilities to determine best educational implications for exercise setting.

PET 5655C—Medical Aspects of Individuals with Disabilities (3) Teaching exercise therapy and adapted physical education to individuals of all ages with physical, mental, and health disabilities.

PET 6426—Advanced Curriculum in Movement Pedagogy (3) Array of methods used in instruction of and through movement.

PET 6706—Research on Teaching Physical Education (3) In-depth study of research on teaching and application of research-based knowledge to teaching physical education.

PHC 6105—Organization and Administration of Public Health Programs (3) Structure and function of local, state, and federal programs, including official agencies, voluntary agencies, and health-related private sector activities in relation to current emphases on health promotion and chronic disease control.

Health Services Research, Management, and Policy

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chair: R. P. Duncan. *Graduate Coordinators:* C. H. Lemak; M. O. Bice. *Professors:* P.W. Duncan; R. P. Duncan; L. C. Gapenski. *Associate Professors:* A. J. Khoury; N. L. McKay. *Research Associate Professor:* A. G. Hall. *Assistant Professors:* W. R. Chumbler; M. J. Cote; J. S. Harman; C. H. Lemak; Z. Yang.

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 is designed to prepare individuals for management positions in the health care field. The Department also offers an executive form of the Master of Health Administration, a weekend program designed for health professionals who may live and work at some distance from the campus. In addition, the Department participates in the Master of Public Health degree by offering a concentration in public health management and policy. These programs are described more fully in the General Information section of this catalog under the heading Specialized Graduate Degrees.

At the doctoral level, the Department offers the Ph.D. degree in health services research. This full-time program is designed to prepare 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.

HSA 5103—Introduction to the U.S. Health Care System (3) Overview of organization, delivery, and financing. Historical antecedents, patients, providers, payers, and health policy.

HSA 5119—Introduction to Management of Health Services Organizations (3) Organizational principles and practices as applied to management. Organizational theory, managerial role, managing groups, work design, organization design.

HSA 5153—Overview of U.S. Health Policy (3) Politics versus policy, health policy process, implementation of health-related policy, roles of federal, state, and local levels of government.

HSA 5177—Fundamentals of Health Care Finance (3) Introduction to basic theory and principles of finance as applied to health care industry. Financial statements, cost measurement, budgeting, and capital investment decisions.

HSA 5425—Legal Issues and Health Administration (2) Corporate theory, consent to care, malpractice, liability, and other special legal problems.

HSA 5426—Legal Aspects of Health Administration (3) *Prereq: EMHA option.* Legal liability, corporate theory, and special legal problems in the health care field.

HSA 5455—Ethical Issues in Health Administration (2) *Prereq: permission of instructor.* Foundations of ethical analysis. Ethical and legal issues related to human reproduction, genetics, definition of death, and other topics of current interest.

HSA 6xxx—Information Management in Health Administration (3) Survey of information systems in healthcare administration, in terms of system composition, role, and development. Design, evaluation, and selection of computer resources. Managing information technology in health care organizations. Current trends and issues in health care information systems.

HSA 6105—Professional Skills Seminar (1; max: 2) *Prereq: permission of instructor.* Presentations by speakers from health-related organizations and programs designed to improve career planning and professional skills. S/U.

HSA 6114—U.S. Health Care System (2) *Prereq: permission of instructor.* Overview of structural elements of contemporary system. Historical antecedents, patients, providers, payers, and role of health policy.

HSA 6115—Health Services Organizations (2) *Prereq: permission of instructor.* Overview of mission, environment, and organizational design of health services organizations, with emphasis on organizational relationships with external environment. Organizational design, structure, stakeholder analysis, and multi-organizational forms.

HSA 6116—Health Services Organizations (3) *Prereq: EMHA option.* Introduction to organizational design of hospital, ambulatory care, long term care, multi-institutional, and managed care organizations, including governance, management, professional oranization, qulaity, cost management, and ethics.

HSA 6118—Health Services Management (3) *Prereq: HSA 6115.* Perspectives from organizational behavior and psychology used to explain dynamics of individual and group processes in complex health services organizations. Professional workers, multi-disciplinary work teams, implications of demography and diversity.

HSA 6125—Overview of U.S. Health Delivery and Financing (3) *Prereq: EMHA option.* An examination of the character and purpose of the provision of health services in the United States. Particular attention is directed to planning, organization, financing, and delivery of personal health services.

HSA 6126—Managed Care (2) *Prereq: HSA 6114, 6115, 6118.* Management of HMOs, medical group practices, and other managed care delivery systems. Organization and administration, quality management, legal and ethical concerns, marketing, and financial aspects.

HSA 6152—Health Policy (3) *Prereq: permission of instructor.* Survey and critical analysis of federal and state health policy processes and outcomes as they relate to effectiveness and efficiency of health services in U.S. and selected countries.

HSA 6163—Health Services Marketing (2) *Prereq: permission of instructor.* Concepts and tools needed for effective marketing in complex organizations. Focus on service marketing, service quality, and identifying health care customers.

HSA 6175—Health Care Financial Management (3) *Prereq: EMHA option.* Application of corporate finance concepts and principles to health care organizations with goal of improving financial decision making.

HSA 6177—Health Care Finance (3) *Prereq: ACG 5075, FIN 5439.* Application of accounting and financial management theory and principles to health care industry, emphasis on provider organizations.

HSA 6178—Advanced Health Care Finance (2) *Prereq: HSA 6177.* Application of accounting and financial management theory and principles to health care industry, emphasis on managed care organizations and integrated delivery systems.

HSA 6179—Introduction to Health Care Finance (3) *Prereq: EMHA option.* Accounting and financial management. Focus on basic theory and principles of health care finance and unique features of health care industry.

HSA 6186—Strategic Management for Health Care Managers (3) *Prereq: EHMA option.* Principles, methods, and models of strategic management of organizations, emphasis on how they apply to health care organizations. System development, business planning, marketing, and decision support.

HSA 6188—Strategic Management in Health Administration (2) *Prereq: HSA 6114, 6115, 6118.* Relationship of health care organization to their environment. Strategic management processes, business planning, and other perspectives to aid in managing complex health care organizations.

HSA 6195—Operations Management for Health Care Organizations (3) *Prereq: EMHA option.* Methods that support decision making in health organizations. Development of practical tools for problem solving.

HSA 6196—Health Services Operations Management (3) *Prereq: permission of instructor.* Quantitative methods to support effective decision making. Descriptive statistics, sampling, quality control, hypothesis testing, regression analysis, forecasting, inventory control, and queuing models.

HSA 6198—Information Management in Health Administration (2) *Prereq: permission of instructor.* Survey of management information systems. Analysis of system requirements, system design, evaluation, and selection of computer resources, and management of implementation process.

HSA 6342—Human Resource Management for Health Services Managers (3) *Prereq: permission of instructor.* Knowledge and skills needed for effective management in complex health services organizations. Focus on human resource acquisition, retention, and exit, as well as labor relations issues.

HSA 6407—Health and Disease (2) Examination of conceptual issues in defining and measuring health, illness, and disease, with an emphasis on the social and cultural dimensions of these concepts.

HSA 6409—Measurement of Health and Illness (3) *Prereq: EMHA option.* Conceptual and methodological issues in definition and measurement of health and illness. Community-based measurement and development of tools for practical application in health organizations.

HSA 6432—Economic Aspects of Health Care (3) *Prereq: EMHA option.* Economist's approach to health care issues, and insights and limitations of economic analyses.

HSA 6436—Health Economics (3) 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 6752—Managerial Statistics for Health Services Managers (2) *Prereq: permission of instructor.* Statistical methods useful for managing health services organizations. Data collection, probability distributions, sampling, descriptive statistics, hypothesis testing.

HSA 6755—Quality Management for Health Care Managers (2) *Prereq: permission of instructor.* Overview, emphasis on implementation. Aspects of quality defined in relation to structure, process, and outcomes. Managerial quality improvement and formal change process techniques related to changing practice behavior in various settings.

HSA 6758—Performance Improvement for Health Care Managers (3) *Prereq: EMHA option.* Tools to improve health care performance practices, capabilities, and results. Meeting expectations and requirements of patients, insurers, government, and other relevant organizations. Assessing clinical outcomes. Understanding role of quality in management decisions.

HSA 6855—Internship in Health Administration (6) *Prereq: permission of instructor.* Supervised fieldwork in health administration setting. S/U.

HSA 6858—Internship in Health Services Research (1-6; max: 6) *Prereq: permission of instructor.* Supervised fieldwork. S/U.

HSA 6875—Residency in Health Administration (1-6; max: 6) *Prereq: HSA 6152*. Applied work experience supervised by preceptor and concluding with comprehensive analyses based on skills and knowledge acquired through courses and demonstrating effective use of qualitative and quantitative methods. S/U.

HSA 6905—Individual Study in Health Administration (1-3; max: 6)

HSA 6910—Supervised Teaching (1-5; max: 5) S/U.

HSA 6911—Research Seminar in Health Services Research (1; max: 6) Research presentations by graduate students. S/U.

HSA 6930—Special Topics in Health Services Administration (1-3; max: 6) Selected topics in theory and research in health services administration.

HSA 6934—Community-Based Health System Analysis (1; max: 2) *Prereq: permission of instructor.* Analysis of financing, organization, and delivery of health services in specific geographic area within state of Florida.

HSA 6935—Seminar in Health Administration (2; max: 4) *Prereq: permission of instructor.* Current issues including new organizational forms for health services delivery and financing, and changing governmental programs related to health care.

HSA 6938—Capstone Seminar and Project (3) *Prereq: EMHA option.* Integrative seminar and project. Final course in MHA program. Examines recent developments in field and requires integration of knowledge and skills gained across curriculum.

HSA 6939—Capstone Seminar in Health Administration (3) *Prereq: permission of instructor.* Analysis of cases dealing with administrative and policy issues in health services. Emphasis on problem-solving in ill-defined, multi-faceted situations.

HSA 6940—Supervised Teaching (1-5; max: 5) S/U.

HSA 6946—Internship in Public Health Management and Policy (1-6; max: 6) Supervised fieldwork. S/U.

HSA 7106—Seminar in Health Care Access and Utilization (3) *Prereq: permission 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 (3) *Prereq: permission of instructor.* Major perspectives in organization theory and their applications to health care sector.

HSA 7157—Research Foundations of Health Policy (3) *Prereq: permission 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 7325—Seminar in Health Care Costs and Financing (3) *Prereq: permission 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 7414—Society, Health, and Medical Care (3) *Prereq: permission of instructor.* Overview of health and medical care as sociocultural phenomena; health behaviors, health care organizations, and health services delivery in social and historical context.

HSA 7437—Advanced Health Economics (3) *Prereq: permission of instructor.* Exposure to advanced economics models of 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 (3) *Prereq: permission of instructor.* Current and historical thinking about philosophy of science and scientific modeling. Experimental and quasi-experimental design. Introduction to measurement and sampling.

HSA 7708—Health Services Research Methods II (3) *Prereq: permission 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 (3) *Prereq: permission 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 (1-3; max: 6)

HSA 7938—Advanced Seminar in Health Services Research (3; max: 12) *Prereq: completion of graduate core program and preliminary dissertation topic.*

HSA 7979—Advanced Research (1-4) 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. S/U.

HSA 7980—Research for Doctoral Dissertation (1-15) S/U.

History

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: B. E. Ward. *Graduate Coordinator:* J. Needell. *Graduate Research Professor:* M. MacLeod. *Richard Milbauer Professor:* B. Wyatt-Brown. *Distinguished Professor:* R. Zieger. *Professors:* J. S. Adler; D. R. Colburn; M. Gannon; D. P. Geggus; F. G. Gregory; A. Kwolek-Folland; R. J. McMahon; J. M. Pleasants; C. J. Sommerville; L. S. White. *Associate Professors:* F. Curta; E. Dale; G. R. Esenwein; A. Freifeld; G. J. Giles; R. A. Hatch; S. T. Kroen; C. H. Montgomery; J. Needell; L. M. Newman; J. F. Sensbach; V. B. Smocovitis; J. F. Spillane; M. W. Thurner; M. Tsin; E. R. Turner; B. E. Ward. *Assistant Professor:* J. Harland-Jacobs.

The Department of History offers the following graduate degrees: (1) Master of Arts with fields of specialization in African, East Asian, Medieval, European, Latin American, and United States history, and the history of science; and (2) Doctor of Philosophy with fields of specialization in Latin American, African, European, and United States history and the history of science.

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: (1) three recommendations from persons competent to evaluate their potential for graduate work; (2) an essay of from three to five double-spaced typewritten pages identifying their career goals and particular regional, temporal, or topical interests within the general field of history; (3) a sample of their written work in history.

Master of Arts—*Purpose:* The M.A. degree is intended to prepare students for admission to a Ph.D. program, for a teaching career in community colleges, or for a career in government or business. *Fields of Specialization:* The M.A. may be taken within a field and with a specialization in African (West Africa, East Africa, Southern Africa), European (ancient, medieval, early modern, or modern), Latin American (colonial Spanish America, modern Spanish America, Brazil, or Caribbean), or United States history (early America, 19th century, 20th century), or history of science (pre-Newtonian, modern physical, or modern biological science).

Requirements for Thesis Option: This option requires a minimum of 30 credit hours.1) Students must obtain at least 12 graduate-level regular course credit hours in their major fields. In European, the student must take the readings seminar in her/his area of specialization and one or more research seminars. In U.S. history, the student 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 and the history of science, the student must take the relevant readings seminar in her/his area of specialization, one other readings seminar, and at least one research seminar. 2) Students must obtain at least 6 graduate-level regular course credit hours in the Department of History but from areas outside their major fields. It is recommended that students invest these regular course hours in readings seminars. 3) Students must take 3 hours of historiography (HIS 6061) their first or second semester of graduate study. 4) Students must take 2 regular course credit hours from outside the Department; these should be graduate level hours, but undergraduate level hours may be taken subject to approval by the student's adviser. 5) Students must complete a master's thesis and the semester they graduate must be registered for a minimum of 3 thesis research hours (HIS 6971) in the fall or spring terms and 2 in a summer term. 6) The thesis should demonstrate the student's ability to handle the primary source material of her/his field, as well as a working knowledge of the secondary literature, and demonstrate the ability to present the results of research in a coherent, well-written essay. The student must complete the thesis and make it available to readers two 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. 7) Each student must pass a final comprehensive oral examination at the end of the program.

Requirements for Nonthesis Option: This option requires a minimum of 32 credit hours. 1) Students must obtain at least 12 graduate-level regular course credit hours in their major fields. In European, the student must take the readings seminar in her/his area of specialization and one or more research seminars. In U.S. history, the student must take the 19th-century American readings seminar, either the 20th-century or early America readings seminar, and at least one research seminar. In Latin American or African history or the history of science, the student must take the relevant readings seminar in his/her area of specialization, one other readings seminar, and at least one research seminar. 2) Students must obtain at least 6 graduate-level regular course credit hours in the Department of History but from areas outside their major fields. It is recommended that students invest these regular course hours in readings seminars. 3) Students must take 3 hours of historiography (HIS 6061) their first or second semester of graduate study. 4) Students must take 3 regular course credit hours from outside the Department; these should be graduate level hours, but undergraduate level hours may be taken subject to approval by the student's adviser. 5) Students must complete a research seminar and/or a nonthesis project in history. Research seminars and nonthesis projects have as their primary goal the student's completion of a journal-length essay (approximately 35 to 40 pages) of publishable or near-publishable quality. The essay should be based largely on primary sources. 6) Each student must pass a final comprehensive oral and written examination conducted by her/his supervisory committee.

M.A. Supervisory Committee: The committee normally consists of the chair and another member from the student's major field and a representative of a minor field. 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.

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 152 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.

Students in this program are not eligible for departmentally controlled financial aid. 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.

Doctor of Philosophy—(1) A professional competence in the field of specialization designed as the major field; (2) a knowledge of two minor fields, one of which must be drawn from the approved major fields of specialization for the doctorate (Latin American, European, African, U.S. history and the history of science) or from approved minor fields (gender), and the other being thematic in nature and including at least 6 hours outside the Department; (3) passage of a set of written and oral qualifying examinations testing competence in major and additional fields as well as the student's knowledge of the nature of history and the historian's task; (4) a dissertation for which credit is given in HIS 7980. Students may also take an optional third area in public history.

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 four years. The program offers students work in the legal and constitutional history of the United States (especially the South), England, Europe, and Latin America. Students may begin their first year of work in either history or law, but they must complete the first year of law school within one year and they must do so within the first two years of admission to the joint degree program.

For further information write to the Graduate Coordinator, Department of History, University of Florida, Box 117320, Gainesville, FL 32611-7320.

AFH 5297—History of African Agriculture (3) Beginning with the transition to agriculture and continuing through an examination of African agriculture in the post-colonial period. Not open to students who have taken AFH 4291 or the equivalent.

AFH 5348—History of West Africa (3) Ghana empire to the contemporary period. Not open to students who have taken AFH 3342 or equivalent.

AFH 5458—Southern Africa (3) *Prereq: permission of instructor.* History of Africa south of the Zambezi River since 1800, with special reference to the Republic of South Africa. Not open to students who have taken AFH 4450 or equivalent.

AFH 5934—Topics in African History (3; max: 9)

AFH 6259—Seminar in Modern Africa (3; max: 6)

AFH 6805—Theories and Methods of African History (3) Theories and methods that underlie the study of African history and changes as field has evolved over last four or more decades. Attention to changing frameworks for viewing African past, focus on historian's research methods and techniques.

AFH 6934—Africa (3)

AFH 6936—Readings in African History (3; max: 6)

AMH 5405—The South to 1860 (3) *Prereq: permission of instructor.* History of South from Civil War to present, emphasizing South as integral region and its relationship to rest of nation. Not open to students who have taken AMH 4403 or equivalent.

AMH 5905—Special Studies (3; max: 12 including HIS 6905)

AMH 5930—Topics in United States History (3; max: 15)

AMH 6198—Early American Society (3) Readings seminar focusing on selected topic or topics in American history through War of 1812.

AMH 6199—Nineteenth Century America (3) Readings seminar focusing on a topic or topics in American history from War of 1812 to around 1900.

AMH 6290—Modern America (3) Readings seminar focusing on a topic or topics in American history in twentieth century.

AMH 6356—Research in U.S. History (3) Reading and research designed to produce a paper which demonstrates ability to do research in primary sources and connect original work with existing historical literature.

AMH 6406—Readings in Southern History, 1607-1865 (3) 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 (3) Historical development of American cities and ways in which the urbanization process has reshaped social life.

AMH 6506—Seminar in American Labor History (3)

AMH 6516—Seminar in American Foreign Relations and Expansion (3) 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 United States (3; max: 9) Chronological and thematic analysis of evolution of American law, legal institutions, and constitutionalism from their English origins to present.

AMH 6677—Civil Rights Movement (3) Origins and development of southern civil rights movement that peaked between roughly 1954 and 1972.

ASH 5388—Topics in East Asian History (3; max: 9)

EUH 5546—Topics in British History (3; max: 9)

EUH 5934—Topics in European History (3; max: 15)

EUH 6126—Readings in Medieval History (3) Major themes; readings combine classic studies that shaped field with current work exploring issues like gender, textuality and historical memory, popular religion.

EUH 6213—Europe, 1500-1763 (3)

EUH 6289—Readings, Modern Europe (3; max: 6) Major themes; readings combine classic studies that shaped field with current works exploring wide range of topics.

EUH 6469—Modern German History (3) Interpretations of and approaches to German history, and introduction to advanced research in the area.

EUH 6935—Readings, Early Modern Europe (3; max: 6) Major themes; readings combine classic studies that shaped field with current works exploring a wide range of topics.

EUH 6937—Readings in Mediterranean History (3; max: 6) Rotating readings seminar.

HIS 5450—Slavery in the New World: Comparative Perspectives (3) Examines in-depth the evolution of slavery in the New World from its European and African antecedents through abolition and emancipation.

HIS 5484—Science and the Enlightenment (3) Theoretical developments in the physical and biological sciences between the late seventeenth and late eighteenth centuries, including significance of social and cultural dimensions of natural science.

HIS 5485—Special Studies in the History of Science (3; max: 9)

HIS 5500—Life Science Since 1800 (3) Critical problems of concern to biologists. Role of mechanistic/materialistic vs. vitalistic and reductionistic vs. holistic approaches to development of biology, as well as relationship of biology to physical and social sciences.

HIS 6060—Historical Method (3) Introduction to the methods of research used by professional historians.

HIS 6061—Introduction to Historiography (3) Development of schools, theories, and philosophies of history since the Enlightenment.

HIS 6416—Problems in Comparative Legal History (3) Seminar begins with 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 (3) Readings in history and theory of aftermaths of Europena imperialism, with emphasis on passage from colonial to postcolonial regimes and on 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 (3; max: 9) History of writing in 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 (3) 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 (3) Physical and life sciences; may cut across chronological, geographical, and disciplinary boundaries.

HIS 6488—Readings in the History of Science (1-4; max: 12) Inquiry into development of western scientific thought and institutions. Specific historical topics having intellectual coherence and substantial historiography.

HIS 6489—Seminar: Social and Cultural History of Science (3; max: 9) Inquiry into social and cultural contexts of western science. Literature, cultural values, religious beliefs, communication networks, and educational institutions in western civilization. Issue of gender in science.

HIS 6905—Individual Study (1-4; max: 12 including AMH 5905)

HIS 6910—Supervised Research (1-5; max: 5) S/U.

HIS 6940—Supervised Teaching (1-5; max: 5) S/U.

HIS 6943—Internship in College Teaching (2,4,6; max: 6)

HIS 6957—Nonthesis Project in History (1-3; max: 9) Nonthesis research. S/U.

HIS 6971—Research for Master's Thesis (1-15) S/U.

HIS 7979—Advanced Research (1-12) 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. S/U.

HIS 7980—Research for Doctoral Dissertation (1-15) S/U.

LAH 5438—Modern Mexico (3) *Prereq: permission of the instructor.* Topics in Mexican history from independence in 1821 to the present with emphasis on the Diaz dictatorship and the Mexican Revolution. Not open to students who have taken LAH 4433 or equivalent.

LAH 5476—Caribbean History to 1800: Slavery, Colonization, and International Conflict (3) *Prereq: permission of instructor.* Social, economic, and political history of West Indies and Circumcaribbean region to around 1800, emphasis on slave societies. Not open to students who have taken LAH 4471.

LAH 5527—Andean Nations (3) *Prereq: permission 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 (3) *Prereq: consent of instructor or department chair.* Historical analysis of Amazon region. Designed to provide knowledge of Latin American history to give context for issues confronting region today.

LAH 5637—Brazil Since 1750 (3) *Prereq: permission of instructor.* History of Brazil since independence with emphasis on the uniqueness of the nation and its internal diversity. Not open to students who have taken LAH 4630 or equivalent.

LAH 5933—Topics in Caribbean History (3) Introduction to historiography of the Caribbean. Pre-Columbian times to present.

LAH 5934—Topics in Latin American History (3; max: 16)

LAH 6934—Seminar in Colonial Spanish America (3; max: 6)

LAH 6936—Seminar in History of Brazil (3)

LAH 6938—Seminar in Modern Spanish America (3)

Horticultural Science

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

HOS Coordinator: D. J. Cantliffe. *Environmental Horticulture Chair:* T. A. Nell. *Graduate Coordinator:* G. L. Miller. *Horticultural Sciences Chair:* D. J. Cantliffe. *Graduate Coordinator:* D. J. Huber. *Eminent Scholars:* A. D. Hanson; H. J. Klee. *Professors:* L. G. Albrigo; L. H. Allen; P. C. Andersen; J. E. Barrett; M. J. Bassett; J. K. Brecht; J. K. Burns; D. J. Cantliffe; W. S. Castle; C. K. Chandler; C. D. Chase; J. L. Cisar; K. C. Cline; J. H. Crane; R. L. Darnell; F. S. Davies; B. Dehgan; J. A. Dusky; E. J. Echeverria; R. J. Ferl; J. J. Ferguson; G. E. Fitzpatrick; E. F. Gilman; J. P. Gilreath; F. G. Gmitter; D. J. Gray; J. W. Grosser; C. L. Guy; L. C. Hannah; B. K. Harbaugh; R. J. Henny; G. J. Hochmuth; D. J. Huber; M. A. Ismail; M. E. Kane; G. W. Knox; K. E. Koch; R. E. Litz; P. M. Lyrene; D. R. McCarty; D. B. McConnell; G. A. Moore; T. A. Nell; S. M. Olson; L. R. Parsons; S. A. Sargent; B. A. Schaffer; J. W. Scott; M. Singh; W. M. Stall; R. H. Stamps; P. J. Stoffella; J. P. Syvertsen; C. S. Vavrina; J. G. Williamson; T. H. Yeager. *Associate Professors:* R. C. Beeson; P. Busey; J. Chen; D. G. Clark; T. L. Davenport; K. Klock-Moore; G. L. Miller; R. T. Nagata; J. G. Norcini; B. Rathinasabapathi; M. A. Ritenour; R. E. Rouse; P. K. Schoellhorn; B. T. Scully; M. Thetford; J. B. Unruh; C. E. Vallejos; J. M. White. *Assistant Professors:* R.S. Buker; C. A. Chase; J. R. Duval; K. M. Folta; C.M. Hutchinson; D. R. Sandrock; A.M. Settles; E. H. Simonne; L. E. Trenholm; W. Vendrame; S. B. Wilson.

The Horticultural Science (HOS) graduate program, administered jointly by the Environmental Horticulture (EH) and Horticultural Sciences (HS) departments, offers graduate programs leading to the Master of Science (thesis or nonthesis option) and 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.

Applications for admission to the HOS graduate program can be submitted through either the HS or EH departments, depending on the career/research interests of the student. All applicants should have a strong undergraduate or graduate background in horticultural, biological, agronomic, or other disciplines within the life sciences, and exposure to 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 will be required to take prerequisite subjects during the first year of graduate study. Undergraduate courses taken to correct curriculum deficiencies will not count for graduate program credit.

In addition to the courses listed below, the following courses in related areas are acceptable for graduate credit as part of the student's major: AEB 5757—Strategic Agribusiness Human Resource Management; AEB 6385—Management Strategies for Agribusiness Firms; AEE 6206—Advanced Instructional Techniques; AEE 6541C—Instructional and Communication Technologies; AGR 5266C—Field Plot Techniques; AGR 5307—Molecular Genetics for Crop Improvement; AGR 6311—Population Genetics; AGR 6323—Advanced Plant Breeding; AGR 6325—Plant Breeding Techniques; AGR 6353—Cytogenetics; AGR 6442CPhysiology of Agronomic Crops; ALS 6830—Grant

Writing; BCH 5045—Graduate Survey of Biochemistry; BOT 5225—CPlant Anatomy; BOT 5646C—Ecology and Physiology of Aquatic Plants; BOT 6566—Plant Growth and Development; SOS 5116—Environmental Nutrient Management.

Specializations within the HS department are specific to vegetable and fruit crops and include plant breeding and genetics, plant production and nutrient management, postharvest biology, sustainable/organic practices, and weed science. A number of faculty within HS and EH participate in the interdisciplinary plant molecular and cellular biology program. Students interested in molecular biology/biotechnology may pursue molecular-oriented studies within any area of specialization listed. Students interested in full specialization within molecular and related disciplines should contact the Plant Molecular and Cellular Biology interdisciplinary program for specific requirements.

Specializations within the EH department include floriculture, foliage, turfgrass, woody plants, plant anatomy and development, ecology, taxonomy, breeding and genetics, tissue culture, stress physiology and plant biotechnology.

Master of Science Nonthesis Option—This option is for students desiring additional training beyond the bachelor's degree in a horticultural specialization. The 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 16 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.

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.

The EH and HOS Departments each offer a combined bachelor's/master's degree program. Contact the respective graduate coordinators for information.

ALS 5036—Contemporary Issues in Science (2) A study of current issues in science as it relates to students pursuing scientific careers. Discussion topics will focus on issues of graduate education, funding for science, job markets, scientific research ethics, publication, and job expectations S/U.

ALS 5934—Graduate Professional Development Seminar (2) Presentations and group discussion of topics essential to enhance awareness, personal satisfaction, and professional success of graduate students S/U.

BOT 6516—Plant Metabolism (3) *Prereq: BOT 5505C, BCH 4024.* Metabolism of carbohydrates, fats, and nitrogen compounds in higher plants; cell structures as related to metabolism; metabolic control mechanisms. Offered spring semester.

HOS 5085C—Principles of Postharvest Horticulture (3) *Prereq: 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 (3) *For graduate students who have not taken ORH 3513C.* Principles and practices of horticultural plant identification using vegetative and floral morphology.

HOS 5306—Molecular Biology of Plant Hormones (3) *Prereq: BCH 6415 and HOS 4304 or equivalent.* Biochemistry, molecular biology, and physiology of plant hormones that control plant growth and development. Offered fall semester in even-numbered years.

HOS 5325C—Citrus Fresh Fruit Technology (3) *Prereq: BOT 3503 or equivalent.* Fresh citrus fruit physiology, pathology, handling, engineering principles, quarantine measures and regulations. Offered even-numbered years in spring at Lake Alfred CREC.

HOS 5330—Postharvest Technologies for Horticultural Crops (2) Lectures and 4-day field trip to commercial horticultural operations throughout Florida during Spring Break.

HOS 5515C—Greenhouse and Nursery Operations (3) *For graduate students needing introduction to principles of planning, organizing, and managing production operations. Not open to students who have taken ORH 3254.* Principles involved in managing nurseries. Interaction between media components, irrigation, and nutrition. Weekend field trips may be required.

HOS 5516C—Advanced Production of Greenhouse and Nursery Crops (3) *Prereq: 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 (3) A comprehensive study at the Tropical Research and Education Center at Homestead and field locations in South Florida. (Students will be in residence for four weeks at the Center.) Offered even-numbered years in summer.

HOS 5565—Advances in Vegetable Production Technology (3) *Prereq: BOT 3503.* Survey of scientific knowledge related to production of vegetable crops. Offered odd-numbered years in spring.

HOS 5616—Agricultural Meteorology (2) Causes and effects on agriculture of droughts, floods, freezes, heat waves, monsoons, hurricanes, thunderstorms, El Nino, and other weather phenomena.

HOS 6201—Breeding Perennial Cultivars (3) *Prereq: AGR 3303.* Methods of breeding perennial fruit and ornamental cultivars using mutations, cell and tissue culture, polyploidy, wide hybridization, and recurrent selection. The conservation and domestication of wild plants. Offered odd-numbered years in fall.

HOS 6231—Biochemical Genetics of Higher Plants (3) *Prereq: AGR 3303 or PCB 3063 or equivalents.* Discussion of current evidence bearing on gene function and regulation, examples of the use of plant mutants in the elucidation of biochemical pathways, and examination of somatic cell genetics in higher plants. Offered even-numbered years in spring.

HOS 6311—Seed Physiology (3) *Prereq: BOT 3503.* Study of the dormancy, germination, growth, and development of seeds and the life processes involved; methods of handling and processing. Offered even-numbered years in spring.

HOS 6331—Postharvest Physiology (3) *Prereq: BOT 3503 and 5505C or equivalent.* Physiological and biochemical principles involved in quality maintenance and postharvest handling of fruit, vegetable, and ornamental crops. Emphasis on phases of development known as maturation, ripening, and senescence. Current theories and research reviewed with emphasis on understanding and control of cellular processes important to storage and quality maintenance of horticultural commodities. Offered odd-numbered years in spring.

HOS 6345—Environmental Physiology (4) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: ORH 3222C.* Principles and practices of turfgrass improvement and management, including propagation, nutrition, physiology, soil management, and experimental methods applied to turf research. Offered even-numbered years in spring.

HOS 6535—Woody Plant Physiology (2) *Prereq: BOT 3503 or equivalent.* Selected topics in fruit crop physiology, including dormancy/chilling; source-sink relations; light relations in plant canopy; water relations. Offered even-numbered years in fall.

HOS 6545—Advanced Citriculture I (3) *Prereq: FRC 3212 and 4223 or equivalent.* Regulation of citrus vegetative growth including climactic, physiological, and cultural factors. Offered odd-numbered years in fall at Lake Alfred CREC.

HOS 6546—Advanced Citriculture II (3) *Prereq: 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 6767—Advanced Plant Metabolism (3) *Prereq: BOT 6516.* Regulation of intermediary metabolism, nitrate/sulfate assimilation, biosynthesis of ureides, polyamines, chlorophyll, secondary metabolites, and protein turnover mechanisms. Offered odd-numbered years in spring.

HOS 6905—Problems in Horticultural Science (1-4; max: 8) H.

HOS 6910—Supervised Research (1-5; max: 5) S/U.

HOS 6931—Horticultural Science Seminar (1; max: 3) 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 fall and spring. S/U.

HOS 6932—Topics (1-4; max: 8) Study of contemporary research in horticultural science.

HOS 6940—Supervised Teaching (1-5; max: 5) S/U.

HOS 6941—Practicum in Horticultural Science (2-4; max: 8) Admission limited to graduate students majoring in horticultural science. Supervised and individual work in professional areas of horticulture.

HOS 6971—Research for Master's Thesis (1-15) S/U.

HOS 7979—Advanced Research (1-12) 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. S/U.

HOS 7980—Research for Doctoral Dissertation (1-15) S/U.

ORH 5026C—Advanced Annual and Perennial Gardening (3) *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 (2) *For graduate students who have not taken ORH 4223.* Golf course and sports turf management.

ORH 5282—Orchid Biology and Culture (3) *For graduate students who have not taken ORH 4280 or permission of instructor.* Orchid plants and flowers, including nomenclature, breeding, seed culture, harvesting, and handling.

ORH 5322C—Palm Biology and Culture (3) *For graduate students who have not taken ORH 4321C or permission of instructor.* Biology, vegetative and reproductive morphology, identification, container, liner, and field production of palms.

ORH 5815C—Advanced Florida Native Landscaping (3) *Prereq: ORH 1520 or 3513.* Introduction to nomenclature, effective utilization, and design elements of plants native to Florida.

PCB 5065—Advanced Genetics (4) *Prereq: AGR 3303 or PCB 3063 and BCH 4024 or 5045. For graduate students in any life science discipline.* Examination of genetic principles including gene and gene function; recombination and linkage; molecular markers, multipoint linkage analysis , and positional cloning; quantitative, population, developmental, and non-Medalian genetics.

PCB 6528—Plant Molecular Biology (3) *Prereq: BCH 6415 and PCB 5065 or equivalents.* Structure, function, and analysis of plant genomes, genes, and gene products. Lecture format with frequent discussion of recent papers. Genome structure, transformation, gene tagging, transcription, signal transduction, organelles, protein trafficking. Offered in spring semester.

PLS 5098—Research and Communication Skills for Plant Scientists (3) *Prereq: graduate standing.* Literature review and research proposal, grant proposal writing, bioethics, poster and oral presentations, and preparation and critique of manuscripts.

PLS 5222C—Propagation of Horticultural Crops (3) *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 (4) *Prereq: PLS 3221 or permission of instructor.* Practical application of plant tissue for clonal propagation of horticultural crops.

PLS 5405—Advanced Composting Technology (3) *For graduate students who have not taken PLS 4404C or permission of instructor.* Humification of organic matter under controlled conditions.

Industrial and Systems Engineering

College of Engineering

Graduate Faculty 2004-2005

Chairman: D. W. Hearn. *Graduate Coordinator:* H. E. Romeijn. *Professors:* R. K. Ahuja; J. F. Burns *(Emeritus);* B. L. Capehart *(Emeritus);* D. J. Elzinga; R. L. Francis; D. W. Hearn; P. Pardalos. *Associate Professors:* S. X. Bai; J. P. Geunes; S. Lawphongpanich; H. E. Romeijn; S. Tufekci; S. Uryasev. *Associate Engineer:* K. E. Dominiak. *Assistant Professors:* E. Akali; Z. J. Shen. *Assistant Engineer:* D. A. Schaub.

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 with the Department of Management. Contact the graduate coordinator for information.

EIN 6227—Advanced Quality Management and Engineering for Business Processes (3) *Prereq: 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 (3) *Prereq: ESI 6417, 6429.* 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (1-6; max: 9) Laboratory, lecture, field work, or conferences.

EIN 6910—Supervised Research (1-5; max: 5) S/U.

EIN 6918—Graduate Seminar (1; max: 15) S/U.

EIN 6940—Supervised Teaching (1-5; max: 5) S/U.

EIN 6971—Research for Master's Thesis (1-15) S/U.

EIN 6972—Research for Engineer's Thesis (1-15) S/U.

EIN 7933—Special Problems (1-6; max: 12) Laboratory, lecture, field work, or conferences.

EIN 7979—Advanced Research (1-12) 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. S/U.

EIN 7980—Research for Doctoral Dissertation (1-15) S/U.

ESI 5236—Reliability Engineering (3) *Prereq: 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 6xxxa—Systems Design (3) *Prereq: calculus, linear algebra, basics of statistics, ESI 6314.* Broad introduction to systems engineering and structured approach necessary for design of complex systems. Emphasis on formulation of systems problems and approach to their solution. Introduction of basic mathematical techniques for dealing with systems design.

ESI 6xxxb—Systems Architecture (3) *Prereq: calculus, linear algebra, ESI 6xxxa.* Foundations for developing and evaluating architectures for systems of systems. Process for generating functional, physical, and operational architecture from top-level operations concept.

ESI 6xxxc—Systems Management (3) *Prereq: calculus, linear algebra, basics of statistics.* Introduction to concepts of systems and role systems engineering plays in their development. Basic framework for planning and assessing system development and how systems analysis methods and techniques are integrated within systems engineering process.

ESI 6162C—Advanced Industrial Applications of Microprocessors (3) *Prereq: 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 (4) *Prereq: 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 (3) *Prereq: calculus, differential equations, undergraduate probability, and statistics.* Applied probability theory and statistics, reliability engineering, quality control, robust design, forecasting, Markov processes, and queueing theory.

ESI 6323—Models for Supply Chain Management (3) *Prereq: 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 6355—Decision Support Systems for Industrial and Systems Engineers (4) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: ESI 6417, 6429.* Extension of linear programming to large scale linear and nonlinear problems. Integer programming methods. Applications of the methodology to real world models.

ESI 6429—Introduction to Nonlinear Optimization (3) *Prereq: ESI 6417 and multivariable calculus.* Nonlinear optimization models, convex sets and functions, optimality conditions, nonlinear algorithms, dynamic programming methods.

ESI 6448—Discrete Optimization Theory (3) *Prereq: 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 6470—Principles of Manufacturing Systems Engineering (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: computer programming and probability theory.* Computer programming aspects of digital simulation. Deterministic simulation; stochastic simulation. Use of simulation languages.

ESI 6546—Stochastic Modeling and Analysis (3) *Prereq: STA 6326.* Stochastic processes, with emphasis on model building and proabilistic 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 queueing, reliability, inventory theory, logistics, and finance.

ESI 6912—Advanced Topics in ISE (1-4; max: 8) *Prereq: consent of instructor.* Course work in specialized topics for graduate students.

Interdisciplinary Ecology

College of Natural Resources and Environment

Graduate Faculty 2004-2005

Director of Academic Programs and Graduate Coordinator: S. R. Humphrey.

Graduate students are advised by one of the 275 members of the School's affiliate faculty and have a supervisory committee with interdisciplinary composition. For the list of Graduate Faculty, see http://snre.ufl.edu/people/affiliate.asp. Graduate students are hosted in one of 48 participating academic units.

The School offers a program of study leading to the Master of Science (thesis and nonthesis options), and Doctor of Philosophy degrees in interdisciplinary ecology. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

These programs combine (1) course work in the basic and applied science of ecology and the social, political, and economic sciences with (2) competence in a recognized discipline in one of these fields of study. The former is achieved with a core-course and distribution requirement. The latter is achieved by extra course work for the master's and a concentration for the doctoral degree. A thesis or dissertation provides first-hand experience with the creation of reliable knowledge. The nonthesis master's option provides rapid, advanced preparation for the job market in 3 to 4 semesters, without a research experience. Course requirements are 36 semester hours for the thesis option, 38 hours for the nonthesis option, and 60 hours beyond the master's degree for the doctoral degree.

Combined Program—The nonthesis master's option is available as a 4-year-plus-1-year sequence to qualified seniors in the School's baccalaureate degree program in environmental science, who may take up to 12 hours of approved graduate courses that count for both undergraduate and graduate credit.

Master's and doctoral students each take a course in principles of ecology and one in ecology of a particular type of system. Students also undertake advanced study of three domains of thought integral to interdisciplinary ecology: resource-related natural sciences, environment-oriented social sciences, and sustainability studies. Details of the requirements are listed on the Internet at http://snre.ufl.edu/. Choices among 160 courses are custom-fitted by the student and the supervisory committee to meet the student's specific needs and interests.

Graduates understand the interaction of natural systems and society, and they are equipped with advanced education on ecological theory, methods, analysis, and applications. They have mastery of one discipline and the ability to communicate efficiently with specialists in other disciplines. This provides the intellectual capacity to address complex environmental and natural resource issues.

EVR 6933—Seminar (1; max: 4) S/U.

EVR 6934—Internship (3; max: 6) *For nonthesis master's students.* Intensive workplace experience in business, government, or nongoverment organization related to specific program of study. S/U.

EVR 6979—Nonthesis Master's Project (1-2; max: 2) Technical paper involving analysis and synthesis but not necessarily generation of new data. S/U.

PCB 6971—Research for Master's Thesis (1-6) S/U.

PCB 7979—Advanced Research (1-12) 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 doctoral program. Not appropriate for students who have been admitted to candidacy. S/U.

PCB 7980—Research for Doctoral Dissertation (1-15) S/U.

Interior Design

College of Design, Construction, and Planning

Graduate Faculty 2004-2005

Chair: M. B. Portillo. *Graduate Coordinator:* M. J. Hasell. *Professors:* M. J. Hasell; S. D. Tate. *Associate Professor:* J. E. Winebrenner. *Assistant Professor:* D. D. Harris.

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 historic preservation and restoration of interior spaces; design for special populations, for example the disabled, elderly and children; investigation and application of design technology, materials, and lighting; design education; issues of indoor air quality and sustainability; environment and behavior research, theory, and applications in interior design.

Regardless of the study emphasis selected by the student, the M.I.D. program has a central focus with three categories of course work: 1) theories and methods of research, 2) design studio, and 3) seminars in current interior design topics. All M.I.D. students must complete an approved research topic with a written thesis.

Complete descriptions of the requirements for the M.I.D. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Applications—All applications must include GRE scores, transcripts for all previous academic work, and scores for the Test of English as a Foreign Language (TOEFL) if the applicant's native language is not English. 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, 340 Architecture, P.O. Box 115705, College of Design, Construction, and Planning, University of Florida 32611-5705, the following: a portfolio of their design work (if applicable), a written essay on the goals and aspirations related to graduate studies, and 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. (The portfolio must be accompanied by a self-addressed, stamped envelope.) 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.

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 may be 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 the fall semester 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 graduate courses. Therefore, each student entering the Master of Interior Design program works with the graduate coordinator to evaluate his/her unique background to determine the specific courses needed to facilitate interest and experience. The estimated credit hours and length of study time vary according to each student's individual baccalaureate degree and experience. There are four options.

1) 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 undergraduate and the M.I.D. degrees. An additional 2 graduate credit hours are required, expect at least one additional year to complete the M.I.D.

2) For students who graduated from a Foundation for Interior Design Education and Research (FIDER) accredited first professional degree program within an architectural framework, the course of study is 36 graduate credit hours. Expect two to three years to complete the M.I.D.

3) 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 58 graduate credit hours (includes the 36-hour M.I.D.). Expect three years to complete leveling courses and the master's degree.

4) For students with a bachelor's degree in a field other than design, the course of study is estimated to be 85 undergraduate and graduate credit hours. Expect three to four 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 upon 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 three hours of course work in graduate statistics and nine hours of multidisciplinary graduate electives that reinforce and extend the research.

Courses from such academic units as Psychology, Anthropology, Sociology, Engineering and Business Administration provide possible electives. The College of Liberal Arts and Sciences offers the Certificate in Gerontology. If the focus of a student is the design of facilities for an aging population, then gerontology 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 their course choices as well as thesis selection, study, and production.

DCP 6931—Special Topics in Design, Construction, and Planning (1-4; max: 6)

DCP 7790—Doctoral Core I (3) Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.

DCP 7792—Doctoral Core II (3) *Prereq: DCP 7790.* Urban, environmental, and legal systems in the context of urban development.

DCP 7794—Doctoral Seminar (1; max: 4) *Prereq: Coreq: DCP 7911. For entering Ph.D. students.* Successfully negotiating graduate school and writing dissertation.

DCP 7911—Advanced Design, Construction, and Planning Research I (3) *Prereq: STA 6167; coreq: DCP 7794; for entering Ph.D. students.* Survey and critical analysis of research in disciplines of design, construction, and planning with emphasis on theory and mehtods.

DCP 7912—Advanced Design, Construction, and Planning Research II (3) *Prereq: ARD 7911.* Conduct of advanced research in architecture, design, landscape, planning, and construction.

DCP 7940—Supervised Teaching (1-5; max: 5) *Prereq: not open to students who have taken 6940.* Independent student teaching under supervision of faculty member. S/U.

DCP 7949—Professional Internship (1-5; max: 5) Professional faculty-supervised practicum.

DCP 7979—Advanced Research (1-12) 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. S/U.

DCP 7980—Research for Doctoral Dissertation (1-15) S/U.

IND 5023—Introduction to Architectural Interiors (2) *Prereq: consent of graduate coordinator.* Overview of profession. Design of interiors to enhance human activity while observing life safety codes and human performance. Examination of significant interiors and furniture components.

IND 5106—History of Interior Design I (3) *Prereq: consent of graduate coordinator.* Design philosophy and interior elements in 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 (3) *Prereq: 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 5157—Preservation of Historic Interiors: Theory and Application (3) *Prereq: consent of graduate coordinator.* Research and implementation in preservation. Interior spaces, fixtures, and furnishings. Evolution of interior preservation theory and practice in U.S.

IND 5212C—Architectural Interiors I (5) *Prereq: consent of graduate coordinator; coreq: IND 5638 and 5427C.* Development of interior spaces from conceptual phases to final design resolution, based on needs of people, interior considerations, and exterior influences. Emphasis on three-dimensional design development, process, and detailed graphic representation of designed spaces.

IND 5213C—Introduction to Architectural Interiors (5) *Prereq: consent of graduate coordinator.* Design of micro-interior environments in relation to architectural setting. Study of human perception, dimension, and spatial activity requirements. Exploration of design process and graphic communication of interior design ideas.

IND 5227C—Advanced Architectural Interiors I (6) *Prereq: consent of instructor or graduate coordinator; coreq: IND 5454C.* Advanced problems with respect to sophisticated clients in urban settings; ranging from infrastructure of large urban spaces to details of individual spaces, including corporate office planning and design of both public and private spaces.

IND 5231C—Architectural Interiors II (5) *Prereq: IND 5212C or consent of instructor or graduate coordinator; coreq: IND 5434C and 5508.* Conceptual design process, design theory, and programmatic concerns included in residential, commercial, and institutional interior design. Emphasis on professional applications and interior designer as team player, programmer, and problem solver.

IND 5232C—Advanced Architectural Interiors II (6) *Prereq: IND 5227C or consent of graduate coordinator; coreq: IND 5454C.* Advanced problems focusing on multiple phases of design process through final design and detailing of each project. Final project demonstrates highest level of design achievement.

IND 5317C—Interior Design Communication Systems (3) *Prereq: consent of graduate coordinator.* Conceptual process, design theory, and programmatic concerns involved in residential, institutional, and commercial interior design. Emphasis on visual communication techniques including explanation of media and forms of visual communication and design concepts.

IND 5427C—Interior Design Construction Documents (4) *Prereq: consent of graduate coordinator.* Systematic overview of construction systems, technologies, and materials. Emphasis on design of interior systems and on detailing of systems as extension of overall design concept.

IND 5428—Materials for Interior Design (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (4) *Prereq: 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 (3) *Prereq: consent of graduate coordinator.* Introduction to microcomputers as tool 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 (3) *Prereq: permission of graduate coordinator.* Relation to human sensory reactions, psychological factors, health safety, and satisfaction. Vocabulary and concepts of interior environmental technology related to process of design.

IND 5508—Business and Professional Practices for Interior Designers (3) *Prereq: consent of instructor or graduate coordinator.* Profession of interior design as practiced today. Consideration of 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—Theory of Interior Design (3) *Prereq: consent of graduate coordinator.* Introduction to significant theories concerning reciprocal interactions between people and interior architectural space. Theories, philosophies, and doctrines of design and exploration of their influences.

IND 5937—Current Topics in Interior Design (1-3; max: 6) 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 6154—Preservation of Historic Interiors: Historic Interior Materials (3) *Prereq: IND 5157.* Historic interiors materials related to American historic periods of architecture and interior design.

IND 6239—Advanced Topics in Interior Design Studio (6; max: 12) 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 (3) *Prereq: graduate standing.* Theory and methods related to research in interior design, environment and behavior, and history. Reciprocal interactions between people and built environment.

IND 6906—Independent Studies and Readings (1-3; max: 9)

IND 6940—Supervised Teaching (1-5; max: 5) S/U.

IND 6941—Interior Design Internship (2-4; max: 4) *Prereq: IND 5427C, 5232C, 5508.* Opportunities to work in architectural and interior design office gaining hands-on professional experience working up to 12 weeks. S/U.

IND 6971—Research for Master's Thesis (1-6) S/U.

Landscape Architecture

College of Design, Construction, and Planning

Graduate Faculty 2004-2005

Chairman: R. R. Grist. *Graduate Coordinator:* S. K. Williams. *Professor:* R. T. Schnadelbach. *Associate Professors:* M. H. Carr; R. R. Grist; M. C. Gurucharri; L. L. Linscott; S. K. Williams.

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 Landscape Architecture—The M.L.A. is a fully accredited advanced professional degree and first professional degree. Graduation from an accredited program is an essential first step toward licensing in Florida and other states that regulate the practice of landscape architecture.

Complete descriptions of the requirements for the M.L.A. and Ph.D. degrees are provided in the *General Information* section of this catalog.

The mission of the Department of Landscape Architecture is teaching, research, and service toward conserving, enhancing, and creating outdoor spaces for their users in the natural and built environments.

Field trips are required as part of normal course work. Students should plan to have adequate funds for trips and studio materials. Students will be required to own personal computers with CADD graphics capabilities. Students should check with the Department for equipment specifications prior to purchase.

The program is flexible in meeting the needs of applicants with varied backgrounds. Students entering the graduate program in landscape architecture follow one of the four following tracks:

Graduates without Design-Related Baccalaureate Degrees–For those students with little to no background in design a summer preparatory program is required that should aid in the development of basic analytical, design, and graphic skills. Having successfully completed this 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 a foundation in landscape construction. A 7- to 10-day field trip is required during one semester. Following this first year of articulation, students enter a two-year program of advanced graduate study.

Graduates with Design-Related Baccalaureate Degrees–Students entering with a design background in a related field are normally required to enroll in a two-semester program that will transfer and enhance their analytical and design skills while providing a foundation in landscape architecture theory and practice. Students without course work or experience in site analysis and computer aided design should enroll in summer preparatory courses in these areas of study prior to their first fall semester of study. The first two semesters of course work focus on landscape planning, design, and construction. A 7- to 10-day field trip is required during one semester. Having successfully completed this first year of instruction, students advance into a two-year program of advanced graduate study.

Graduates with Accredited Professional Baccalaureate Degrees in Landscape Architecture–Those students having graduated from an accredited professional degree program in landscape architecture immediately enter a two year program of advanced graduate study.

Graduates with Significant Life Experience in the Practice of Landscape Architecture–Those persons who have a baccalaureate degree, preferably from an accredited program in landscape architecture, and a significant history of achievement in professional practice may tailor a program of advanced study to meet their specific needs. A minimum of 30 graduate credits is required for the M.L.A. degree.

With the exception of those applicants with significant life experience and practice in landscape architecture, the normal tenure of graduate study is five semesters and includes a summer semester internship. Students complete at least 52 credit hours comprised of lecture courses, seminars, design and construction studios, internship and individual study (special studies, supervised research, and thesis or project). This time period would be extended should a student elect to expand their course work or seek a concurrent degree in a related field.

Design Studios—Three graduate design studios build upon required lecture and seminar courses. The emphasis and issues addressed in the planning/design studios are user issues, both social and behavioral; issues of the regionñññthe social, cultural, and natural context; and ecological issues from regional to site scales of concern. Each studio requires a student to develop a research component regarding project type, program/user analysis, and other resource data. 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 germane to research and community service.

Construction—Graduate landscape construction is ancillary to the design studio sequence. Project management methodologies, contract writing, production of bid documents, and material specification issues are explored. Utilization of computer technology is required.

Thesis/Terminal Project—It is recognized that students have different professional goals and personal strengths and interests. Students who are interested in further research teaching, or in pursuing advanced degrees are advised to select a thesis. For students expressing a desire for design or project-oriented aspects of landscape architecture, or if their specific areas of interest suggest a nontraditional approach, a project with a significant research component is appropriate.

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 Preservation Institute: Nantucket–Provides students with 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–Research and applied research regarding the conservation of the rich cultural traditions of the Greater Caribbean basin.

The GEOPLAN Center: 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 to be advised by the Graduate Coordinator. He or she has guided the students 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 comprised of two faculty members. The primary purpose of the graduate committee is to advise the student on educational objectives and the thesis or project course work.

Applications—Notify the Department of Landscape Architecture of your interest or intent to apply to the M.L.A. program, preferably by letter, fax or e-mail. The Department will respond with additional program information and application forms. Submit the original application form accompanied by official copies of transcripts, copies of GRE scores and TOEFL scores (applicants with English as a second language) to Office of the RegistrarññAdmissions Section, Criser Hall, University of Florida, Gainesville, Florida 32611. Concurrently, copies of the application form and transcripts (official copies not required) should be submitted to the Graduate Coordinator, Department of Landscape Architecture. Graduates with design-related baccalaureate degrees and with accredited professional baccalaureate degrees in landscape architecture must submit a portfolio representative of their academic and/or professional experience. (If the portfolio is to be returned, it must be accompanied by a self-addressed stamped envelope.) All materials should be submitted by the end of February preceding the date of proposed entry. Early submissions are encouraged.

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.*

DCP 6931—Special Topics in Design, Construction, and Planning (1-4; max: 6)

DCP 7790—Doctoral Core I (3) Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.

DCP 7792—Doctoral Core II (3) *Prereq: DCP 7790*. Urban, environmental, and legal systems in the context of urban development.

DCP 7794—Doctoral Seminar (1; max: 4) *Prereq: Coreq: DCP 7911.* For entering Ph.D. students. Successfully negotiating graduate school and writing dissertation.

DCP 7911—Advanced Design, Construction, and Planning Research I (3) *Prereq: STA 6167; coreq: DCP 7794; for entering Ph.D. students.* Survey and critical analysis of research in disciplines of design, construction, and planning with emphasis on theory and mehtods.

DCP 7912—Advanced Design, Construction, and Planning Research II (3) *Prereq: ARD 7911*. Conduct of advanced research in architecture, design, landscape, planning, and construction.

DCP 7940—Supervised Teaching (1-5; max: 5) *Prereq: not open to students who have taken 6940.* Independent student teaching under supervision of faculty member. S/U.

DCP 7949—Professional Internship (1-5; max: 5) Professional faculty-supervised practicum.

DCP 7979—Advanced Research (1-12) 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. S/U.

DCP 7980—Research for Doctoral Dissertation (1-15) S/U.

LAA 5331—Site Design Methodologies (3) Learn, develop, and refine methodologies to evaluate effectively relevant natural, social, and cultural characteristics of a site and its context as integral part of planning and design process.

LAA 5366—Principles of Landscape Architecture (5) Exploration of range of introductory landscape architectural issues. Site design incorporating mixture of cultural, environmental, and historic topics.

LAA 6231—Landscape Architecture Theory (3) *Prereq: consent of instructor; coreq: LAA 6656C.* Exploration of theories pertinent to practice and study of landscape architecture. Aesthetic and cultural principles and values and related ecological aspects. Designated as core course.

LAA 6322—Project Management for Landscape Architects (3) Two-part exploration of current methods, theories, and approaches to critiquing and evaluating built and proposed environments and their users. Designated as core course.

LAA 6342—Landscape Architecture Criticism (3) Case studies and readings of theories, models, and processes applicable to landscape architectural planning and design. Emphasis on issues of perception, preference, and other user concerns. Designated as core course.

LAA 6382—Ecological and Environmental Policy (3) Survey of major environmental policy and law with particular reference to Florida case studies. Designated as core course.

LAA 6525L—Advanced Landscape Construction Design (4) Development of current comunication and production techniques related to professional landscape architectural construction documentation.

LAA 6536—Landscape Management (3) Survey of large and small scale management issues including principles of landscape ecology and site maintenance.

LAA 6656C—Advanced Landscape Architectural Design (1-6; max: 18) Complex project design with emphasis on user issues, ecological concerns, and regional and cultural issues, determination of form for sustainable environments.

LAA 6716—History of Landscape Architecture (3) History of man as expressed in urban form, gardens, parks, and public spaces.

LAA 6905—Directed Study (1-3; max: 9)

LAA 6931C—Special Topics (1-3; max: 6) Development of a current design opportunity. May be in collaboration with a professional office.

LAA 6933—Topics in European Design: Paris, France (4) *Coreq: LAA 6952C.* Urban form and its relation to history, ecology, and culture.

LAA 6941—Supervised Internship (3) Required of all students who do not document a landscape architectural experience. Work is to be supervised by 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 following fall semester for credit. S/U.

LAA 6952C—European Landscape Architecture Studio (5) *Coreq: LAA 6933.* Studio to explre classical and ecological design methodologies in European landscape.

LAA 6971—Research for Master's Thesis (1-15) S/U.

LAA 6979—Terminal Project (1-6) This option, in lieu of thesis, is available for a design project which because of magnitude or design complexity does not adapt to thesis format. S/U.

Latin American Studies

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director: C. D. Deere. *Graduate Coordinator and Associate Director:* M. C. Espinosa. *Distinguished Professor:* P. K. R. Nair. *Distinguished Research Professor:* K. A. Deagan. *Distinguished Service Professors:* C. G. Davis; D. A. Denslow. *Professors:* C. J. Adams; J. Alvarez; A. O. Avellaneda; C. S. Barfield; E. Barradas; H. R. Bernard; M. Binford; L. Branch; A. F. Burns; C. N. Caviedes; T. L. Crisman; J. K. Dow; M. L. Duryea; T. C. Emmel *(Emeritus);* G. Fairchild; D. P. Geggus; M. W. Gordon; D. G. Griffin; M. J. Hardman-de-Bautista; P. E. Hildebrand; S. R. Humphrey;S. K. Jacobson; W. S. Judd; W. F. Keegan; C. F. Kiker; F. W. King; B. MacFadden; M. L. Margolis, T. L. McCoy; J. T. Milanich; S. Milbraith; M. E. Moseley; W. D. Mulkey; G. Nichols; A. R. Oliver-Smith; C. A. Perrone; A. L. Peterson; D. A. Pharies; F. E. Putz; M. C. Schmink; J. F. Scott; J. L. Seale; N. J. Smith; T. H. Spreen; A. Spring; G. W. Tanner; P. J. van Blokland; H. Vera; P. J. Williams. *Associate Professors:* L. E. Anderson; L. N. Crook; E. Ginway; A. C. Goldman; R. L. Jimenez; W. F. Keegan; M. Leslie; G. F. Murray; J. D. Needell; M. Pena; M. Roberts; M. E. Sunquist; M. W. Thurner; Y. Toda; M. A. Vasquez. *Assistant Professors:* M. J. Heckenberger; K. Kainer; L. Norr; S. Perz; R. Stepp.

The Center for Latin American Studies offers the following graduate programs: (1) an interdisciplinary Master of Arts degree, (2) graduate certificates and advanced graduate 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.

A description of the several degree and certificate programs in Latin American studies may be found in the section *Interdisciplinary Graduate Programs* and at http://www.latam.ufl.edu/academic. Complete course listings are available at the Center for Latin American Studies (319 Grinter Hall) and website.

FOT 6801—Translation Studies Practicum (3) *Prereq: 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.

FOT 6803—Translation for Diplomacy, Law, and European Issues (3) *Prereq: FOT 6805.* International, hemispheric, and European Union issues in translation. Government translation included.

FOT 6805—Theory and Practice of Translation (3) *Prereq: consent of instructor.* Theory, history, and practice of translation, focusing on approaches to acquisition of translational skills.

FOT 6810—Advanced Translation Workshop (3; max: 6) *Prereq: FOT 6805.* Rotating topics include literary translation, translation history and criticism, cross-cultural communications and translation, ethics and philosophy of translation.

FOT 6815—Translation for the Professions (3) *Prereq: FOT 6805.* Technical, contractual, film, multi-media, and medical translation.

FOT 6822C—Terminology and Computer-Assisted Translation (3) *Prereq: FOT 6805.* Theoretical and practical aspects of terminology management and computer-assisted translation (CAT). Training in computer-assisted translation, including use of CAT tools.

LAS 6290—Tropical Conservation and Development (3; max: 6) 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 (3; max: 6) 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 (3; max: 6) Introduction to field research methods for studies focused on natural resource use and management by local populations in tropical regions. Emphasis on participatory approaches and integration of natural and social science tools.

LAS 6295—Latin American Business Environment (2) *Prereq: M.B.A. core.* Examination of contemporary political economy of Latin America from business perspective. Analysis of economic, social, political, and cultural factors affecting business and finance in region. Special attention to recent market reforms and regional integration.

LAS 6296—Latin American Business Topics (2-4; max: 4) *Prereq: 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 (1-3; max: 9) Reading or research in topics focusing on a Latin American area, but cutting across disciplines.

LAS 6938—Latin American Area Seminar (3; max: 9) *Prereq: Latin American area concentration.* Different course sections are taught under this number, for instance issues and perspectives on Latin America, introduction to the analysis of Latin American data, Latino/a culture, Mexican icons, Cuba, change and continuity.

LAS 6971—Research for Master's Thesis (1-15) S/U.

Liberal Arts and Sciences–General

College of Liberal Arts and Sciences

Dean: N. Sullivan.

IDS 6670—Yulee Humanities Seminar (1; max: 3) Interdisciplinary exploration from vantage point of humanities into issues confronting modern society.

Linguistics

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director: D. Boxer. *Graduate Coordinator:* C. R. Wiltshire. *Professors:* D. Boxer; M. J. Hardman; D. G. Miller; D. A. Pharies. *Associate Professors:* G. Hatav; F. McLaughlin; R. M. Thompson; A. Wehmeyer; C. R. Wiltshire. *Assistant Professors:* T. Antes; J. Camps; E. Kaan; V LoCastro; G. Lord; A. E. Lynch; E. H. Potsdam; R. Wayland.

Linguistics offers graduate programs leading to the M.A. and Ph.D. degrees with specializations in (a) the core areas of the discipline (theoretical and descriptive phonetics, phonology, syntax, discourse, semantics, morphology, language and gender, cross-cultural communication, linguistic change) and (b) applied linguistics (sociolinguistics, second language acquisition, psycholinguistics, neurolinguistics). Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

The Certificate in Teaching English as a Second Language is offered to degree-seeking students in applied linguistics and related disciplines.

Applicants who have deficiencies in linguistics must fulfill prerequisites prior to graduate work in the field. These deficiencies can be met by taking LIN 3010, LIN 3201, and LIN 3460 or the equivalent. For detailed information on the programs, including financial aid, please contact Linguistics by telephone (352) 392-0639, by fax (352) 392-8480, by e-mail wiltshir@ufl.edu, or by mail addressed to Linguistics, P.O. Box 115454, University of Florida, Gainesville, FL 32611.

As part of its service to the University community, Linguistics also offers programs for international applicants and admitted students. These programs, the English Language Institute (ELI), the Scholarly Writing Program (SW), and the Academic Spoken English Program (ASE), are described in the *General Information* section of this catalog. This information, along with links to the application form, may be found on the Internet at http://web.lin.ufl.edu/.

LIN 6796—Cognitive Neuroscience of Language (3) 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.

Linguistics Core

LIN 6039—Studies in Etymology: The Roots of English (3) *Prereq: 1 year of foreign language (preferably Latin or French).* Word formation and change in form and meaning, linguistic (Indo-European, Germanic) background of English, sociocultural history of English in England, and input from classical sources.

LIN 6084—Introduction to Graduate Research (3) Scholarly and scientific approaches to study of linguistics. Scientific method, theory development, data processing, scholarly writing, and structure of research proposals.

LIN 6128—Historical Linguistics (3) *Prereq: LIN 6323, 6501.* Principles and methods of historical and comparative linguistics, development of competing models for language change and linguistic relatedness. Examples and problems from a broad spectrum of the world's languages.

LIN 6129—Issues in Historical Linguistics (3) *Prereq: LIN 6341, 6520, 6128.* Advanced diachronic linguistics. The mutual interdependence of diachronic and synchronic analyses of language.

LIN 6165—Field Methods (3) *Prereq: LIN 3201.* Development of basic linguistic skills of discovery of structure of language previously known to investigator, starting with paper and pencil. Students learn to listen and interact with native speaker, to construct questions, to organize and analyze data, to construct and test hypotheses, and to write up discoveries. Ethics as requisite of good science emphasized.

LIN 6208—Phonetics for Linguists (3) Understanding of issues in experimental phonetics and appreciation of research techniques in the acoustic, physiological, and perceptual study in speech.

LIN 6323—Phonology (3) *Prereq: 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—Issues in Phonology (3) *Prereq: LIN 6323.* Technical articles from a variety of twentieth-century schools, including American and European structuralism, generative and stratificational phonology, natural and metric-autosegmental phonology. Examples from variety of languages.

LIN 6402—Morphology (3) *Prereq: 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, typology, cultural and conceptual categories, predictions of various theories of morphology. Examples and problems from a wide variety of the world's languages.

LIN 6410—Issues in Morphology (3) *Prereq: LIN 6402.* Technical articles from variety of twentieth-century schools. Prominent inquiries include place of morphology in grammar, its relationship with other components, and whether a unified theory of morphology can be constructed.

LIN 6501—Syntax (3) *Prereq: LIN 3460.* Generative-transformational model of syntax: phrase structure, lexicon, case and agreement, movement, government, and anaphora. Emphasis on problem solving and linguistic argumentation.

LIN 6520—Issues in Syntax (3) *Prereq: LIN 6501.* Further investigation of generative-transformational model of syntax: advanced clause structure, binding theory, constraints on movement, and logical form.

LIN 6562—Discourse Grammar (3) *Prereq: LIN 6501.* Recent developments in study of relationships between sentence grammar and discourse. Subject and theme, relativization and subordination, pronoun and anaphora, transitivity, tense and aspect, information structure, and discourse basis for grammatical categories. Synthesis of topics into systematic framework.

LIN 6571—Structure of Specific Language (3) *Prereq: introductory linguistics course.* Linguistic examination of Aymara, Cakchiquel, Eskimo, Armenian, Bulgarian, Polish, Turkish, Quechua, Sanskrit, Tamil, or another rarely taught language.

LIN 6804—Semantics I (3) Truth conditional sematics as opposed to pragmatics. Basic notions in classical logic since logic is assumed in truth conditional semantics.

LIN 6905—Individual Study (1-3; max: 12)

LIN 6910—Supervised Research (1-5; max: 5) S/U.

LIN 6932—Special Topics (3; max: 27)

LIN 6940—Supervised Teaching (1-5; max: 5) S/U.

LIN 6971—Research for Master's Thesis (1-15) S/U.
LIN 7118—History of Linguistics (3) *Prereq: LIN 6323, 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 7885—Discourse Analysis and Pragmatics (3) *Prereq: LIN 6601.* Methods of discourse analysis research and face-to-face discourse and pragmatics.
LIN 7979—Advanced Research (1-12) 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. S/U.
LIN 7980—Research for Doctoral Dissertation (1-15) S/U.

Applied Linguistics

LIN 5657—Gender and Language (3) *Prereq: 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 (3) Survey of English grammar based on principles of second language acquisition and social interaction with implications for teachers.
LIN 6601—Sociolinguistics (3) *Prereq: LIN 6323, 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 (3) Psycholinguistic and sociolinguistic aspects of bilingualism, with implications for education.
LIN 6720—Second Language Acquisition (3) The neurolinguistic, psycholinguistic, and sociolinguistic bases of second language acquisition in childhood and adulthood.
LIN 7641—Seminar in Language Variation (3; max: 9) Possible topics include variation theory, conversational interaction, language contact, bilingualism, pidgins and Creoles.
LIN 7725—Topics in Second Language Acquisition (3; max: 6) *Prereq: LIN 6720.* Focused topic in area of second language acquisition.
TSL 6371—TESL I: Materials and Techniques (3) Theories of TESL teaching methods and materials. Instruction in classroom materials. Observation of ESL classroom procedures.
TSL 6372—TESL II: Materials for Special Purposes (3) *Prereq: TSL 6371.* Continuation of TSL 6371. Instruction in designing courses and programs in ESL. Each student will be required to develop a sample ESL course.

Service Courses for International Students

EAP 5835—Academic Spoken English I (4) *Prereq: 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. S/U.
EAP 5836—Academic Spoken English II (2-3) *Prereq: 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. S/U.
EAP 5837—Academic Spoken English Tutorial (3) *Prereq: EAP 5835 or qualifying SPEAK score. Designed for international graduate students. No credit toward any graduate degree.* Focus on the language and interpersonal communication skills needed for one-on-one exchanges. International students matched with undergraduates seeking tutoring in graduate student's area of expertise. Tutoring sessions videotaped and analyzed. S/U.
EAP 5845—Scholarly Writing (3) *For international students. No credit toward any graduate degree.* Organizational strategies and formats for writing graduate-level papers, theses and dissertations. Emphasis on writing in student's discipline. Offered in fall and spring semesters. S/U.
EAP 5846—Research and Technical Writing (3) *For international and U.S. students. No credit toward any graduate degree.* Emphasis on overall process of research writing with assignments geared to students' professional careers. S/U.
EAP 5937—Special Topics in Academic Spoken English (2) *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, accent modification. S/U.

Management

Warrington College of Business Administration

Graduate Faculty 2004-2005

Chair: L. A. DiMatteo. *Graduate Coordinator:* J. A. LePine. *Eminent Scholar:* T. A. Judge. Professors: R. Emerson; V. G. Maurer; H. L. Tosi, Jr. *Associate Professors:* J. A. Colquitt; A. Erez; L. A. DiMatteo; J. A. LePine; R. E. Thomas. *Assistant Professors:* J. D. Kammeyer-Mueller; R. O. Lacey; W. Shen. *Senior Lecturer:* H. J. Hall.

The Management Department offers graduate work leading to the Master of Science degree in management, the Ph.D. degree in business administration with a concentration in management, and a concentration in the Master of Business Administration degree program. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The Master of Science degree in management targets students from nonbusiness backgrounds who would like to gain "core" business knowledge and application skills. Requirements span the traditional business disciplines to produce a sound knowledge base for students seeking a solid business foundation. Students are required to take such courses as accounting, finance, economics, entrepreneurship, management, marketing, organizational behavior, and statistics. Typical positions for graduates include managers, consultants, and analysts.

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 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 6126/6127), research methods (e.g., MAR 7786, EDF 7486, or PPE 6308), psychometrics (e.g., EDF 6436, EDF 7432, EDF 7439), multivariate analysis (EDF 7932), experimental design (MAR 7622), field research methods (SYA 6348, SYA 6655, 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 Ph.D.* section of this catalog.

Combined Degree Program—The Department offers a bachelor's/master's program with the Department of Industrial and Systems Engineering. Contact the graduate coordinator for information.

BUL 5810—Legal Environment of Business (3) 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 (2) *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 (3) *Prereq: 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 Commerical Code, federal bankruptcy act, and other federal and uniform state laws.

BUL 5832—Commercial Law for Accountants (2) *Prereq: level 5M.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 (3) 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 (2) *Designed for advanced master's students in business administration.* Ethical issues managers face in business organizations.

BUL 6516—Law of Real Estate Transactions (2) Introduction to legal aspects, including basic concepts or 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 (3) *Prereq: BUL 5810 or 5811.* Law and ethics underlying and governing structure and operation of business corporations in U.S. and other industrial countries.

BUL 6821—Cyberlaw and Ethics (2) 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 (2) *Designed for master's students in business.* Law related to employment and employees in business organizations.

BUL 6851—International Business Law (3) *Designed for M.B.A. students.* Legal aspects of managing the international business environment.

BUL 6852—International Business Law (2) *Designed for M.B.A. students.* Legal aspects of managing the international business environment.

BUL 6891—Legal Aspects of Technology Management (2) *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 (1-5; max: 10) *Prereq: consent of instructor.* Reading and/or research in business law.

BUL 6930—Special Topics (1-3; max: 9) *Prereq: consent of instructor.* Topics not offered in other courses and of special current significance.

MAN 5141—Leadership Skills (1) *Designed for master's students in business administration.* Concepts of leadership theory and methods to improve skills. S/U.

MAN 5245—Organizational Behavior (3) *Designed for M.B.A. students.* Relationship between the individual administrator and supervisors, the employees supervised, and associates at a comparable level in the organization.

MAN 5246—Organizational Behavior (2) *Designed for M.B.A. students.* Focus on behavior of individuals, groups, and organizations with purpose of understanding organizations, how they work, and people in them. Concepts presented in relation to core managerial competencies.

MAN 5265—Managing Groups and Teams in Organizations (1) Development of critical team skills and techniques to improve team processes an effectiveness. S/U.

MAN 6107—Motivation in Organizational Setting (3) *Prereq: 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 (3) Exploration of interpersonal skills critical to development of effective manager.

MAN 6149—Developing Leadership Skills (2) *Designed for master's students in business administration.* Concepts of leadership theory and methods to improve skills.

MAN 6257—Power and Politics in Organizations (1-3; max: 3) *Prereq: permission of instructor. Designed for advanced master's students in business administration.* Links between theory and practice in use of power and political skills in organizations.

MAN 6266—Managing Groups and Teams in Organizations (2) *Prereq: 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 (2) *Prereq: MAN 5246 or equivalent.* Organizational and managerial issues. Strategic decision-making; managing research and development as strategic resource; simulation and experimentation; organizational change; and interactions among organizational strategy, structure, and culture.

MAN 6296—Designing Effective Organizations (2) *Prereq: MAN 5246 or equivalent.* Nature of firm, history of organizational design, contemporary designs for vertical integration, diversification, low cost, differentiation and mixed strategies, and organizational design problems.

MAN 6321—Human Resource Management (3) *Prereq: consent of instructor.* Techniques for managing personnel functions such as recruitment, selection, performance evaluation, training, compensation, and labor relations.

MAN 6331—Compensation in Organizations (2) *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 (2) *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 (3) *Prereq: 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 (2) *Designed for M.B.A. students.* Personnel selection. Foundations of job analysis, measurement, and selection techniques, with attention to psychometric principles, analysis of job requirements, and assessment of relevant human characteristics and assessment of individual contribution to organizational effectiveness.

MAN 6385—Strategic Human Resource Management (2) *Prereq: MAN 5246 or equivalent.* Human resource management from perspective of organization with emphasis on how organizations utilize human resources effectively to achieve organizational goals.

MAN 6446—Negotiations (3) *Designed for M.B.A. students.* Theory and skills of negotiation and conflict resolution.

MAN 6447—Art and Science of Negotiation (2) *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 6537—Managing Technology in Organizations (2) *Prereq: MAN 5246 or equivalent.* Issues surrounding development, diffusion, and adoption of new technologies. Interplay of technology, organizations, and work; interplay of development, transfer, and adoption of new technologies; R&D of new products and processes; technology transfer; diffusion of innovation.

MAN 6635—International Aspects of Human Resource Management (2) *Designed for master's students in business administration.* Perspectives of a multinational firm.

MAN 6636—Global Strategic Management (2) *Designed for master's students in business administration.* Strategic issues facing global and multinational organizations.

MAN 6637—Global Strategic Management (3) *Designed for master's level students in business administration.* Analysis of ways firms compete in multinational and global environment.

MAN 6721—Business Policy (3) *Prereq: all M.B.A. required courses. Designed for M.B.A. students and taken last semester before graduation.* Integrating and applying the various functional and support areas of business administration; business policy making and administration from the perspective of general manager.

MAN 6724—Strategic Management (2) *Designed for M.B.A .students and taken last semester before graduation.* Focus on 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 6905—Individual Work in Management (1-5; max: 10) *Prereq: consent of department.* Reading and/or research in management.
MAN 6910—Supervised Research (1-5; max: 5) S/U.
MAN 6930—Special Topics (1-3; max: 12) *Prereq: consent of instructor/department.* Topics not offered in other courses and of special current significance.
MAN 6940—Supervised Teaching (1-5; max: 5) S/U.
MAN 6957—International Studies in Management (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.
MAN 6958—International Study Program (1-6; max: 6) *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 (1-4; max: 4)
MAN 7108—Seminar in Research Concepts and Methods in Management (1-3; max: not repeatable for credit) *Prereq: consent of instructor.* Focus on design, execution, and evaluation of research in organizational behavior, human resource management, strategic management, and organization theory.
MAN 7109—Seminar in Motivation and Attitudes (1-3; max: not repeatable for credit) Focus on (1) various motivation theories, including expectancy and equity theories and (2) work attitudes such as job satisfaction, as well as other attitudes relevant to work and their effects on individuals and organizations.
MAN 7146—Seminar in Leadership (1-3; max: 3) Focus on theoretical and imperical 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 7205—Organization Theory (3) *Prereq: consent of instructor.* Consideration of method and study of human behavior in organizational contexts. Focus on organizational structure and environment.
MAN 7207—Seminar on Foundations of Organizational Theory (1-3; max: not repeatable for credit) Focus on classical models of organizations as coordination and control mechanisms, organizational boundaries, political processes, and contingency theory.
MAN 7208—Seminar in Contemporary Approaches to Organizations (1-3; max: not repeatable for credit) Focus on recent views of organizations 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 (1-3; max: not repeatable for credit) Focus on emerging research on groups and teams in organizations, examining classic and contemporary theories and research on team composition and team performance.
MAN 7275—Organizational Behavior (3) *Prereq: consent of instructor.* Focus on individual and group behavior.
MAN 7328—Seminar on Staffing and Selection (1-3; max: not repeatable for credit) Focus on theory and methods organizations use to staff their positions.
MAN 7778—Seminar in Strategic Adaptation to Environment (1-3; max: not repeatable for credit) Focus on how organizations make decisions to cope effectively with their environments. Specific topics treat 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 (1-3; max: not repeatable for credit) 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 (3; max: 9) *Prereq: consent of instructor.* Research topics and literature in strategic aspects of decision making.
MAN 7979—Advanced Research (1-12) 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. S/U.
MAN 7980—Research for Doctoral Dissertation (1-15) S/U.

Marketing

Warrington College of Business Administration

Graduate Faculty 2004-2005

Chairman: J. W. Alba. *Graduate Coordinator:* C. Janiszewski. *Russell Berrie Eminent Scholar:* S. M. Shugan. *J. C. Penney Eminent Scholar:* B. A. Weitz. *Distinguished Professor:* J. W. Alba. *Distinguished Service Professor:* J. B. Cohen. *Professors:* C. Janiszewski; R. J. Lutz; A. G. Sawyer. *Associate Professors:* A. Cooke; J. Xie. *Assistant Professors:* L. A. Brenner; S Fay; R. LeBoeuf; D. Mitra.

The Marketing Department offers graduate work leading to the Ph.D. degree in business administration, the M.S. degree in business administration with a concentration in retailing, and a concentration in the Master of Business Administration (M.B.A.) program. Complete descriptions of the requirements for the M.B.A., M.S., and Ph.D. degrees are provided in the *General Information* section of this catalog.

The Ph.D. program admission standards are the following: (a) combined verbal and quantitative score of 1250 on the Graduate Record Examination or a score of 600 on the Graduate Management Admission Test; (b) a TOEFL score of 260 (for foreign students); and (c) a record of previous scholastic excellence in either business or a closely related social science discipline (e.g., economics, psychology, sociology, statistics). Neither industry experience nor an M.B.A. degree is required.

The program offers the opportunity for concentrated study in consumer behavior, marketing management, and quantitative 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 and a third-year review paper. Other requirements are outlined in the *General Information* section of this catalog.

The research foundations requirement is comprised of a set of five to six courses chosen from statistics and/or economics.

The major field course work is made up of a set of five required marketing seminars that are completed during the student's first two years in the program. In addition, the student is required to attend MAR 7925Workshop in Marketing Research, which features presentations by both University of Florida faculty and students and researchers from other institutions. Electives are selected from both advanced marketing seminars and other related

disciplines to complement the student's research program. There is no formal minor requirement.

The M.S. degree in business administration with a concentration in retailing is Internet delivered. Applicants must have (a) an undergraduate degree from a regionally accredited program, (b) a minimum 3.0 undergraduate GPA, (c) a minimum 460 GMAT (1000 GRE), and (d) a minimum of three years of full-time professional work experience. The concentration requires 21 credits of core business courses, 3 credits of business skills courses, 6 credits of retailing electives, and 3 credits of project in lieu of thesis.

MAR 5805—Problems and Methods in Marketing Management (3) *Prereq: ACG 5065, MAR 5624. Designed for MBA students.* Concepts and techniques for resolving marketing management problems through the case method.

MAR 5806—Problems and Methods in Marketing Management (2) *Prereq: ACG 5065, MAR 5621.* Concepts and techniques for resolving marketing management problems through case method.

MAR 6157—International Marketing (2) *Designed for M.B.A. students.* Analysis and strategies for international environment.

MAR 6158—International Marketing (3) *MAR 5805. Designed for M.B.A. students.* Analysis and strategies for marketing in the international environment.

MAR 6202—Marketing Channel Management (2) Elements and management of marketing distribution channels. Interorganizational system involved with task of making goods, services, and concepts available to businesses and/or consumers and enhancing their time, place, and possession utilities.

MAR 6205—Distribution Channel Management (2) Examination of strategic decisions to build competitive advantage through effective distribution channel management. Strategies for using channels to provide unique benefits to end user and consumers and to reduce distribution costs.

MAR 6238—Retail Strategy (3) Evolving nature of retail environment (customer needs and competitive capabilities). Process and issues in developing strategy for completing successfully in this challenging marketplace.

MAR 6335—Building and Managing Brand Equity (2) *Prereq: MAR 5620, 5621, 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 6408—Sales Management and Control (2) *Prereq: MAR 5806 or consent of instructor. Designed for MBA students.* Issues related to management of sales forces including selection, training, motivation, compensation, and evaluation of sales people and organization and allocation of sales activities.

MAR 6457—Business-to-Business Marketing (2) *Prereq: 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, building and maintaining alliances and partnerships.

MAR 6508—Customer Analysis (2) *Prereq: 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 6644—Data-Based Marketing (2) *Prereq: MAR 5805.* Overview of principles of data-based marketing and practical experience using direct marketing as technique for developing "customer based" marketing strategy. Types of customer information that should be collected and stored in customer database and how to use information effectively to achieve marketing goals.

MAR 6646—Marketing Research for Managerial Decision Making (3) *Prereq: MAR 5805 and 5624. 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 (2) *Prereq: MAR 5806 and 5621. Designed for M.B.A. students.* Examination of approaches and methods with particular attention given to perspective of marketing manager.

MAR 6649—Managerial Decision Making (2) *Prereq: MAR 5805.* What constitutes high-quality decision making, how managers tend to fall short of these standards, and how decision making can be systematically improved.

MAR 6723—Introduction to Electronic Commerce (2) *Prereq: MAR 5805.* Review of e-commerce business opportunities and issues confronting firms that engage in e-commerce.

MAR 6725—Introduction to Electronic Commerce (3)

MAR 6726—Electronic Commerce and Marketing (2) Internet as medium for communicating with customers and as channel for distributing products and services. Marketing activities related to performance of e-commerce business such as building traffic for site and personalization of site to build repeat visits and customer loyalty.

MAR 6816—Advanced Marketing Management (3) *Prereq: 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 (2) *Prereq: MAR 5806. Designed for M.B.A. students.* Advanced cases dealing with wide range of strategic problems faced by marketing manager.

MAR 6834—Marketing of Science and Technology (2) *Prereq: MAR 5806 or permission of instructor.* Application of specialized marketing techniques and strategies to discoveries, inventions, and innovations embodied in products, services, and intellectual property. Focus on particular characteristics of engineering- and science-driven market offerings.

MAR 6835—Marketing of Science and Technology (3) *Prereq: MAR 5805.* Application of specialized marketing techniques and strategies to discoveries, inventions, and innovations embodied in products, services, and intellectual property. Focus on particular characteristics of engineering- and science-driven market offerings.

MAR 6836—Product Development and Management (2) *Designed for M.B.A. 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 6837—Consumer-Centered Product Design (3) Project based. Elaboration on product-development model introduced in core marketing course. Focus on intersection of marketing, engineering, and design.

MAR 6849—Services Marketing (2) *Prereq: MAR 5621 and 5806. Designed for M.B.A. students.* Examination of approaches and methods of research with particular attention to perspective of marketing manager.

MAR 6861—Customer Relationship Management (2) *Prereq: MAR 5806.* Conceptual foundations, analytical techniques and marketing tactics for managing customer relationships.

MAR 6862—Customer Relationship Management (3) Focus on acquiring, building, and maintaining mutually beneficial relationships with customer. Customer as financial asset that companies should measure, manage, and maximize like other assets.
MAR 6905—Individual Work (1-4; max: 8) *Prereq: consent of department.* Reading and/or research.
MAR 6910—Supervised Research (1-5; max: 5) S/U.
MAR 6930—Special Topics in Marketing (1-4; max: 16) *Prereq: consent of instructor.* Selected topics in marketing management, research, or theory.
MAR 6940—Supervised Teaching (1-5; max: 5) S/U.
MAR 6957—International Studies in Marketing (1-4; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.
MAR 6971—Research for Master's Thesis (1-15) S/U.
MAR 6973—Project in Lieu of Thesis (3) S/U.
MAR 7507—Perspectives on Consumer Behavior (3) *Prereq: graduate standing or consent of instructor.* An in-depth analysis of the field. A variety of theoretical and methodological approaches critically examined through marketing and consumer behavior literatures. Students required to develop an original research project.
MAR 7576—Consumer Preference Formation and Change (3) *Prereq: MAR 7507 or permission of instructor.* Individual and social influences on attitude formation, change, and resulting behavior. Attitudes viewed as evaluative responses to interplay of motivational and informational influences. Conceptual framework for analysis of nature and origin of value in consumer judgments.
MAR 7588—Consumer Information Processing and Decision Making (3) *Prereq: 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. Research project required.
MAR 7589—Judgment and Decision Making (3) *Prereq: 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 7622—Design of Marketing Research (3) *Prereq: consent of instructor* Design, execution, analysis, and interpretation of experiences in marketing.
MAR 7626—Multivariate Statistical Methods in Marketing (3) 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 (3) *Prereq: admission to M.A. or 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 behavior research.
MAR 7666—Marketing Decision Models (3) *Prereq: 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 7667—Building Mathematical Models in Marketing (3) Various issues and approaches for building and analyzing mathematical models of marketing phenomena and related decision problem.
MAR 7786—Marketing Literature (3) *Prereq: admission to M.A. or 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 (3; max: 9) *Prereq: departmental approval.* 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 (1-12) 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. S/U.
MAR 7980—Research for Doctoral Dissertation (1-15) S/U.
QMB 5301—Introduction to Managerial Statistics (2) *Prereq: basic statistics. Designed for M.B.A. students.* 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 5302—Advanced Managerial Statistics (2) *Designed for M.B.A. students.* Builds on QMB 5301. Basic concepts in collection, analysis, and interpretation of data, emphasizing capabilities of different statistical methods and business applications. Focus on how business decisions can be informed by statistical analysis and how to apply computer software tools to business decisions.
QMB 5305—Introduction to Managerial Statistics (3) *Prereq: 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.

Mass Communication

College of Journalism and Communications

Graduate Faculty 2004-2005

Dean: T. Hynes. *Senior Executive Associate Dean:* J. Wright. *Interim Senior Associate Dean of Graduate Studies and Research:* C. Roberts. *Associate Dean of Graduate Studies and Research:* D. Treise. Joseph L. Brechner *Eminent Scholar:* W. F. Chamberlin. *Professors:* L. B. Alexander; S. J. Dickson; J. E. Dodd; M. A. Ferguson; T. Hynes; L. Kaid; J. Kaplan; K. Kelly; K. Kent; R. L. Lowenstein *(Emeritus);* M. McAdams; W. L. McKeen; J. D. Morris; D. H. Ostroff; R. N. Pierce *(Emeritus);* J. R. Pisani; C. L. Roberts; J. A. Roosenraad; F. L. Smith; J. C. Sutherland; L. P. Tipton; D. M. Treise; E. L. Wagner; K. Walsh-Childers; J. W. Wright. *Associate Professors:* J. Babaniko; G. Baker; J. Babanikos; S. F. Chance; S. Chan-Olmsted; M. E. Hall; L. L. Hon; M. Leslie; H. S. Pactor; M. S. Roberts; B. E. Tripp; M. F. Weigold; E. G. Weston. *Assistant Professors:* C. Armstrong; J. Brown; C. H. Cho; Y. Choi; J. Cleary; L. Correll; L. Duke Cornell; J. R. Goodman; S. Kiousis; M. O. Lamme; M. Mitrook; J. C. Molleda; C. Morton; L. Perry; T. Spiker; J. Villegas; T. Wilkerson; J. Williams.

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 nonthesis option) degree, and the Master of Advertising (thesis) degree. Complete descriptions of the requirements for these degrees are provided in the *General Information* 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, telecommunications, international communication, political communication, or science/health communication. Nonthesis students choose from journalism, political campaigning, public relations, and telecommunication. With the approval of the 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, including documentary.

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. The programs provide students interested in scholarship or practice of communication law or in reporting on the law with 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 Associate Dean of Graduate Studies and Research.

Grading Policy—Any student who receives one grade below "C+" but above "D+" will be placed on academic probation. A requirement of the probation is 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 student who accumulates two grades below "C+" but above "D+" during graduate studies will be suspended, as will a student who receives one grade of "D+" or lower at any time.

Combined Degree Program—The College offers a combined bachelor's/master's program. For information, contact the Associate Dean for Graduate Studies and Research.

ADV 5005—Advertising Planning (3) Introduction to the process of developing advertising strategy, emphasizing theory and research methods.

ADV 6006—Theories of Advertising (3) 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 (3) *Prereq: ADV 4300, MMC 6421, or equivalents.* Media planning to meet advertising goals. Use of research findings. Computer models.

ADV 6403—International Advertising (3) 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 (3) *Prereq: Coreq: 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 (3) Introduction to methods most commonly use in professional and scholarly research, including secondary, qualitative, survey, content analysis, and experimental methods.

ADV 6602—Advertising Management (3) *Prereq: ADV 6305 and 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.

COM 6315—Advanced Research Methods (3; max: 6) *Prereq: MMC 6421 and STA 6126 or equivalents, and consent of instructor.* Scientific method, measurement, analysis. Student research required.

COM 6940—Supervised Teaching (1-3; max: 5) S/U.

FIL 6101—Advanced Radio, Television, and Film Writing (3) *Prereq: consent of instructor.* Forms, techniques, and types of writing as they apply to radio, television, and film.

FIL 6233—Documentary Pre-Production Planning (3) *Prereq: permission of instructor.* Conceptualization and development of television documentary. Components: idea, funding, planning production and producing preview tape, and writing and presenting proposal.

FIL 6234—Documentary Field Production (3) Basics of producing, shooting, lighting, sound gathering, and editing. Technical and creative aspects.

FIL 6235—Producing and Writing the Documentary (3) Fundamentals of producing, directing, and writing as well as business and aesthetic dimensions of documentary.

FIL 6237—Documentary Production II (3) Theoretical, aesthetic, and technical principles of nonlinear editing for documentary.

FIL 6238—Documentary Research Methods (3) Research process preceding production of television documentary and skills needed to construct effective research strategy.

FIL 6248—Advanced Post-Production Techniques (2) Advanced technical, theoretical, and aesthetic principles of post-production process used in editing television documentaries. Focus on developing continuity, building sequences, refining dramatic structure, narrators, special effects.

FIL 6315—Writing for Documentary I (3) 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 6335–Business of Documentary

FIL 6425—History of Documentary Film I (3) History of development from roots in nineteenth-century art forms to role in World War II. Styles and techniques of documentary. Contribution as persuasive means of communication to achieve social and political goals.

FIL 6426—History of Documentary Film II (3) 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.

JOU 5007—History of Journalism (3) Origin, development, and potentiality of print and broadcast media. Evolution of standards, policies, methods, and controls.

JOU 5705—Issues and the Press (3) Influence of the press in defining and shaping public concern with major social issues.

JOU 6102—Advanced Reporting Workshop (3) *Prereq: MMC 5206 or equivalent, or consent of instructor.* Depth reporting theory and practice.

JOU 6309—Seminar in Journalism as Literature (3) 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 6502—Newsroom Management (3) Internal problems of newspaper operation. Status of personnel, effects of technological developments, news decision-making, defining objectivity, improving news coverage.

MMC 5005—Mass Communication History (3) Origin, development, and potentiality of print and electronic media. Evolution of standards, policies, methods, controls.

MMC 5015—Electronic Publishing (3) 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 (3) Problems of constitutional law, libel, privacy, and governmental regulation. Not open to students who have taken MMC 4200 or equivalent.

MMC 5306—International Communication (3) 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 (3) Nature and history of foreign correspondence. Impact on nations and international relations.

MMC 6202—Legal Problems of Mass Communication (3) *Prereq: MMC 5206 or previous research or equivalent.* Constitutional interpretation, conflicts between media and rights of others, regulation, the nature of jurisprudence.

MMC 6307—Seminar in International Communication (4; max: 8) *Prereq: 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 (3) 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 (4; max: 16) *Prereq: MMC 6400, 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 (4) *Prereq: MMC 6400, 6421 or equivalents, and consent of instructor.* Conceptualizations of public opinion as a collective process; role of mass communication in describing and shaping perceptions of public opinion. Student research required.

MMC 6409—Science/Health Communication (3) Overview of science and health communications field.

MMC 6417—Seminar in Mass Media and Health (4) 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 (3) Introduction to experiments, surveys, content analysis, sampling, measurement. Laboratory applications.

MMC 6423—Content-Analysis Methods (3) 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 (4) Theory and application in social science and communication. Qualitative data analysis, evaluation, ethical considerations, and writing.

MMC 6428—Collaborative Communication Research (4; max: 8) 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 6441—New Media and a Democratic Society (3) Relationships among new media, citizens, and governments; effects of Internet on democracy and globalization; role of journalism in democratic society.

MMC 6560—Seminar in History of Mass Communication (4; max: 8) *Prereq: JOU 5007, MMC 5005, or equivalent, and consent of instructor.* Reading, critical study. Advanced investigative report on an approved research subject.

MMC 6615—Race, Class, Gender, and Media (3-4; max: not repeatable for credit.) Examination of race, class, and gender portrayals in media, from critical and cultural studies perspectives.

MMC 6618—Survey of Political Communication (3) 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 (3) 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 6660—Mass Communication and Society (3) Rights, responsibilities, ethics of communication media; government and media; economic, political, and social determinants of media content.

MMC 6665—Seminar in First Amendment Theory (4) *Prereq: 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 (4) *Prereq: 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 (4) *Prereq: 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 (4) *Prereq: 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. Offered in fall semester, even-numbered years; spring semester, odd-numbered years.
MMC 6905—Individual Work (1-3; max: 9) Reading or research.
MMC 6910—Supervised Research (1-3; max: 5) S/U.
MMC 6920—Communication Proseminar (1) *Required at beginning of each student's program.* Introduction to mass communication and graduate study. S/U.
MMC 6929—Communication Colloquium (1; max: 8) S/U.
MMC 6930—Seminar in Mass Communication Teaching (3) Research and training for teaching and supervision of student mass media.
MMC 6936—Special Topics in Mass Communication (1-3; max: 6) *Prereq: consent of instructor or graduate adviser.*
MMC 6949—Professional Internship (1-3; max: 3) Training in an approved mass communication office; instructor receives reports from on-site supervisor. S/U.
MMC 6953—Collaborative Communication Research (4; max: 8) Experience in team research project. Student-faculty teams produce scholarly work for presentation/publication or research proposal for external funding.
MMC 6971—Research for Master's Thesis (1-15) *Prereq: permission of instructor.* S/U.
MMC 6973—Project in Lieu of Thesis (1-9) *Prereq: permission of instructor.* Development, testing, and evaluation of original mass communication project. S/U.
MMC 7979—Advanced Research (1-12) 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. S/U.
MMC 7980—Research for Doctoral Dissertation (1-12) S/U.
PUR 6005—Theories of Public Relations (3) Theories that dominate field. Evolution of theories, their critiques, and current standing.
PUR 6006—Public Relations Foundations (3) Roles and responsibilities of public relations professionals and function of public relations in institutions and society.
PUR 6416—Public Relations and Fund Raising (3) Application of public relations theories and concepts to practice-centered study of fund raising 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 (3) Application of public relations theories and concepts to practice-centered study of philanthropy, organizations, and role of each in society. Effective strategies for managing relationships between philanthropic organizations and stakeholders.
PUR 6506—Public Relations Research (3) 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 (3) Application of strategic management to development of public relations plans and programs. Emphasis on theoretical framework for relationship management in public relations.
PUR 6608—Strategic Public Relations Management: An International Perspective (3) Factors to assist conceptualization and execution of international public relations activities. Exploration of 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 6934—Problems in Public Relations (3) *Prereq: PUR 6415 or equivalent.* Specialized topics, case studies, community relations, analysis of public relations problems in the light of theory.
RTV 5702—Telecommunication Regulation (3) *Prereq: undergraduate or graduate law course or permission of instructor.* Legal structure of radio, television, cable, satellite, and new media forms; Communication Act, Federal Communications Commission.
RTV 6508—Audience Analysis (3) Methods of audience analysis. Survey research, sampling, and program content analysis. Analysis of secondary audience data.
RTV 6801—Broadcast Station Management (3) Station organization, operational policies, market research, programming policy, network affiliation, federal and state regulations governing the broadcast industry, FCC procedures.
RTV 6807—Telecommunication Outlet Systems and Practices (3) 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 (1-9) *Prereq: permission of instructor.* Development, testing, and evaluation of original electronic media product, audience research, or management analysis. S/U.

Materials Science and Engineering

College of Engineering

Graduate Faculty 2004-2005

Chairman: K. S. Jones. *Associate Chair:* J. J. Mecholsky, Jr. *Graduate Coordinators:* C. D. Batich; J. J. Mecholsky Jr. *Distinguished Professors:* P. H. Holloway; B. M. Moudgil; S. J. Pearton. *Professors:* R. Abbaschian; C. R. Abernathy; C. D. Batich; C. L. Beatty; A. B. Brennan; R. T. DeHoff *(Emeritus);* F. Ebrahimi; E. P. Goldberg; R. E. Hummel *(Emeritus;)* K. S. Jones; J. J. Mecholsky, Jr.; D. P. Norton; S. R. Phillpot; R. K. Singh; E. D. Wachsman; E. D. Whitney *(Emeritus)*. *Associate Professors:* J. R. Ambrose; D. P. Butt; E. P. Douglas; H. E. El-Shall; L. A. Gower; H. J. Seifert; W. M. Sigmund; S. B. Sinnott. *Research Associate Scientist:* R. H. Baney. *Assistant Professors:* G. E. Fuchs; J. C. Nino. *Research Assistant Scientists:* V. Craciun; B. Gila; C. B. Milz. *Assistant Engineer:* L. A. Dempere.

The Department of Materials Science and Engineering offers the Master of Science, Master of Engineering, Doctor of Philosophy, and the Engineer degrees. Complete descriptions of the requirements for these degrees are provided in the *General Information*

section of this catalog. Degrees may be obtained with specialization in metal, ceramic, polymeric, or electronic materials.

Nontraditional Degree Programs—The Department also offers a combined bachelor/masters degree program along with a joint Master of Science/Juris Doctor degree program.

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 (M.S. or M.E.) course work in their senior years and double count specific graduate courses for both degrees. The master's degree may be completed within two to three semesters after completing the bachelor's degree. Seniors admitted into the combined program are eligible for assistantships. The TA or RA appointment includes a stipend plus a tuition payment. Program admission requirements are (1) satisfaction of Graduate School admission requirements, (2) an upper division GPA of at least 3.3, (3) completion of a minimum of 18 credit hours of courses in materials science and engineering, (4) admission by the Department's Combined Degree Studies Admissions Committee and approval by the College of Engineering and the Graduate School. For more information, contact the Department.

The J.D./M.S. (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 one year less than it would take to attain both degrees if pursued consecutively.

The Department also offers combined materials science and engineering/biomedical engineering master's degrees. The program requirements are similar to those in materials science and engineering. For more information, please contact the Department.

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.

Specific areas of specialization within the Department include biomaterials, ceramics, composites, computational materials, corrosion, diffusion, electronic materials, glasses, mechanical behavior, quantitative microscopy, mineral processing, nanotechnologies, reaction kinetics in the solid state, structural analysis, composites, compound semiconductors, opto-electronic materials, integrated circuit materials, and high temperature superconductors.

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 M.S.E. 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.

EMA 5008—Particle Science and Technology: Theory and Practice (3) *Prereq: 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 5108—Vacuum Science and Technology (3) *Prereq: 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 (3) *Prereq: 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 MaterialsA Survey (3) *Prereq: 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 (3) *Prereq: EMA 3010, CHM 2046, PHY 3048, 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 (3) *Prereq: CHM 2045, MAP 2302, 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 (3) Phase diagrams considering systems with as many as four components; emphasis on pressure temperature composition diagrams.

EMA 6107—High Temperature Materials (3) 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 (3) 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 (3) 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 (3) Atomistic (classical) and electron theory of optical properties of metals, alloys, and dielectrics. Nonlinear optics, lasers. Raman-spectra.

EMA 6128—Materials Microstructure (3) *Prereq: EMA 6316 or equivalent.* Geometry of microstructures: kinematics and kinetics of microstructural evolution in materials processing.

EMA 6136—Diffusion, Kinetics, and Transport Phenomena (3) *Prereq: 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 (3) *Prereq: EMA 3066.* Solid state properties of amorphous and semi-crystalline polymers.

EMA 6166—Polymer Composites (3) Physical and mechanical properties of polymers and polymer composites as related to preparation and microstructure.

EMA 6226—Advanced Mechanical Metallurgy I (3) *Prereq: EMA 4223 or equivalent.* Dislocation theory, microstructural effects in mechanical properties, strengthening mechanisms, fracture, and other current topics.

EMA 6227—Advanced Mechanical Metallurgy II (3) Continuation of EMA 6226.

EMA 6265—Mechanical Properties of Polymers (3) *Prereq: EMA 3066 or equivalent.* Linear and nonlinear viscoelastic

behavior of polymers with emphasis on molecular and microstructure aspects.

EMA 6315—Colloidal Hydrodynamics (3) 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 (3) *Prereq: EMA 4314.* Thermodynamics of materials systems, surfaces in solids, irreversible processes.

EMA 6319—Applied Colloid and Interfacial Chemistry for Engineers (3) *Prereq: 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 (3) *Prereq: undergraduate-level thermodynamics, kinetics, and electrical properties of materials or equivalent.* 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 6446—Electronic Processes in Crystalline Ceramics (3) *Prereq: 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 (3) 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 (3) *Prereq: EMA 3066.* Use of broad variety of spectroscopic and other scattering phenomena in polymer research.

EMA 6507C—Scanning Electron Microscopy and Electron Probe Microanalysis (3) *Prereq: EMA 3513C or equivalent.* Fundamentals of scanning electron microscopy and electron probe microanalysis. Laboratory.

EMA 6510—Survey of Materials Analysis Techniques (3) *Prereq: EMA 3513C, 4145 or equivalent.* Principles and techniques used in characterization of materials. Chemical, microstructural, and surface analysis of materials; metals, ceramics, polymers, and semiconductor systems.

EMA 6518—Transmission Electron Microscopy (3) *Prereq: 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 (1) 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 (1-2; max: 10) *Prereq: EMA 6507C or equivalent.* Utilizing primarily STEM, TEM, SEM, EMP, FIM, and optical metallography.

EMA 6580—Science of Biomaterials I (3) *Prereq: undergraduate chemistry.* Introduction to variables that control compatibility and performance of biomaterials, including physical and chemical properties, corrosion, fatigue, and interfacial histochemical changes.

EMA 6581C—Polymeric Biomaterials (4) *Prereq: undergraduate chemistry and EMA 3066.* 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 (3) *Prereq: 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 6616—Advanced Electronic Materials Processing (3) *Prereq: EMA 4614 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 (3) *Prereq: EMA 4125 or equivalent.* 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 (2-3; max: 3) *Prereq: 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 (3) *Prereq: 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 6805—Mathematical Methods in Materials Science I (2) Review of mathematical methods with emphasis upon applications in materials science and engineering.

EMA 6806—Mathematical Methods in Materials Science II (2) *Prereq: EMA 6805 or equivalent.* Applications of advanced differential equations, transform methods, and computational analysis.

EMA 6808—Error Analyses and Optimization Methodologies in Materials Research (3) *Prereq: ESI 4905, EIN 6912, STA 6166 and 6167, or permission of instructor.* 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 (1-4; max: 8)

EMA 6910—Supervised Research (1-5; max: 5) S/U.

EMA 6936—Seminar in Materials Science and Engineering (1; max: 14) Offered in fall and spring. Required of all students. S/U.

EMA 6938—Special Topics in Materials Science and Engineering (1-4; max: 6)

EMA 6971—Research for Master's Thesis (1-15) S/U.

EMA 7979—Advanced Research (1-12) 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. S/U.

EMA 7980—Research for Doctoral Dissertation (1-15) S/U.

Mathematics

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: K. Alladi. *Associate Chair:* L. Block. *Graduate Coordinator:* P. L. Robinson. *Graduate Research Professor:* J. G. Thompson. *Professors:* K. Alladi; L. S. Block; B. L. Brechner; J. K. Brooks; D. A. Cenzer; Y. Chen; N. Dinculeanu; D. A. Drake; A. Dranishnikov; B. H. Edwards; P. E. Ehrlich; G. G. Emch; F. G. Garvan; J. Glover; W. W. Hager; C. Y. Ho; J. E. Keesling; J. A. Larson; B. A. Mair; J. Martinez; S. A. McCullough; W. J. Mitchell; Z. R. Pop-Stojanovic; M. Rao; P. L. Robinson; S. A. Saxon; L. C. Shen; P. K. Sin; S. J. Summers; A. Turull; A. Vince; H. Voelklein; N. L. White; D. C. Wilson. *Associate Professors:* P. L. Boyland; R. M. Crew; D. J. Groisser; K. P. Keating; J. L. F. King; T. O. Moore; S. Moskow; T. Olson; R. Smith; P. Tiep; T. Walsh. *Assistant Professors:* A. Berkovich; M. Bona; J. Hueter; M. Kutuzova; D. Metzler; S. Pilyugin; Y. Rudyak; J. Zapletal.

The Department of Mathematics offers the degrees of Doctor of Philosophy, Master of Science and Master of Arts, 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 *General Information* section of this catalog.

Interdisciplinary Programs—The Department offers a co-major program in conjunction with the Statistics Department leading to the Doctor of Philosophy degree in mathematics and statistics. The Department is also a partner in the interdisciplinary concentration in quantitative finance, along with the Statistics, Industrial and Systems Engineering, and Finance, Insurance, and Real Estate Departments.

Combined Program—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 or Master of Arts degree. The main feature of the program is that up to 21 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, differential equations, dynamical systems, probability theory, numerical analysis, numerical optimization, approximation theory, combinatorial analysis, graph theory, computer applications, biomathematics, mathematical physics, inverse problems, and medical 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, abstract algebra, and linear 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.

The courses MAA 5228, MAA 5229, MAS 5311, and MAS 5312 are required for all advanced degree programs in mathematics.

The requirements for the master's degree nonthesis option include a minimum of 32 semester hours of course work. Students pursuing the master's degree in mathematics must pass two comprehensive written examinations, one in algebra and one in analysis. Students pursuing the master's degree with a specialization in applied mathematics have two options: the examination option requires passage of the algebra and analysis examinations; the thesis option requires instead the preparation and 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.

The doctoral student must pass a written and oral comprehensive preliminary examination administered by the Department to become a candidate for the degree. The doctoral student must pass reading knowledge examinations 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.

Every graduate student is expected to attend the regular colloquium.

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.

MAA 5104—Advanced Calculus for Engineers and Physical Scientists I (3)

MAA 5105—Advanced Calculus for Engineers and Physical Scientists II (3) *Prereq: MAA 5104.*

MAA 5228—Modern Analysis I (3) *Prereq: MAC 2313.* Topology of metric spaces, numerical sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, sequences and series of functions, the Stone-Weierstrass theorem, functions of several variables. Stokes' theorem, the Lebesgue theory.

MAA 5229—Modern Analysis II (3) *Prereq: MAA 5228.*

MAA 5404—Introduction to Complex Variables for Engineers and Physical Scientists (3)

MAA 6236—Mathematical Analysis for Statisticians (3) *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 (3) *Prereq: 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 (3) *Prereq: MAA 6406.*

MAA 6616—General Theory of Measure and Integration I (3) *Prereq: MAA 5229.* Borel sets, measurable functions and the monotone class theorem. Measures and their extension theorems, Lebesgue integral, convergence theorems. Product measures and Fubini's theorem, the Radon-Nikodym theorem and differentiation. Elementary Hilbert and Banach space theory, LP-spaces.

MAA 6617—General Theory of Measure and Integration II (3) *Prereq: MAA 6616.*

MAA 7526—Advanced Topics in Functional Analysis I (3; max: 6) *Prereq: MAA 6617, 6332.* Algebraic and topological approach to current material and methods in analysis.

MAA 7527—Advanced Topics in Functional Analysis II (3; max: 6) *Prereq: MAA 7526.*

MAD 6206—Combinatorial Theory I (3) 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 (3) *Prereq: MAD 6206.*

MAD 6406—Numerical Linear Algebra (3) *Prereq: 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 (3) *Prereq: MAA 4212, 5105, or 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 (3; max: 6) *Prereq: 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 (3; max: 6) *Prereq: MAD 7396.*

MAE 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of graduate adviser.* S/U.

MAE 6943—Internship in College Teaching (3; max: 6) *Prereq: consent of graduate adviser.*

MAP 5304—Intermediate Differential Equations for Engineers and Physical Scientists (3)

MAP 5345—Introduction to Partial Differential Equations (3)

MAP 6208—Numerical Optimization (3) *Prereq: MAD 6406 and MAD 6407 or permission 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 6217—Introduction to Calculus of Variations for Engineers and Physical Scientists (3) *Prereq: MAP 5304, MAS 5157 or equivalent.* Extremum problems, first variation. Euler equation problems with fixed and movable boundaries. Lagrange multiplier methods for problems with constraints, canonical form, second variation, applications to physics and engineering.

MAP 6327—Applied Differental Equations I (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: MAP 6356.*

MAP 6375—Numerical Partial Differential Equations (3) *Prereq: MAD 6406 and MAD 6407 or permission of instructor.* Introduction to partial differential equations and fundamental concepts. Parabolic equations: finite differences, consistency, convergence and stability, two- and three-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 (3) *Prereq: MAD 6406 and MAD 6407 or permission of instructor.* Variational formulations of partial differential equations, finite element approximations, both theoretical framework and numerical issues addressed. 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 (3) 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 (3) *Prereq: MAP 6467.*

MAP 6472—Probability and Potential Theory I (3) *Prereq: 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 6487—Biomathematics Seminar I (3) *Prereq: 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 (3) *Prereq: MAP 6487.* Continuation of MAP 6487.

MAP 6505—Mathematical Methods of Physics and Engineering (3) *Prereq: 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 (3) *Prereq: MAP 6505.*

MAP 6941—Internship in Applied Mathematics (1-5; max: 9) *Prereq: 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 (3; max: 6) Various topics in applications of mathematics both classical and in areas of current research.

MAP 7437—Seminar in Applied Mathematics II (3; max: 6)

MAS 5157—Vector Analysis (3)

MAS 5311—Introductory Algebra I (3) *Prereq: MAS 4105 or 4302.* The basic algebraic systems: groups, rings, vector spaces, and modules. Linear transformations, matrices, and determinants.
MAS 5312—Introductory Algebra II (3) *Prereq: MAS 5311.*
MAS 6331—Algebra I (3) *Prereq: 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 (3) *Prereq: MAS 6331.*
MAS 7215—Theory of Numbers (3) *Prereq: 2 of MAA 6407, 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 (3) *Prereq: MAS 7215.*
MAS 7396—Advanced Topics in Algebra I (3; max: 6) *Prereq: MAA 6407, 6617, MAS 6332 or MTG 6347.* Current topics in algebra.
MAT 6905—Individual Work (3; max: 9)
MAT 6910—Supervised Research (1-5; max: 5) S/U.
MAT 6932—Special Topics in Mathematics (3; max: 9) *Prereq: consent of graduate adviser, who should be consulted well in advance of registration.*
MAT 6971—Research for Master's Thesis (1-15) S/U.
MAT 7979—Advanced Research (1-12) 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. S/U.
MAT 7980—Research for Doctoral Dissertation (1-15) S/U.
MHF 5107—Introduction to Set Theory (3) 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 (3) 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 (3) 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 (3) *Prereq: MHF 6306.*
MTG 5316—Introduction to Topology I (3) 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 (3) *Prereq: MTG 5316.*
MTG 5411—Introduction to Fractal Geometry (3) *Prereq: advanced calculus or permission 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 (3) *Prereq: advanced calculus or permission of instructor.* Introduction to nonlinear dynamical systems and chaos. One-dimensional systems, bifurcation theory, symbolic dynamics, Shankovsky'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 (3) *Prereq: MAS 5157 or equivalent.* First part of a two-term sequence. Classical differential geometry of curves and surfaces, differentiable manifolds, tensor analysis, affine connection, Riemannian geometry. Lie groups, Lie algebras, applications to physics.
MTG 6257—Differential Geometry II (3) *Prereq: MTG 6256.*
MTG 6346—Topology I (3) *Prereq: 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 (3) *Prereq: MTG 6346.*
MTG 6401—Ergodic Theory and Dynamical Systems I (3) *Prereq: 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. Bernouilli 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 (3) *Prereq: MTG 6401.* Continuation of MTG 6401.
MTG 7396—Advanced Topics in Topology I (3; max: 6) *Prereq: MTG 6347.* Topics change yearly.
MTG 7397—Advanced Topics in Topology II (3; max: 6)

Mechanical and Aerospace Engineering

College of Engineering

Graduate Faculty 2004-2005

Interim Chair: G. W. Hemp. *Associate Chair:* J. K. Schueller. *Graduate Coordinator:* C. C. Hsu. *Graduate Research Professor:* N. D. Cristescu. *Hines Eminent Scholar:* J. Chung. *Ebaugh Professors:* B. V. Sankar; J. C. Ziegert. *Distinguished Professors:* R. T. Haftka; W. Shyy. *Professors:* C. D. Crane; D. Y. Goswami; G. W. Hemp, C. C. Hsu; J. N. Klausner; A. J. Kurdila; U. H. Kurzweg; R. Mei; W. M. Phillips; J. K. Schueller; P. M. Sforza; S. A. Sherif; R. Tran-Son-Tay; L. Vu-Quoc; E. K. Walsh. *Associate Professors:* N. K. Arakere; B. F. Carroll; L. N. Cattafesta; N. G. Fitz-Coy; D. W. Hahn; P. G. Ifju; H. A. Ingley, III; A. V. Kumar; W. E. Lear; G. K. Matthew; D. W. Mikolaitis; J. E. Peterson; C. Segal; M. Sheplak; G. J. Wiens; P. H. Zipfel. *Associate Engineer:* D. A. Jenkins. *Assistant Professors:* S. A. Banks; O. Cazacu; W. Dixon; H. Fan; B. J. Fregly; N. H. Kim; R. C. Lind; B. Mann; M. Sarntinoranont; W. G. Sawyer; T. Schmitz.

The Department of Mechanical and Aerospace Engineering offers the degrees of Master of Science with or without thesis, Master of Engineering with or without thesis, Engineer, and Doctor of Philosophy in aerospace engineering and mechanical engineering. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog. Additional information can be foundat http://www.mae.ufl.edu/graduate.

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.

EAS 5938—Special Topics in Aerospace Engineering (1-4; max: 8)

EAS 6135—Molecular Theory of Fluid Flows (3) *Prereq: EGM 6812 or equivalent.* Introduction to molecular dynamics of gases and liquids, Boltzmann equation, Chapman-Enskog expansion and derivation of Euler and Navier-Stokes equations, lattice Boltzmann methods, application to gas, liquid, and multiphase flows.

EAS 6138—Gasdynamics (3) *Prereq: EAS 4103 or EML 5714.* Theory of sound waves, subsonic and supersonic flows, shock-waves, explosions and implosions.

EAS 6242—Advanced Structural Composites (3) *Prereq: 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 (3) *Prereq: EAS 4412 or equivalent.* Application of modern control theory to aerospace vehicles. Parameter identification methods applied to aircraft and missiles.

EAS 6905—Aerospace Research (1-6; max: 12 including EGM 5905 and EGM 6905)

EAS 6910—Supervised Research (1-5; max: 5) S/U.

EAS 6935—Graduate Seminar (1; max: 6) S/U option.

EAS 6939—Special Topics in Aerospace Engineering (1-6; max: 12) Laboratory, lectures, or conferences covering selected topics in space engineering.

EAS 6971—Research for Master's Thesis (1-15) S/U.

EAS 7979—Advanced Research (1-12) 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. S/U.

EAS 7980—Research for Doctoral Dissertation (1-15) S/U.

EGM 5005—Laser Principles and Applications (3) *Prereq: consent of instructor.* Applications of lasers for lidar aerodynamic and structural testing and for cutting and welding of materials.

EGM 5111L—Experimental Stress Analysis (3) *Prereq: 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 5533—Applied Elasticity and Advanced Mechanics of Solids (3) *Prereq: 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, creep deformation procedures, introduction to instability and fracture mechanics. Design applications.

EGM 5584—Biomechanics of Soft Tissue (3) *Prereq: 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 (4) *Prereq: 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 (1-4; max: 8)

EGM 6321—Principles of Engineering Analysis I (3) *Prereq: 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 (3) *Prereq: 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. Poison, Helmholtz, and Schroedinger equations.

EGM 6323—Principles of Engineering Analysis III (3) *Prereq: 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 (3) *Prereq: 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—Numerical Methods of Engineering Analysis II (3) *Prereq: EGM 6341 or consent of instructor.* Finite-difference methods for parabolic, elliptic, and hyperbolic partial differential equations. Application to heat conduction, solid and fluid mechanics problems.

EGM 6352—Advanced Finite Element Methods (3) *Prereq: EGM 6351.* Discontinuous Galerkin method applied to transient problems. Optimization theory applied to formulation of mixed FEM; treatment of constraints, e.g., incompressibility. General shape functions. Electromagnetics, heat, fluids, solids. Other advanced topics.

EGM 6365—Structural Optimization (3) *Prereq: EML 4500, EGM 4350,EML 5526, or EGM 6451.* Structural optimization via calculus of variations. Application of techniques of numerical optimization to design of trusses, frames, and composite laminates. Calculation of sensitivity of structural response. Approximation and fast reanalysis techniques. Optimality criteria methods.

EGM 6570—Principles of Fracture Mechanics (3) *Prereq: 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 6595—Bone Mechanics (3) Biology, composition, and mechanical properties of cortical bone tissue, cancellous bone tissue, and cartilage. Bone modeled as anisotropic elastic material, as bioviscoelastic material and as composite material. Adaptation to stress and remodeling; articular cartilage.

EGM 6611—Continuum Mechanics (3) *Prereq: 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 (3) *Prereq: EGM 6611.* Virtual work, stability, extremum principles. Applications on the microscale, miniscale, and macroscale. Thermodynamics, internal variables, damage parameters, time and temperature effects. Fracture mechanics. Finite elastoplasticity.

EGM 6812—Fluid Mechanics I (3) *Prereq: 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 (3) *Prereq: EGM 6812.* Mathematical and physical structures of Navier-Stokes equation. Exact solutions of 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 (3) *Prereq: undergraduate fluid mechanics.* Biothermal fluid sciences. Emphasis on physiological processes occurring in human blood circulation and underlying physical mechanisms from engineering perspective.

EGM 6905—Individual Study (1-6; max: 12 including EGM 5905 and EAS 6905)

EGM 6910—Supervised Research (1-5; max: 5) S/U.

EGM 6934—Special Topics in Engineering Mechanics (1-6; max: 12)

EGM 6936—Graduate Seminar (1; max: 6) Discussions and presentations in the fields of graduate study and research. S/U option.

EGM 6971—Research for Master's Thesis (1-15) S/U.

EGM 7819—Computational Fluid Dynamics (3) *Prereq: EGM 6342 and 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 (3) *Prereq: 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 (1-12) 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. S/U.

EGM 7980—Research for Doctoral Dissertation (1-15) S/U.

EML 5045—Computational Methods for Design and Manufacturing (3) *Prereq: EML 3023 or permission 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 (3) 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: dynamics.* Analytical methods of statics and dynamics. Principle of virtual work, holonomic and nonholonmic 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 Dyanmics (3) *Prereq: 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 (3) *Prereq: ENG 3353C, EGM 4313, or permission of instructor.* Theory of sound. Plane waves and three-dimensional acoustic fields. Sound transmission and reflection. Dissipation, radiation, and scattering.

EML 5311—Control System Theory (3) Analysis of dynamic mechanical engineering control systems. Introduction to classical, digital, and state space techniques. Modeling, stability, transient response, frequency response. Implementation consideration.

EML 5318—Computer Control of Machines and Processes (3) *Prereq: CGS 2425 or permission of instructor.* Basic concepts, including hardware and software. Modeling of machines, processes, and their controllers.

EML 5455—Clean Combustion Technology (2) Latest developments on combustion of solid fuels, cocombustion of fuels, fluidized bed combustion, and gasification for combustion turbine applications.

EML 5465—Energy Management for Mechanical Engineers (3) *Prereq: permission 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 (3) *Prereq: EML 4419 or consent of instructor.* Theory and analysis of gas turbine engines and major components.

EML 5516—Design of Thermal Systems (3) *Prereq: 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 (3) *Prereq: EML 3520 or permission 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 5591—Biometrics (3) *Prereq: EGM 2511, EMA 3010, EEL 3003 or 3111, EML 3023.* Human/machine interface examined. Basic human anatomy introduced. Physical capabilities and limitations explored in context of practical design problems. Injury prevention, both acute and cumulative investigated.

EML 5595—Mechanics of the Human Locomotor System (3) *Prereq: EGM 3401, 3520.* Analysis of 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 for analysis of human activities.

EML 5598—Orthopedic Biomechanics (3) *Prereq: mechanics of materials.* Mechanical properties of 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, orthotic and prosthetic devices.

EML 5605—Advanced Refrigeration (3) *Prereq: EML 4601.* Analysis and design considerations for vapor compression, absorption, steam-jet, thermoelectric, and air refrigeration systems.

EML 5714—Introduction to Compressible Flow (3) 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 (3) *Prereq: EML 4141.* Kinetic theory and transport phenomena; fundamentals of statistical mechanics; microscale heat conduction, convection and radiation; applications.

EML 6154—Conduction Heat Transfer (3) *Prereq: MAP 2302, EML 4141.* Studies of heat conduction in homogeneous, heterogeneous, isotropic, anisotropic, stationary, moving bodies in Cartesian, cylindrical and spherical systems. Both exact and approximate solutions stressed.

EML 6155—Convective Heat Transfer I (3) *Prereq: EML 4702, 4141.* Application of the 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 (3) *Prereq: 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 (3) *Prereq: MAP 2302, EML 4141.* Theory and analysis for radiation exchange in both transparent and absorbing, emitting and scattering medium.

EML 6216—Analytical Dynamics II (3) *Prereq: EML 5215 or permission of instructor.* Continuation of Analytical Dynamics I. Vector and analytical dynamics in three dimensions. Rotational kinematics, particle and rigid body motion, moments of inertia, comparison between Lagrangian techniques and the vector methods of Euler and Newton; vibrations, Euler's angles, motion of gyroscope and axially symmetric bodies.

EML 6267—Structural Dynamics of Production Machinery (3) Review 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 (3) *Prereq: EML 4220 and consent of instructor.* Analysis of dynamic stability, critical speeds, and unbalance response of rotor-bearing systems. Special problems encountered in modern application operating through and above the critical speeds.

EML 6281—Geometry of Mechanisms and Robots I (3) Development of applications to basic theory of the mathematics required in the design of 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 (3) Theory of screws and application to the determination of stationary and uncertainty configurations of mechanisms and robot arms. Dexterity and workspace of robot arms.

EML 6324—Fundamentals of Production Engineering (3) Fundamentals of metal cutting, metal forming, and welding. Accuracy and rigidity of machine tools. Automation, numerical control, adaptive control.

EML 6417—Solar Energy Utilization (3; max: 6) Solar energy; its characteristics and availability; collection and storage; conversion and utilization as heat, refrigeration, thermal electric and power, photovoltaic conversion; and other applications.

EML 6451—Energy Conversion (3) Conversion of 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 6597—Mechanics of Gait (3) *Prereq: EML 5595.* Concepts, nomenclature, and control mechanics of normal and pathological bipedal gait.

EML 6606—Advanced Air Conditioning (3) *Prereq: EML 4600.* Air-conditioning system selection and system design; air handling techniques including noise control, cleaning, temperature and humidity control; modern technological development and economic analysis.

EML 6905—Individual Projects in Mechanical Engineering (1-3; max: 9)

EML 6934—Special Topics in Mechanical Engineering (1-4; max: 12)

EML 6936—Nonthesis Project (1-4; max: 6) An in-depth project for graduate students not pursuing a thesis master's degree. S/U.

EML 6971—Research for Master's Thesis (1-15) S/U.

EML 7979—Advanced Research (1-12) 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. S/U.

EML 7980—Research for Doctoral Dissertation (1-15) S/U.

Medical Sciences

College of Medicine

Dean: C. C. Tisher. *Associate Dean for Graduate Education:* W. T. McCormack.

The College of Medicine offers training opportunities leading to either the Doctor of Philosophy or Master of Science degree in medical sciences. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog. The interdisciplinary program (IDP) in medical 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 Medical Sciences

The goal of the IDP is to prepare students for a diversity of careers in research and teaching in academic and commercial settings. 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 200 faculty members.

During the first year of study, students undertake a common, comprehensive interdisciplinary core curriculum of classroom study, an extensive practical laboratory experience, and a responsible conduct of research course. In addition, they participate in several laboratory rotations in any of the laboratories of the College of Medicine faculty members. Selection of advanced concentration and mentor for dissertation research is made after completion of the core curriculum in order to maximize flexibility and facilitate an informal decision. Students entering the advanced concentrations will 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 provide students further means to augment their scientific development.

Prospective students should have strong backgrounds in biology, chemistry (organic, quantitative, and physical), physics, and calculus. A demonstration of high motivation and a serious intention to pursue research-related careers is also an important consideration. For more information, write IDP, P.O. Box 100215, College of Medicine, Gainesville, FL 32610-0215. Expanded information about the IDP can be found on the IDP Web page (http://idp.med.ufl.edu).

Core Courses–IDP

GMS 6001—Fundamentals of Biomedical Sciences I (5) *Prereq: consent of instructor.* Integrated approach to cellular, molecular, biochemical, and genetic aspects of cell function.

GMS 6003—Fundamentals of Graduate Research and Professional Development (1; max: 2) *Prereq: permission of instructor; coreq: GMS 6001. Designed for new graduate students.* Practical knowledge and understanding of issues to increase chances for successful graduate education and professional career in biomedical sciences. S/U.

GMS 6004—IDP Practical Laboratory (2) 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 (2) *Prereq: 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 (1) *Prereq: 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 (2) *Prereq: 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 (2) *Prereq: GMS 6001 or consent of instructor. Designed for first-year graduate students.* Fundamental physiological concepts. Emphasis on impact of functional genomics technology on contemporary physiology.

GMS 6009—Principles of Drug Action (1) *Prereq: GMS 6001 or consent of instructor. Designed for first-year graduate students.* Fundamental concepts on drug action, receptor structure and function, and pharmacokinetics.

GMS 6065—Fundamentals of Cancer Biology (2) *Prereq: 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 6090—Research in Medical Sciences (1-10; max: 10) 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. S/U.

GMS 6901—Seminar in Biology of Disease (1; max: 8) Current advances in etiology and treatment of disease. S/U.

GMS 6931—Ethical and Policy Issues in Clinical Research (2) Ethical and policy issues related to conduct of clinical research. Basic understanding of regulations that govern human subject research and introduction to topic of research with animals.

GMS 7593—Topics in Pharmacology and Toxicology (1-3; max: 12) Seminars, informal conferences, or laboratory work on selected topics.

General Courses

GMS 5905—Special Topics in Biomedical Sciences (1-4; max: 4) Analysis and discussion of contemporary topics and the development of biomedical sciences.

GMS 6090—Research in Medical Sciences (1-10; max: 10) 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. S/U.

GMS 6905—Independent Studies in Medical Sciences (1-10; max: 12)

GMS 6910—Supervised Research (1-5; max: 5) S/U.

GMS 6940—Supervised Teaching (1-5; max: 5) S/U.

GMS 6971—Research for Master's Thesis (1-15) S/U.

GMS 7979—Advanced Research (1-12) 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. S/U.

GMS 7980—Research for Doctoral Dissertation (1-15) S/U.

Advanced Concentration in Biochemistry and Molecular Biology

Graduate Faculty 2004-2005

Director: M. S. Kilberg. *Eminent Scholars:* R. J. Cousins; P. A. Hargrave. *Distinguished Professors:* B. M. Dunn; D. N. Silverman. *Professors:* B. A. Battelle; C. Baylis; B. E. Burke; R. Burne; M. Brantly; W. C. Buhi; B. D. Cain; W. G. Cance; J. B. Flanegan; S. C. Frost; E. Goldberg; W. Harvey; M. S. Kilberg; P. J. Laipis; R. J. Lamont; W. S. May; H. S. Nick; T. O'Brien; D. L. Purich; G. S. Schultz; F. S. Southwick; P. W. Stacpoole; A. Srivastava; M. R. Wallace; C. S. Wingo; T. P. Yang. *Associate Professors:* K. D. Brown; M. R. Bubb;

S. E. Chesrown; W. Clapp; R. J. Cohen; N. D. Denslow; W. A. Dunn; A. S. Edison; S. Ghivizzani; R. M. Greenberg; P. A. Luvalle; T. H. Mareci; P. M. McGuire; A. Mergia; S. Narayan; M.-H. Nguyen; R. Renne; N. Terada; G. A. Visner; K. W. Wang. *Associate Scientists:* M. J. Koroly; C. K. Tu. *Assistant Professors:* M. Agbandje-McKenna; L. B. Bloom; H. Bose; L. J. Brady; J. Bungert; X. Deng; S. N. Hochwald; S. Holliday; A. Ishov; H Kasahara; S. Kaushal; S. A. Litherland; J. R. Long; R. McKenna; D. A. Ostrov; B. Petersen; V. Reddy; K. D. Robertson; R. Rogers; P. Sayeski; R. Snyder; G. Walter; L. Xiao.

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. It is the structure, encoded ultimately by the genome, which 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 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.

BCH 6206—Advanced Metabolism (3) *Prereq: BCH 4024, CHM 4207, or consent of instructor. One of three core biochemistry courses.* Reactions of intermediary metabolism with emphasis on their integrations, mechanisms, and control. Extensive examples from current literature.

BCH 6207—Advanced Metabolism: Role of Membranes in Signal Transduction and Metabolic Control (1) *Prereq: 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 (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Key reactions in metabolic pathways of carbohydrate and lipid metabolism with special attention to exploration of experimental basis for current understanding of these processes. Understanding of interactions between major metabolic pathways and control of pathways under different physiological conditions.

BCH 6209—Advanced Metabolism: Regulation of Key Reactions in Amino Acid and Nucleotide Metabolism (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Special attention to understanding interactions between major metabolic pathways and control of these pathways under different physiological conditions. Structural basis of enzyme function and regulation.

BCH 6296—Advanced Topics in Metabolic Control (1; max: 6) *Prereq: Coreq: BCH 6206 or consent of instructor.* Thermodynamic, allosteric, hormonal, and genetic control of metabolic reactions.

BCH 6415—Advanced Molecular and Cell Biology (3) *Prereq: 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, emphasis on understanding experimental approaches which 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 (3) *Prereq: 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 (1-2; max: 2) *Prereq: BCH 6740 or equivalent or consent of instructor.* MR imaging methods used to study structure of cells, tissues, and whole animals. MR spectroscopy methods for monitoring biochemistry in living animals. Sample preparation, operation of instrumentation, and data analysis.

BCH 6744—Molecular Structure Determination by X-ray Crystallography (1; max: 2) *Prereq: BCH 6740 or equivalent or consent of instructor.* Detailed theoretical and practical instruction on technique of x-ray crystallography utilized for three-dimensional structure determination of macromolecules in studies aimed at structure-function elucidation.

BCH 6745—Molecular Structure and Dynamics of NMR Spectroscopy (1; max: 2) *Prereq: 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 6746—Structural Biology: Macromolecular Structure Determination (1; max: 3) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001 or consent of instructor.* Experimental approaches to biological macromolecular structure determination. Emphasis on current understanding or protein-protein, protein-nucleic acid structure motifs.

BCH 6747—Structural Biology/Advanced Physical Biochemistry: Spectroscopy and Hydrodynamics (1) *Prereq: BCH 3025, 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Application of 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 (1) *Prereq: 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 6876—Recent Advances in Membrane Biology (1) *Prereq: general biochemistry or consent of instructor.* Literature presented by students and faculty, discussed in depth. Emphasis on current developments, data, interpretation, and critical analysis. S/U.

BCH 6877—Recent Advances in Structural Biology (1; max: 8) *Prereq: 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. S/U.

BCH 6878—Recent Advances in Cytoskeletal Processes (1; max: 8) *Prereq: 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. S/U.

BCH 6936—Biochemistry Seminar (1; max: 20) *Prereq: 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 7410—Advanced Gene Regulation (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Literature-based assessment of most recent advances in factors governing eukaryotic gene regulation.

BCH 7515—Structural Biology/Advanced Physical Biochemistry: Kinetics and Thermodynamics (1) *Prereq: BCH 4024, CHM 3218, 4207, GMS 6001, or consent of instructor.* Fundamentals of chemical kinetics and thermodynamic analysis of equilibria. Emphasis on application of this knowledge to understanding basic enzyme kinetics, pulse-chase kinetics, protein polymerization, DNA dynamics, protein-nucleic acid interactions, and cooperative ligand binding.

GMS 6195—Chromatin Structure and Gene Expression Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles in literature. S/U.

Advanced Concentration in Genetics

Graduate Faculty 2004-2005

Director: H. V. Baker. *Eminent Scholars:* W. W. Hauswirth; N. Muzyczka. *Professors:* M. A. Atkinson; H. V. Baker; K. Berns; B. Byrne; B. D. Cain; R. C. Condit; D. Driscoll; K. Drury; T. Flotte; M. M. Goodenow; P. A. Gulig; J. Hillman; M. Kilberg; P. J. Laipis; A. S. Lewin; R. W. Moyer; S. A. Moyer; T. W. O'Brien; D. Schatz; G. Schultz; J.-X. She; M. S. Swanson; M.R. Wallace; T. P. Yang. *Associate Professors:* J. Aris; K. Brown; L.-J. Chang; ; M. Cohn; M. Elder; A. Falsetti; S. Ghivizzani; S. Hunger; S. Jin; W. T. McCormack; L. Morel; J. L. Resnick; E. Scott; E. Sobel; A. Yachnis; R. Zori. *Assistant Professors:* D. Bloom; L. B. Bloom; J. Bungert; B. Harfe; S. Hochwald; S. Kaushal; C. Liu; P. Shirk; W. Slayton; R. Snyder; L. Zhou.

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.

BCH 7410—Advanced Gene Regulation (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Literature-based assessment of most recent advances in factors governing eukaryotic gene regulation.

GMS 6010—Yeast Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Use of the yeast *Saccharomyces cerevisiae*, as model eukaryotic cell for study of biological processes common to all eukaryotic organisms.

GMS 6011—Mouse Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals of mouse genetics and use of mouse model for study of human disease as well as advanced technical tools used for research and their application to novel problems.

GMS 6012—Human Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals of human genetics as well as advanced technical tools used for research.

GMS 6013—Developmental Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals developmental genetics. Advantages and limitations of several model systems and their application to study of development.

GMS 6014—Applications of Bioinformatics to Genetics (1) *Prereq: GMS 6001; permission of instructor.* Storage, retrieval, and analysis of information related to genetics.

GMS 6015—Human Genetics II (1) *Prereq: GMS 6012; permission of instructor.* Theoretical framework, emphasizing functional genomics and bioinformatics as well as advanced technical tools used for research and development in these areas.

GMS 6034—Advanced Virology I: Genetics and RNA (1) *Prereq: consent of instructor.* Theoretical framework for understanding fundamental concepts of viral genetics and methods of analysis employed to elucidate mechanisms of virus reproduction.

GMS 6038—Bacterial Genetics and Physiology (1) *Prereq: GMS 6006 or consent of instructor.* Theoretical framework for understanding fundamental concepts.

GMS 6059—Gene Therapy from Bench to Bedside (1) *Prereq: GMS 6034, 6035, and 6036 or permission of instructor.* Design and use of gene transfer vectors for treating variety of diseases. Practical understanding of successes and hurdles in gene therapy.

GMS 6181—Special Topics in Microbiology (1-6; max: 18)

GMS 6195—Chromatin Structure and Gene Expression Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles in literature. S/U.

GMS 6920—Genetics Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles. S/U.

GMS 7192—Journal Colloquy (1; max: 12) Critical presentation and discussion of recent original articles in the gene therapy literature. S/U.

Advanced Concentration in Immunology and Microbiology

Graduate Faculty 2004-2005

Directors: P. A. Gulig and L. Morel. *Graduate Research Professor:* A. S. Bleiweis. *Eminent Scholars:* B. Kaplan; N. Muzyczka; W. H. Reeves. *Professors:* V. Antony; M. A. Atkinson; B. S. Bender; R. Braylan; T. Brown; R. Burne; B. J. Byrne; E. Chan; M. Clare-Salzler; R. C. Condit; J. Crawford; D. H. Duckworth; B. Dunn; J. B. Flanegan; T. Flotte; M. M. Goodenow; P. A. Gulig; J. D. Hillman; S. R. Khan; P. A. Klein; R. Lamont; A. S. Lewin; W. P. McArthur; R. W. Moyer; S. A. Moyer; A. B. Peck; A. Progulske-Fox; D. Schatz; F. Southwick; C. B. Walker; W. E. Winter; J. R. Zucali. *Associate Professors:* L.-J. Chang; M. Elder; S. Jin; W. T. McCormack; A. Mergia; E. Scott; E. Sobel; S. Swaminathan; N. Terada. *Research Associate Professor:* M. Satoh. *Assistant Professors:* D. Bloom; L. J. Brady; M. Handfield; P. Kima; S. Litherland; C. Liu; L.Morel; D. Ostrov; V. J. Reddy; R. Renne; H. Richards.

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.

GMS 6030—Autoimmunity (1; max: 3) *Prereq: 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.

GMS 6031—Molecular Immunology (1) *Prereq: GMS 6001, 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 (1) *Prereq: GMS 6001, 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 (1) *Prereq: GMS 6001, 6006, or consent of instructor.* Biological and biochemical aspects of immunology, focusing on molecular and cellular basis of human disease.

GMS 6034—Advanced Virology I: Genetics and RNA (1) *Prereq: consent of instructor.* Theoretical framework for understanding fundamental concepts of viral genetics and methods of analysis employed to elucidate mechanisms of virus reproduction.

GMS 6035—Advanced Virology II: RNA Viruses (1) *Prereq: consent of instructor.* Molecular biology and genetics of virology, focusing on molecular biology of RNA viruses.

GMS 6036—Molecular Virology III: DNA Viruses (1) *Prereq: consent of instructor.* Molecular biology and genetics of virology, focusing on replication and pathogenesis of DNA viruses.

GMS 6038—Bacterial Genetics and Physiology (1) *Prereq: GMS 6006 or consent of instructor.* Theoretical framework for understanding fundamental concepts.

GMS 6039—Bacterial Pathogenesis (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on genetics and physiology of bacteria, their use as research tools, and role of bacteria in causing disease.

GMS 6040—Host-Pathogen Interactions (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on host response and subsequent evasion of that response by pathogens.

GMS 6121—Infectious Diseases (3) *Prereq: permission 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 (3) *Prereq: GMS 6001 or consent of instructor.* Biological and biochemical aspects of hosts resistance and immunity; the chemical and physiochemical properties of the proteins of immune reactions.

GMS 6181—Special Topics in Microbiology (1-6; max: 18)

GMS 6193—Research Conference in Oral Biology (1 or 3; max: 8) *Required of graduate students in oral biology; open to others by permission of department.* Critical discussion and appraisal of current research within department by students and faculty. S/U.

GMS 6381—Special Topics in Pathology (1-4; max:12) *Prereq: permission of department.* Conference and supervised laboratory work. Topics selected to meet each student's needs.

GMS 6382—Special Topics in Immunology (1-3; max:6) *Prereq: 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 6921—Immunology/Microbiology Journal Colloquy (1; max: 12) *Prereq: GMS 6001, 6006, or consent of instructor.* Critical presentations and discussions of recent original articles.

GMS 7192—Journal Colloquy (1; max: 12) Critical presentation and discussion of recent original articles in the gene therapy literature. S/U.

Advanced Concentration in Molecular Cell Biology

Graduate Faculty 2004-2005

Director: P. LuValle. *Eminent Scholar:* W. Hauswirth. *Distinguished Professor:* S. A. Benner. *Professors:* B. S. Bender; H. Berrey; M. Brantly; W. Buhi; B. Burke; E. K.Chan; N. Chegini; J. Crawford; K. Drury; S. C. Frost; M. Grant; R. Johnson; S. Khan; P. J. Linser; S. May; W. McArthur; D. F. Muir; A. Progulske-Fox; D. L. Purich; K. E. Rarey; D. A. Romrell; G. S. Schultz; G. Shaw; K. T. Shiverick; F. Southwick; D. A. Steindler; S. Sugrue; A. Srivastava; M. S. Swanson; C. Walker; J. R. Zucali. *Associate Professors:* J. P. Aris; M. Bubb; M. Cohn; W. A. Dunn; R. Freel; M. Hatch; T. G. Hollinger; S. Hunger; P. LuValle; K. M. Madsen; S. Narayan; J .L. Resnick; E. W. Scott; S. L. Semple-Rowland; P .D. Shirk; S. Swaminathan; N. Terada; G. A. Visner; C. G. Widmer. *Associate Scientist:* J. Reed. *Assistant Professors:* S. E. Borst; H. Bose; X. Deng; L. N. Fletcher; B. Harfe; L. S. Holliday; A. Ishov; S. Kaushal; L. Kornberg; D. Liao; S. Litherland; C. Liu; S. P. Oh; B. Peterson; M. S. Segal; W. Slayton; W. C. Smith; S. Svetlov; A. Timmers; L. Xiao; L. Zhou.

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 40 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 lime molds through *Drosophila* to birds and mammals. These systems are manipulated and analyzed employing 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.

GMS 6061—The Nucleus (1) *Prereq: GMS 6001 or consent of instructor.* Cell biology of the nucleus. Offered in old-numbered years.

GMS 6062—Protein Trafficking (1) *Prereq: GMS 6001 or consent of instructor.* Movement of proteins in cell. Offered in even-numbered years.

GMS 6063—Cellular Aging (1) *Prereq: GMS 6001 or consent of instructor.* Recent developments in the field of aging.

GMS 6064—Tumor Biology (1) *Prereq: GMS 6001 or consent of instructor.* Current understanding of molecular basis of cancer. Offered in odd-numbered years.

GMS 6065—Fundamentals of Cancer Biology (2) *Prereq: 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 6331—Stem Cell Biology (1) *Prereq: GMS 6001 or consent of instructor.* Recent progress in mammalian stem cell research.

GMS 6635—Organization of Cells and Tissues (2) *Prereq: GMS 6001 or consent of instructor.* Structural and functional aspects.

GMS 6642—Morphogenesis: Organ Systems I (2) *Prereq: GMS 6635, second-year IDP student.* Skin, respiratory, lymphatics, and special sense.

GMS 6643—Morphogenesis: Organ Systems II (2) *Prereq: GMS 6642, second-year IDP student.* GI, kidney, endocrine, male and female reproduction.

GMS 6644—Apoptosis (1) *Prereq: GMS 6001 or consent of instructor.* Modern view of molecular mechanisms of tumor development. Offered in even-numbered years.

GMS 6647—Transcriptional and Translational Control of Cell Growth and Proliferation (1) *Prereq: GMS 6001 or consent of instructor.* Role of transcription and translation in control of gene expression regulating cell growth and proliferation, and perturbations during cellular stress, viral infection, and cancer.

GMS 6690—Molecular Cell Biology Journal Club (1; max: 12) Faculty-student discussion of research papers and topics.

Advanced Concentration in Neuroscience

Graduate Faculty 2004-2005

Director: S. Semple-Roland. *Eminent Scholars:* D. K. Anderson; P. Hargrave. *Distinguished Professors:* B. W. Ache; S. A. Benner; M. Gold. *Professors:* P. A. V. Anderson; B. Battelle; S. Blackband; B. Cooper; P. Davenport; W. Dawson; D. Driscoll; W. H. Drummond; W. A. Friedman; R. L. Hayes; M. B. Heaton; M. W. Heft; R. D. Johnson; H. Jones; P. S. Kalra; S. P. Kalra; M. Keller-Wood; W. Kem; C. M. Leonard;*(Emerita)* M. H. Lewis; P. Linser; W. G. Luttge *(Emerius);* D. F. Muir; J. B. Munson *(Emerius);* H. Nick; J. M. Petitto; D. Price; M. Raizada; R. L. Reep; S. Roper; J. C. Sackellares; N. Scarpace; P. J. Scarpace; P. G. Shaw; P. Small; P. W. Stacpoole; D. Steindler; W. J. Streit; C. Sumners; T. W. Vickroy; C. J. Vierck *(Emerius);* D. W. Walker *(Emerius); C. E. Wood; R. Yezierski. Associate Professors:* K. J. Anderson; D. Bolser; R. Caudle; B. Y. Cooper; A. Edison; T. Foster; J. K. Harrison; M. A. King; R. J. Mandel ; A. Mauderli; R. L. Papke; J. Petitto; L. A. Ritz; S. L. Semple-Rowland; F. J. Thompson; K. Wang; I. D. Weiner; R. T. Zori. *Assistant Professors:* P. Bedenbaugh; D. Bloom; P. Carney; C. Frazier; C. Haskell-Luevano; L. F. Hayward; D. R. Howland; Y. Liu; J. Long; A. Martynyuk; L. L. Moroz; J. K. Neubert; W. C. Smith; S. Svetlov; S.-L. Xia.

The Graduate Faculty associated with the neuroscience advanced concentration have expertise in neuroanatomy, molecular and cellular neurobiology, neuroembryology and aging, neurotransmitter chemistry and pharmacology, neuroendocrinology and immunology, 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.

GMS 6705—Fuctional Human Neuroanatomy (4) *Prereq: permission of instructor.* Intensive introduction covering anatomy, function, and dysfunction of human central nervous system

GMS 6709—Current Topics in Vision (1) *Prereq: GMS 6001 or consent of instructor.* Genetics, molecular biology, biochemistry of vision and associated diseases.

GMS 6711—Neurobiology of Pain (1) *Prereq: GMS 6001 or permission of instructor.* Overview of neurobiological processes involved in pain, including methods of investigating pain processing in both human and other animals.

GMS 6750—Molecular Pathobiology of Neural Disease (1) *Prereq: consent of instructor.* Overview of broad range of neural disorders with emphasis on genetically determined conditions. Offered summer semester only.

GMS 6760—Comparative Biology of Cell Signaling (2) *Prereq: GMS 6001 or consent of coordinator.* Basic principles of cellular and molecular signaling in nervous system and introduction to novel experimental approaches and nonmammalian preparations used to explore function of nervous system.

GMS 7794—Neuroscience Seminar (1; max: 12) Local, national, and occasionally international speakers. S/U.

GMS 7795—Special Topics in Neuroscience (1-4; max: 12) Intensive readings and lectures in specialized fields of neuroscience and allied disciplines.

GMS 6021—Principles of Neuroscience I: Development and Plasticity of Central Nervous System (1) *Prereq: GMS 6001 or consent of instructor.* Principles of neural development and plasticity.

GMS 6022—Principles of Neuroscience II: Signaling in Nervous System (1) *Prereq: GMS 6001 or consent of instructor.* Principles of communication within nervous system.

GMS 6023—Principles of Neuroscience III: Neural Integration and Control (1) *Prereq: GMS 6001 or consent of instructor.* Principles of nervous system integration and control.

GMS 6029—Brain Journal Club (1; max: 12) *Prereq: consent of instructor.* Presentation and discussion of research neuroscience research papers. S/U.

GMS 6051—Signal Transduction (1) *Prereq: GMS 6001 or consent of instructor.* Focused study of mechanisms of cellular signal transduction.

GMS 6052—Ion Channels of Excitable Membranes (1) *Prereq: consent of instructor.* Cell's membrane potential represents important source of energy used to regulate intracellular ion concentration, to control secretory process, and as basis for electrical signaling in nervous system. Background understanding of ion channel proteins that regulate and respond to cell membrane potential.

GMS 6072—Neuroendocrinology and Neuroimmunology (1) *Prereq: GMS 6007 or consent of instructor.* Cellular and molecular mechanisms regulating interactions between immune, endocrine, and nervous systems.

GMS 6073—Developmental Neurobiology (1) *Prereq: GMS 6007 or consent of instructor.* Broad view of current understanding of how nervous system develops, including both cellular and molecular perspectives.

GMS 6074—Comparative Neurobiology (2) *Prereq: GMS 6007 or consent of instructor.* Broad perspective on nervous system evolution, structure and function in different species, and detailed overview of mammalian nervous systems showing principles of cytoarchitecture.

GMS 6078—Synaptic Function and Plasticity (1) *Prereq: consent of instructor.* Synapses that mediate fast electrical excitation and inhibition in 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 in relation to neuroplastic events.

GMS 6079—Computers in Biology (1) *Prereq: GMS 6001 or consent of instructor.* Short lectures and demonstrations that introduce use of computers in studies of protein and nucleic acid sequences and cellular function.

GMS 6080—Basic Magnetic Resonance Imaging (1) *Prereq: GMS 6007 or consent of instructor.* Principles behind nuclear magnetic resonance imaging (MRI) and spectroscopy (MRS) with particular reference to studies of the human brain.

GMS 6592—Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes (1) Discussion of recent papers in context of larger issues in therapeutics and neuroscience. Presentations by students and faculty. S/U.

Advanced Concentration in Physiology and Pharmacology

Graduate Faculty 2004-2005

Director: J. K. Harrison. *Eminent Scholar:* D. Anderson. *Distinguished Professor:* D. N. Silverman. *Professors:* C. M. Allen; P. A. V. Anderson; S. P. Baker; C. Baylis; S. Blackband; P. Blier; D. Burchfield; B.. Cooper; P. W. Davenport; D. M. Dennis; W. W. Dawson; W. H. Drummond; L. C. Garg *(Emeritus);* E. P. Goldberg; M. Grant; W. Harvey; J. Hill; M. O. James; R. J. Johnson; H. C. Jones; P. S. Kalra; S. P. Kalra; B. Kaplan; M. Keller-Wood; W. R. Kem; J. L. Mehta; A. Neims; J. M. Patel; J. M. Petitto; M. I. Phillips; D. Price; M. K. Raizada; S. M. Roberts; N. Scarpace; P. J. Scarpace; K. T. Shiverick; D. W. Siemann; P. Stacpoole; B. R. Stevens; C. Sumners; T. W. Vickroy; C. Vierck; D. Walker; C. S. Wingo; C. E. Wood. *Associate Professors:* D. R. Bena; D. C. Bolser; B. Y. Cooper; N. Denslow; B. Goldberger; J. K. Harrison; M. Hatch; E. Meyer; R. L. Papke; N. Richards; T. C. Rowe; F. J. Thompson; I. D. Weiner; C. G. Widmer. *Research Associate Professor:* R. Freel. *Clinical Associate Professor:* B. Goldberger. *Associate Scientist:* C. K. Tu. *Assistant Professors:* P. Bedenbaugh; P. Carney; B.S. Fletcher; L. N. Fletcher; C. Haskell-Luevano; L. Hayward; H. Kasahara; P. E. Kima; H. Knot; D. Kultz; B. K. Law; J. K. Neubert; S. Oh; R. J. Rogers; P. Sayeski; Z. Sun; G.A. Walter; S. L. Xia. *Research Assistant Professor:* M . E. Law.

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, and 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, conducting research at the molecular, cellular, and integrative levels. Many of the faculty are involved in multidisciplinary, collaborative research efforts that are aimed at understanding basic physiological mechanisms and pathophysiological processes (e.g. cardiovascular, neurodegenerative, and neoplastic diseases).

GMS 6051—Signal Transduction (1) *Prereq: GMS 6001 or consent of instructor.* Focused study of mechanisms of cellular signal transduction.

GMS 6052—Ion Channels of Excitable Membranes (1) *Prereq: consent of instructor.* Cell's membrane potential represents important source of energy used to regulate intracellular ion concentration, to control secretory process, and as basis for electrical signaling in nervous system. Background understanding of ion channel proteins that regulate and respond to cell membrane potential.

GMS 6053—Cancer Biology and Therapeutics (1) *Prereq: GMS 6065 or consent of instructor.* Integrated approach for teaching of pharmacology and physiology pertaining to cancer.

GMS 6400C—Principles of Physiology (6) *Prereq: consent of instructor.* Physiology of mammalian organ systems, with special reference to the human.

GMS 6405—Fundamentals of Endocrine Physiology (1) *Prereq: 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 (1) *Prereq: GMS 6001 or consent of instructor.* Human body pulmonary/respiratory system physiology.

GMS 6408—Fundamentals of Renal Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Human body gastrointestinal system physiology.

GMS 6410—Physiology of the Circulation of Blood (2) Physiology of the component parts of the circulation, relation of structure and function, emphasis on control mechanisms.

GMS 6411—Fundamentals of Cardiovascular Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Human body cardiovascular system physiology.

GMS 6415—Fundamentals of Gastrointestinal Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Gastrointestinal system of human body.

GMS 6491—Journal Club in Physiology (1; max: 12) Timely research papers in all areas of physiology; namely, cellular physiology, molecular physiology, and functional genomics. S/U.

GMS 6563—Molecular Pharmacology (1; max: 3) *Prereq: 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 (1; max: 15) *Prereq: 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 (1) Discussion of recent papers in context of larger issues in therapeutics and neuroscience. Presentations by students and faculty. S/U.

GMS 6735—Neuropharmacology (1; max: 3) *Prereq: GMS 6007, 6009, or consent of instructor.* Identification, synthesis, metabolism, and pharmacology of neurotransmitters and their receptors, to include biogenic amines, neuropeptides, and other nervous system transmitters.

GMS 7593—Topics in Pharmacology and Toxicology (1-3; max: 12) Seminars, informal conferences, or laboratory work on selected topics.

Other Interdisciplinary Doctoral Concentrations

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. Kathleen Shiverick, P.O. Box 100267, College of Medicine, Gainesville, FL 32610 or (352) 392-3545.

The interdisciplinary emphasis on **vision sciences** is also discussed in the *Interdisciplinary Graduate Studies* section. The program director is Dr. William W. Hauswirth, P.O. Box 100266, College of Medicine, Gainesville, FL 32610 or (352) 392-0679.

M.D./Ph.D. Program

The College of Medicine also offers the M.D./Ph.D. Training Program (combined M.D./Ph.D. degrees) to highly qualified students. Candidates for this 6 to 7 year program must satisfy admission requirements of both the College of Medicine and the Graduate School. Applicants are admitted following independent

approval by the Medical Admissions Committee, IDP Admissions Committee, and the M.D./Ph.D. Training Program Advisory Committee. Further information may be obtained from the program director, Dr. Colin Sumners, P.O. Box 100274, College of Medicine, Gainesville, FL 32610 or telephone (352)392-4485.

Medicinal Chemistry

College of Pharmacy

Graduate Faculty 2004-2005

Chairman: M. O. James. *Graduate Coordinator:* R. J. Bergeron. *Eminent Scholar:* R. J. Bergeron. *Professors:* M. O. James; L. Prokai; S. G. Schulman; K. B. Sloan; R. Streiff; I. R. Tebbett. *Assistant Professors:* C. Haskell-Luevano; D. Wielbo.

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, drug metabolism, molecular toxicology, molecular biology, combinatorial chemistry, neurochemistry, analytical chemistry, molecular modeling, and drug discovery.

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.

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.

Complete descriptions of the minimum requirements for the M.S.P. and Ph.D. degrees are provided in the *General Information* section of this catalog.

The Department participates in the interdisciplinary concentration in toxicology. For more information, see the *Interdisciplinary Graduate Studies* section of this catalog.

PHA 5475—Synthesis of Prodrugs (3) *Prereq: introductory organic chemistry, medicinal chemistry, pharmaceutics.* An outline of synthetic and physical chemical approaches to solving drug delivery, bioavailability, activity, potency, toxicity, and acceptability problems.

PHA 6115—Equilibria, Complexations, and Interactions of Drugs (3) Models for drug interactions in solution. Physical chemistry characteristics of drugs and their complexes in pharmaceutical systems.

PHA 6354—Natural Medicinal Products (3) Chemistry of compounds derived from plants and animals.

PHA 6417—Pharmaceutical Analysis II (3) Absorption, fluorescence, phosphorescence, and spectroanalysis of drugs and related compounds.

PHA 6425—Drug Biotransformation and Molecular Mechanisms of Toxicity (3) *Prereq: introductory organic chemistry, biochemistry.* Enzymology and mechanisms of drug biotransformation pathways. Examples of drugs and other xenobiotics that exhibit toxicity related to biotransformation.

PHA 6447—Drug Design (3) *Prereq: organic chemistry, biochemistry, pharmacology, or permission of instructor.* Outline of how relevant disciplines impact on development of new drug product from discovery of new active lead compound to final refinement as commercial product.

PHA 6448—High Throughput Drug Discovery (2) *Prereq: organic chemistry, biochemistry, or permission of instructor.* Introduction to combinatorial chemistry, multi-compound based technologies, and their use in screening bioassays to discover lead compounds.

PHA 6449—Pharmacogenomics (1) *Prereq: biochemistry, PHA 6425, or permission of instructor.* Introduction to basic concepts and methodology of genome mapping and functional genomics applied in field of pharmacogenomics. Examples from current review and primary literature.

PHA 6471—Synthetic Medicinal Products (3)

PHA 6840—Medicinal Chemistry of Drugs of Abuse (3) Pharmacological effects of commonly encountered licit and illicit pharmaceutical compounds.

PHA 6851—Forensic Analysis of DNA (3) Techniques for isolation of DNA from cells; spectroscopic techniques; hydrodynamic and electrophoretic separation methods; sequence determination; statistical analysis and forensic significance.

PHA 6853—Biological Evidence and Serology (3) Overview of crime scene investigation as it pertains to biological evidence; crime scene safety; collection and preservation of evidence; identification, analysis, and interpretation of biological stains.

PHA 6854—Forensic Immunology (3) Antibody formation, antigen structure; complement mediated reactions; hypersensitivity; immunoelectrophoretic techniques in forensic science.

PHA 6855—Forensic Genetics (3) Principles of inheritance; genetic polymorphisms and forensic implications, population genetics and paternity testing.

PHA 6856—Blood Spatter and Distribution (3) Blood spatter creation and interpretation; recording, collection, and processing of bloodstains and blood spatter evidence.

PHA 6905C—Research Procedures in Medicinal Chemistry (1-4; max: 12)

PHA 6934—Seminar in Medicinal Chemistry (1; max: 3) Weekly presentation and discussion of research reports based on college programs or literature. S/U option.

Microbiology and Cell Science

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: E. W. Triplett. *Graduate Coordinator:* M. E. Rasche. *Graduate Research Professor:* H. M. Johnson. *Distinguished Service Professor:* L. O. Ingram. *Professors:* P. M. Achey *(Emeritus);* H. C. Aldrich *(Emeritus);* S. R. Farrah; W. B. Gurley; E. M. Hoffmann*(Emeritus);* R. A. Jensen; J. F. Preston III; K. T. Shanmugam; J. K. Yamamoto. *Associate Professors:* F. C. Davis, Jr.; J. E. Maruniak; J. A. Maupin-Furlow; A. Mergia; W. L. Nicholson; M. E. Rasche. *Assistant Professors:* N. Keyhani; P. E. Kima; Z. Mou.

Graduate study is offered leading to the Doctor of Philosophy degree in microbiology and cell science, with emphasis in one or more of the disciplines of biochemistry, cell biology, and microbiology.

Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

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 to the courses listed below, the following will be accepted for credits toward graduate degrees in microbiology and cell science: BCH 6206, BCH 6415, and BCH 6740.

MCB 5252—Microbiology, Immunology, and Immunotherapeutics (4) *Prereq: 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 5303L—Microbial Genetics and Biotechnology Laboratory (2) *Prereq: MCB 3020/3020L 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 (3) *Prereq: MCB 3020/3020L, and BCH 4024 or CHM 4207.* Structure, physiology, metabolism, and biotechnology of anaerobes.

MCB 5458—Energy Transformation in Microorganisms (3) *Prereq: 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 (3) *Prereq: 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 6409—Microbial Cell Structure and Function (3) *Prereq: undergraduate biochemistry and microbiology and consent of instructor.* Review of current knowledge concerning structure, function, and biosynthesis of microbial cells.

MCB 6485—Advanced Techniques in Microbiology and Cell Science (2-4; max: 4) *Prereq: consent of instructor.* Application of advanced techniques to experimental research in biochemistry, cell biology, and microbiology.

MCB 6905—Experimental Microbiology (1-8; max: 12) *Prereq: eight credits in microbiology and cell science.* Application of physical, chemical and biological techniques to experimental problems in microbiology. Individual laboratory study. H.

MCB 6910—Supervised Research (1-5; max: 5) S/U.

MCB 6930—Seminar (1; max: 8) Attendance required of all graduate majors at all research presentations. S/U.

MCB 6937—Special Topics in Microbiology (1-4; max: 12) Contemporary research in a particular aspect of general microbiology.

MCB 6940—Supervised Teaching (1-5; max: 5) S/U.

MCB 6971—Research for Master's Thesis (1-15) S/U.

MCB 7922—Journal Colloquy (1; max: 8) Critical presentation and discussion of recent original articles in the microbiological literature. Attendance required.

MCB 7979—Advanced Research (1-12) 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. S/U.

MCB 7980—Research for Doctoral Dissertation (1-15) S/U.

PCB 5136L—Techniques in Microbial and Cell Biology (3) *Prereq: 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 (3) *Prereq: 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 6176—Electron Microscopy of Biological Materials (2) *Prereq: MCB 3020 or equivalent.* Use of the electron microscope, including fixation, embedding, sectioning, freeze-etching, negative staining, and use of vacuum evaporator.

PCB 6176L—Laboratory in Electron Microscopy (2) *Coreq: PCB 6176 and consent of instructor.* Laboratory training in use of electron microscopes, ultramicrotomes, vacuum evaporators, and freeze-etch machines.

Molecular Genetics and Microbiology

College of Medicine

Graduate Faculty 2004-2005

Interim Chairman: H. V. Baker. *Graduate Coordinator:* A. S. Lewin. *Master's Program Director:* D. H. Duckworth. *Eminent Scholars:* W.W. Hauswirth; N. Muzyczka. *Professors:* H. V. Baker; K. I. Berns; B. J. Byrne; R. C. Condit; D. Driscoll; D. H. Duckworth; T. Flotte; P. A. Gulig; A. S. Lewin; R. W. Moyer; S. A. Moyer; M. S. Swanson; M. Wallace. *Associate Professors:* L.-J. Chang ; S. Hunger; S. Jin; R. Renne; J. L. Resnick; E. C. Scott; S. Swaminathan. *Assistant Professors:* D. Bloom; B. Harfe; S. Hochwald; R. Snyder; L. Zhou.

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., M.S./J.D., M.S./M.B.A., M.S./M.Ed., and M.S./M.S. (business administration-management) 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 designed for students who wish to have careers in the biomedical industry as research or managerial associates, become teachers or educators at any level but primarily high school or junior college, or to gain 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.

A program of concurrent studies leading to the Master of Business Administration and Master of Science (business administrationmanagement) degrees is offered in cooperation with the Warrington College of Business Administration. This concurrent program was established in response to the needs of businesses engaged in biotechnological sciences. Both degrees can be obtained in three years. The program requires one year of science courses, one year of business courses, and a year devoted to research and electives in business and science. Research may be done in any laboratory in the College of Medicine. Students must take both the GMAT and GRE prior to admission and meet the curriculum requirements of both degrees.

For more information contact Dr. Donna Duckworth, P.O. Box 100266, College of Medicine, Gainesville, FL 32610 or call (352)392-0681, or e-mail duckwort@college.med.ufl.edu.

GMS 6010—Yeast Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Use of the yeast *Saccharomyces cerevisiae*, as model eukaryotic cell for study of biological processes common to all eukaryotic organisms.

GMS 6011—Mouse Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals of mouse genetics and use of mouse model for study of human disease as well as advanced technical tools used for research and their application to novel problems.

GMS 6012—Human Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals of human genetics as well as advanced technical tools used for research.

GMS 6013—Developmental Genetics (1; max: 3) *Prereq: GMS 6001 or consent of instructor.* Theoretical framework for understanding fundamentals developmental genetics. Advantages and limitations of several model systems and their application to study of development.

GMS 6014—Applications of Bioinformatics to Genetics (1) *Prereq: GMS 6001; permission of instructor.* Storage, retrieval, and analysis of information related to genetics.

GMS 6015—Human Genetics II (1) *Prereq: GMS 6012; permission of instructor.* Theoretical framework, emphasizing functional genomics and bioinformatics as well as advanced technical tools used for research and development in these areas.

GMS 6034—Advanced Virology I: Genetics and RNA (1) *Prereq: consent of instructor.* Theoretical framework for understanding fundamental concepts of viral genetics and methods of analysis employed to elucidate mechanisms of virus reproduction.

GMS 6035—Advanced Virology II: RNA Viruses (1) *Prereq: consent of instructor.* Molecular biology and genetics of virology, focusing on molecular biology of RNA viruses.

GMS 6036—Molecular Virology III: DNA Viruses (1) *Prereq: consent of instructor.* Molecular biology and genetics of virology, focusing on replication and pathogenesis of DNA viruses.

GMS 6038—Bacterial Genetics and Physiology (1) *Prereq: GMS 6006 or consent of instructor.* Theoretical framework for understanding fundamental concepts.

GMS 6039—Bacterial Pathogenesis (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on genetics and physiology of bacteria, their use as research tools, and role of bacteria in causing disease.

GMS 6040—Host-Pathogen Interactions (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on host response and subsequent evasion of that response by pathogens.

GMS 6059—Gene Therapy from Bench to Bedside (1) *Prereq: GMS 6034, 6035, and 6036 or permission of instructor.* Design and use of gene transfer vectors for treating variety of diseases. Practical understanding of successes and hurdles in gene therapy.

GMS 6121—Infectious Diseases (3) *Prereq: permission 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 (3) *Prereq: GMS 6001 or consent of instructor.* Biological and biochemical aspects of hosts resistance and immunity; the chemical and physiochemical properties of the proteins of immune reactions.

GMS 6181—Special Topics in Microbiology (1-6; max: 18)

GMS 6190—Seminar (1; max:12) Presentations by invited speakers. S/U.

GMS 6195—Chromatin Structure and Gene Expression Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles in literature. S/U.

GMS 6920—Genetics Journal Colloquy (1; max: 12) *Prereq: consent of instructor.* Critical presentations and discussions of recent original articles. S/U.

GMS 6921—Immunology/Microbiology Journal Colloquy (1; max: 12) *Prereq: GMS 6001, 6006, or consent of instructor.* Critical presentations and discussions of recent original articles.

GMS 7191—Research Conference (1; max: 12) Critical discussion and appraisal of research programs of faculty and students of the department. S/U.

GMS 7192—Journal Colloquy (1; max: 12) Critical presentation and discussion of recent original articles in the gene therapy literature. S/U.

GMS 7194—Biotechnology Seminar (1; max: 12) *Prereq: Prereq or coreq: Molecular Biology.* Given concurrently with BCH 7410. Presentations related to biotechnology industry by outside speakers and students.

Music

College of Fine Arts

Graduate Faculty 2004-2005

Director: J. Duff. *Assistant Director:* R. G. Langford. *Graduate Program Advisers:* L. Odom *(Doctoral);* J. Helton *(Master's).* *Professors:* P. D. Basler; R. G. Burrichter; J. F. Davis; E. P. Graham; C. R. Hoffer; W. Kesling; D. Z. Kushner; J. C. Oliverio; R. L. Robinson; B. Sharon; D. A. Waybright. *Associate Professors:* K. L. Broadway; R. A. Chobaz; L. N. Crook; M. Estrin; J. A. Helton; A. C. Jennings; P. Koonce; J. Lower; L. Odom; P. S. Richards; J. P. Sain; K. Sharpe; C. M. Smith. *Assistant Professors:* T. Brophy; A. Irchai; K. Orr; B. J. Smith; K. Stoner; J. S. Thomas.

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, music history and literature, 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 includes concentrations in (1) music history and literature, with options in traditional musicology and ethnomusicology, and (2) composition, with options in acoustic and electroacoustic specialization. The program emphasis for the Ph.D. in music education is on college music teaching. 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 are, in addition, encouraged to publish their research in appropriate journals.

Complete descriptions of the minimum requirements for the M.M. and Ph.D. degrees are provided in the *General Information* section of this catalog.

The week before classes begin, students must take placement examinations in music history and literature 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.

MUC 5315—Introduction to Electroacoustic Music (3) *Prereq: MUC 2102 or equivalent.* Survey of techniques, history, literature, and materials of electroacoustic music.

MUC 6444—Composition of Electronic Music (3) *Prereq: MUC 4311 or 5315.* Experimental electroacoustic art music composition using interactive software and digital recording.

MUC 6445—Electroacoustic Music CompositionDigital I (3) *Prereq: MUC 4401 or 6444 or permission of instructor.* Introduction to direct-digital software synthesis systems through flowcharting, programming, and instrument design focusing on use of Csound software.

MUC 6446—Electroacoustic Music CompositionDigital II (3) *Prereq: MUC 6445 or permission of instructor.* Continuation of MUC 6445. Composition and research in direct-digital software synthesis systems to include advanced instrument design, algorithmic composition, and interactive digital signal processing.

MUC 6900—Secondary Graduate Composition (3; max: 15) *Prereq: permission of instructor.* Individual music composition instruction for graduate students in music.

MUC 6930—Graduate Composition (3; max: 6) Composition of chamber works for instrumental and/or vocal ensembles.

MUC 6932—Composition Seminar (1; max: 4) Identification of problematic techniques in development of compositional craft for research, presentation, and discussion.

MUC 7447—Advanced Seminar in Electroacoustic Music (3) *Prereq: MUC 6446 or permission of instructor.* Composition and research in advanced topics in computer music.

MUC 7931—Advanced Graduate Composition (3; max: 18) Composition for large instrumental and/or vocal ensembles.

MUE 6080—Foundations of Music Education (3) Historical development and philosophy; comparison of United States with other countries and cultures; individuals, associations and institutions that shape the music education program.

MUE 6385—Music in Higher Education (3) Various aspects and programs of music in higher education for persons who intend to teach in or administer departments of music.

MUE 6444—Materials and Methods of String Class Teaching (2) Survey of materials and methods suitable for public school string classes and orchestras.

MUE 6497—Public School Orchestral Literature (2) Survey of materials suitable for various educational levels.

MUE 6647—Trends in Teaching and Learning Music (3)

MUE 6785—Methods of Research in Music Education (3) Materials and specialized techniques of research in music education.

MUE 6931—Contemporary Curriculum Practices in Music Education (3) An exploration of 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 (3) *Prereq: MUS 6685.* Examination of methods and techniques for measuring and evaluating learning in music.

MUE 7938—Music Education Seminar (3) Contemporary issues and problems in music education and the investigation and planning of research relevant to selected problems.

MUG 6105—Graduate Conducting (3; max: 15) Conducting larger works from the standard repertoire for band, orchestra, and chorus.

MUG 7106—Advanced Graduate Conducting (3; max: 15) *Prereq: MUG 6105.* For conducting emphasis. Conducting major works for band, orchestra, and chorus, with emphasis on analysis and interpretation.

MUH 5219—Graduate Music History Review (3) Credit earned will not apply to credit-hour requirement of any graduate degree offered in the School of Music.

MUH 5505—Introduction to Ethnomusicology (3) *Prereq: permission of instructor.* Field research, use of oral, written, and media sources, transcription and analysis, and interpretative techniques.

MUH 6548—Seminar in Caribbean Music (3) Examination of historical, social, and aesthetic dimensions of Caribbean music and music making.

MUH 6549—Seminar in Brazilian Music (3) Examination of historical, social, and esthetic dimensions of Brazilian music and music making.

MUH 6635—Seminar in American Music (3) History and literature of American music from the landing of the pilgrims to the present.

MUH 6660—History of Opera (3) The historical development of opera and its literature from the Florentine Camerata to the present.

MUH 6671—Seminar in Renaissance Music (3) Selected topics from the Renaissance era for research and study.

MUH 6672—Seminar in Baroque Music (3) Selected topics from the Baroque era for research and study.

MUH 6673—Seminar in Classical Music (3) Selected topics from the Classical era for research and study.

MUH 6674—Seminar in Romantic Music (3) Selected topics from the Romantic era for research and study.

MUH 6675—Seminar in Twentieth-Century Music (3) Selected topics from the twentieth century for research and study.

MUH 6931—Nationalism in Music (3) The historical development of nationalistic movements in music with emphasis on the nineteenth and twentieth centuries.

MUH 7411—Medieval and Renaissance Notation (3) Practical experience in transcriptions of lute and organ tablatures.

MUH 7938—Musicology Seminar (3; max: 9) *Prereq: MUS 6716.* Contemporary issues and problems in musicology, and the investigation and planning of research relevant to selected problems.

MUL 6435—String Literature (3) Survey of solo study materials suitable for preparatory departments affiliated with conservatories and universities.

MUL 6486—Piano Literature (3) Survey of piano literature from the Baroque era to the present.

MUL 6555—Survey of Wind Literature (3) Literature for chamber and larger wind ensembles from Baroque to present.

MUL 6565—Chamber Music Literature (3) Survey of music literature for chamber ensemble from the Baroque era to the present.

MUL 6645—Choral Literature (3) Survey of choral music from Renaissance to present.

MUN 6010—Graduate Ensemble (1; max: 3) For graduate students holding positions of leadership and participating in music ensembles.

MUN 6125—Concert Band (1; max: 4) Performance of general and popular band literature.

MUN 6135—Symphonic Band (1; max: 4) Performance of traditional and contemporary band literature.

MUN 6145—Symphonic Wind Ensemble (1; max: 4) Performance of wind ensemble literature.

MUN 6215—University Orchestra (1; max: 4) Standard orchestra literature.

MUN 6315—University Choir (1; max: 4) Advanced choral group providing specialized study performance opportunities for vocally qualified students.

MUN 6325—Women's Chorale (1; max: 4) Vocal training and public performance of standard female chorus repertoire.

MUN 6335—Men's Glee Club (1; max: 4) Vocal training and public performance of standard male chorus repertoire.

MUN 6445—Percussion Ensemble (1; max: 4) Study and performance of ensemble literature for percussion instruments.

MUN 6495—Steel Drum Ensemble (1; max: 8) *Prereq: permission of instructor.* Rehearsal, performance and historical aspects of steel drum.

MUN 6496—World Music Ensemble (1; max: 4) Rehearsal and performance of folk and traditional music of the world.

MUN 6497—New Music Ensemble (1; max: 15) *Prereq: permission of instructor.* Rehearsal and performance of repertoire for small ensembles written in 20th and 21st centuries.

MUN 6715—Jazz Band (1; max: 4) Standard and experimental jazz ensemble. Jazz laboratory.

MUR 6206—Survey of Hymnody (3) The 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 (3) Development of congregational and choral song from the early church to the present; survey of instrumental forms in worship music.

MUS 5665—Music Criticism (3) History and literature of music criticism. Practical experience in writing reviews of musical compositions and of live and recorded performances.

MUS 5911—Directed Study (1-3; max: 12) *Prereq: May not count toward completion of degree requirements. To provide graduate students, who are making change of degree concentration, with opportunity to achieve knowledge and /or skills not acquired in previous programs.* S/U.

MUS 6547—Music and Sound Design for Digital Media (3) *Prereq: graduate level status or permission of instructor.* Investigation of techniques, tools, and current research in music and sound design for digital media for digital arts and science non-music majors.

MUS 6685—Foundations of Musical Behavior (3) Cultural influences, learning conditions, biological constraints, psychoacoustical phenomena, musical taste, the measurement and prediction of musical taste, the measurement and prediction of musical ability.

MUS 6716—Methods of Musical Research and Bibliography (3) Materials and specialized techniques of research in musicology.

MUS 6905—Projects and Problems in Music (3; max: 12 including MUS 7905) Approved problems for study and research.

MUS 6910—Supervised Research (1-5; max: 5) S/U.

MUS 6940—Supervised Teaching (1-5; max: 5) S/U.

MUS 6971—Research for Master's Thesis (1-15) S/U.

MUS 6973—Individual Project (1-10; max: 10) Creative project or graduate recital in lieu of written thesis. Project or recital must be acceptable to candidate's supervisory committee and to the Graduate School. S/U.

MUS 7656—Teaching Music and the Creative Process (3) *Prereq: graduate composition major or permission of instructor.* Examination of creative process, appropriate pedagogical applications, and curricular implications.

MUS 7905—Projects and Problems in Music (3; max: 12 including MUS 6905) For doctoral students. Approved problems for study and research.

MUS 7979—Advanced Research (1-12) 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. S/U.

MUS 7980—Research for Doctoral Dissertation (1-15) S/U.

MUT 6xxx—Contemporary Styles (3) *Prereq: MUT 6629.* Recent trends in music through score study and analysis, composition exercises, and supplementary readings.

MUT 6051—Graduate Music Theory Review (3) Credit earned will not apply to credit-hour requirement of any graduate degree offered in the School of Music.

MUT 6445—Advanced Counterpoint (3) *Prereq: MUT 4411, 4421.* Emphasis on advanced harmonic techniques and upon fugal writing.

MUT 6531—Figured Bass and Continuo Performance (3) Theoretical principles and practical application of figured bass realization and continuo performance practice techniques.
MUT 6565—Late Nineteenth- and Twentieth-Century Styles (3) *Prereq: MUT 6629.* Analysis of exemplary works of the late nineteenth and twentieth centuries.
MUT 6624—Seminar in Set Theory (3) *Prereq: MUT 6629.* Advanced study in set theory for analysis of music.
MUT 6627—Seminar in Reductive Analysis (3) *Prereq: MUT 6629.* Advanced study in reductive approach to analysis of music.
MUT 6629—Analytical Techniques (3) Study of analytical systems and methodology emphasizing style analysis and the integration of all elements of music.
MUT 6751—Pedagogy of Music Theory (3) *Prereq: MUT 6629.* Techniques and art of teaching music theory and conditions for effective learning.
MUT 6936—Music Theory Seminar (1; max: 4) *Prereq: MUT 6629.* Selected topics from current research for study, presentation, and discussion.
MUT 7316—Advanced Orchestration (3) Analysis of nineteenth- and twentieth-century compositions for full orchestra and orchestration of original scores and arrangements for full orchestra.
MUT 7585—Seminar in Musical Style (3) *Prereq: MUT 6629.* Analysis of exemplary works from the Medieval period to the early nineteenth century.
MUT 7760—History of Music Theory (3) The study of musical theories, primarily through readings, from ancient Greece to the present.
MVK 5156—Improvisational Keayboard Skills and Related Technology (3) *Prereq: upper-division and graduate keyboard majors and minors, or permission of instructor.* Improvisational skills, electric keyboard technology, and musical styles outside classical realm.
MVK 6605—Organ Pedagogy (3) Introduction to teaching basic organ performance techniques, posture, and approaches to practice.
MVK 6651—Piano Pedagogy (3) Introduction to the teaching of basic piano performance and literature.
MVK 6661—Advanced Piano Pedagogy (3) Teaching materials for intermediate and advanced student; methodologies of piano technique.
MVO 6250—Secondary Music Performance (3; max: 15) Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.
MVO 6460—Music Performance (3; max: 9) Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.
MVO 7260—Secondary Music Performance (3; max: 15) For doctoral students. Offered in piano, voice, organ, harpsichord, historical instruments, conducting, carillon, and all standard band and orchestral instruments.
MVO 7460—Music Performance (3; max: 9) 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 (3) Survey of Suzuki violin pedagogy from Unit IA (Pre-Twinkle) through Unit IV(Vivaldi A Minor Concertos) .
MVV 6651—Vocal Pedagogy (3) *Prereq: SPA 3101 or equivalent.* Study and teaching of vocal techniques.

Neuroscience

College of Medicine

Graduate Faculty 2004-2005

Chairman: D. K. Anderson. *Graduate Coordinator:* S. Semple-Rowland. C. M. and K. E. Overstreet *Professor of Neuroscience and Neurological Surgery:* D. K. Anderson. Mark F. Overstreet *Professor of Neurological Surgery and Neuroscience:* P. J. Reier. *Professors:* B. W. Ache; P. A. V. Anderson; B. M. Battelle; S. J. Blackband; P. Blier; W. Friedman; M. S. Gold; R. L. Hayes; M. B. Heaton; M. Heft; R. D. Johnson; P. S. Kalra, S. P. Kalra; M. A. King; C. M. Leonard; M. H. Lewis; P. Linser; W. G. Luttge *(Emeritus);* D. F. Muir; H. S. Nick; J. M. Petitto; D. D. Price; R. L. Reep; S. Roper; J. C. Sackellares; N. Scarpace; G. Shaw; P. Small; D. J. Stehouwer; D. A. Steindler; W. J. Streit; C. Sumners; T. W. Vickroy; C. J. Vierck *(Emeritus);* D. W. Walker *(Emeritus);* R. Yezierski. *Associate Professors:* K. J. Anderson; D. C. Bolser; R. M. Caudle; B. Y. Cooper; D. F. Muir; R. Mandel; L. A. Ritz; S. L. Semple-Rowland; F. J. Thompson; B. Uthman; K. Wang; C. G. Widmer. *Assistant Professors:* P. Bedenbaugh; P. R. Carney; L. Hayward; D. R. Howland; Y. Liu; A. Martynyuk; L. Moroz; L. Notterpek; W. C, Smith; A. M. Timmers.

The Graduate Faculty of the Department of Neuroscience participates in the interdisciplinary program (IDP) in medical sciences, leading to the Doctor of Philosophy degree. Neuroscience is one of the six advanced concentration areas of the IDP (see *Medical Sciences*). The faculty associated with this advanced concentration have expertise in neuroanatomy, molecular and cellular neurobiology, neuroembryology, aging, neurotransmitter chemistry and pharmacology, neuroendocrinology and immunology, cellular and molecular neuro-oncology, cellular and membrane neurophysiology, somatosensory and motor systems, transplantation neurobiology, injury and repair of the CNS, and neurobehavioral sciences. Interdisciplinary study in marine vertebrate and invertebrate neurobiology is available through departmental faculty at the Whitney Laboratory. Many of the faculty are involved in multidisciplinary, collaborative research efforts that are aimed at understanding basic neurobiological mechanisms.

The College of Medicine houses state-of-the-art research facilities maintained by the Interdisciplinary Center for Biomedical Research (ICBR), the McKnight Brain Institute, the Clinical Research Center, several other University of Florida Research Centers listed on the Medical Science page, and individual research laboratories. Together these facilities provide services for DNA and protein synthesis and sequencing, hybridoma production, confocal and electron microscopy, NMR spectroscopy, computing and molecular modeling, flow cytometry, transgenic mouse production, and gene therapy vector construction. The University of Florida libraries, including the Health Center library, form the largest information resource system in the state of Florida, and support up-to-date computer-based bibliographic retrieval services.

GMS 6051—Signal Transduction (1) *Prereq: GMS 6001 or consent of instructor.* Focused study of mechanisms of cellular signal transduction.
GMS 6072—Neuroendocrinology and Neuroimmunology (1) *Prereq: GMS 6007 or consent of instructor.* Cellular and molecular mechanisms regulating interactions between immune, endocrine, and nervous systems.

GMS 6073—Developmental Neurobiology (1) *Prereq: GMS 6007 or consent of instructor.* Broad view of current understanding of how nervous system develops, including both cellular and molecular perspectives.

GMS 6074—Comparative Neurobiology (2) *Prereq: GMS 6007 or consent of instructor.* Broad perspective on nervous system evolution, structure and function in different species, and detailed overview of mammalian nervous systems showing principles of cytoarchitecture.

GMS 6078—Synaptic Function and Plasticity (1) *Prereq: consent of instructor.* Synapses that mediate fast electrical excitation and inhibition in 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 in relation to neuroplastic events.

GMS 6079—Computers in Biology (1) *Prereq: GMS 6001 or consent of instructor.* Short lectures and demonstrations that introduce use of computers in studies of protein and nucleic acid sequences and cellular function.

GMS 6705—Fuctional Human Neuroanatomy (4) *Prereq: permission of instructor.* Intensive introduction covering anatomy, function, and dysfunction of human central nervous system

GMS 6709—Current Topics in Vision (1) *Prereq: GMS 6001 or consent of instructor.* Genetics, molecular biology, biochemistry of vision and associated diseases.

GMS 6711—Neurobiology of Pain (1) *Prereq: GMS 6001 or permission of instructor.* Overview of neurobiological processes involved in pain, including methods of investigating pain processing in both human and other animals.

GMS 6750—Molecular Pathobiology of Neural Disease (1) *Prereq: consent of instructor.* Overview of broad range of neural disorders with emphasis on genetically determined conditions. Offered summer semester only.

GMS 6760—Comparative Biology of Cell Signaling (2) *Prereq: GMS 6001 or consent of coordinator.* Basic principles of cellular and molecular signaling in nervous system and introduction to novel experimental approaches and nonmammalian preparations used to explore function of nervous system.

GMS 6791—Visual Neuroscience Journal Club (1; max: 2) *Prereq: 1st year IDP core course or consent of instructor.* Presentation and discussion of cutting-edge research papers. S/U.

GMS 7794—Neuroscience Seminar (1; max: 12) Local, national, and occasionally international speakers. S/U.

GMS 7795—Special Topics in Neuroscience (1-4; max: 12) Intensive readings and lectures in specialized fields of neuroscience and allied disciplines.

Nuclear and Radiological Engineering

College of Engineering

Graduate Faculty 2004-2005

Chairman: A. Haghighat. *Graduate Coordinator:* W. E. Bolch. *Graduate Research Professor:* A. E. S. Green. *Professors:* S. Anghaie; W. E. Bolch; F. J. Bova; G. R. Dalton; J. R. Fitzsimmons; A. Haghighat; A. M. Jacobs; M. J. Ohanian *(Emeritus);* G. J. Schoessow *(Emeritus);* K. N. Scott; E. V. Staab, Jr.; J. S. Tulenko. *Associate Professors:* E. T. Dugan; L. T. Fitzgerald; D. E. Hintenlang; N. P. Mendenhall; J. R. Palta; W. S. Properzio. *Associate Engineer:* W. G. Vernetson. *Assistant Professors:* M. Arreola; C. Liu; S. L. Meeks; S. S. Shukla; T. C. Zhu.

The Department offers the degrees of Master of Science, Master of Engineering, Engineer, and Doctor of Philosophy in nuclear engineering sciences with emphases in nuclear power engineering, health physics, medical physics, engineering physics, and biomedical engineering. 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 and the Department of Environmental Engineering Sciences (see the *Health Physics and Medical Physics* description under *Interdisciplinary Graduate Studies*). The Biomedical Engineering program is college-wide.

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 a strong emphasis on the radiological engineering sciences. Specific areas of study include advanced and space nuclear power concepts and systems, space nuclear propulsion, nuclear reactor power plant technology and operations, reactor dynamics and control, environmental aspects of nuclear power generation, mobile robotics for hazardous environments, nuclear waste management, reactor physics, nondestructive evaluation of structures and materials, radiographic imaging technique development, nuclear detection and instrumentation, bionucleonics, radiation dosimetry, medical diagnostic imaging, medical radiation physics, radiation biology, and health physics.

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. 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 omit the master's thesis 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). In such cases the completion of 32 credits will meet the minimum requirements for the nonthesis 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. If articulation work is required, it may take longer, depending upon the extent of the student's deficiency.

In addition to graduate courses in nuclear engineering, the following courses are acceptable for in-department graduate credit as part of the health physics option: ENV 6215—Health Physics; ENV 6215L—Health Physics Laboratory; ENV 6216—Radioactive Wastes; ENV 6932—Special Problems in Environmental Engineering; and STA 6166—Statistical Methods

in Research. The medical physics option includes the following courses for in-department graduate credit: ENV 6215—Health Physics and STA 6166—Statistical Methods in Research.

ENU 5142—Reliability and Risk Analysis for Nuclear Facilities (3) *Prereq: ENU 4144 or 5005 and 4934 or 6935.* Nuclear facilities' safety systems including reliability and probabilistic risk assessment.

ENU 5176L—Principles of Nuclear Reactor Operations Laboratory (1) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 (2) *Prereq: ENU 4612L or 5615L and 4104 or 6106.* Laboratory practice in neutron and gamma detection and analysis. Determination of basic neutron parameters in nonmultiplying and multiplying media.

ENU 5615—Nuclear Radiation Detection and Instrumentation (3) Interaction of radiation with matter, radiation detector 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 (1) Laboratory associated with ENU 5615.

ENU 5626—Radiation Biology (3) *Prereq: 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—Image Analysis with Medical Physics Applications (3) Description and processing of images obtained using X-ray/neutron fields. Filtering, enhancement, reconstruction of CT and coded aperature images. Digital and optical methods.

ENU 5705—Advanced Concepts for Nuclear Energy (3) *Prereq: 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 (3) 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 (3) 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 (3) 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 (1) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 6623—Radiation Dosimetry (3) 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 (3) *Prereq: ENU 5615, EEL 6051, 6053.* 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—Advanced Radiation Shielding Design (2) *Prereq: ENU 6051, 6053.* 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 (3) *Prereq: working knowledge of therapeutic radiological physics.* Experience in clinical therapeutic radiological procedures, patient dosimetry, and treatment planning.

ENU 6652—Clinical Rotation in Diagnostic Radiology (3) *Prereq: 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 6657—Diagnostic Radiological Physics (3) *Prereq: ENU 5615, 6051, 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 (2) *Prereq: ENU 5615 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 6905—Individual Work (1-6; max: 12) Supervised study or research in areas not covered by other graduate courses.

ENU 6910—Supervised Research (1-5; max: 5) S/U.

ENU 6935—Nuclear and Radiological Engineering Seminar (1; max: 3) Discussion of research, current trends in the nuclear related industry, government, and research establishments.

ENU 6936—Special Projects in Nuclear and Radiological Engineering Sciences (1-9; max: 12) Nonthesis research projects. H.

ENU 6937—Special Topics in Nuclear and Radiological Engineering Sciences (1-9; max: 12) H.

ENU 6971—Research for Master's Thesis (1-15) S/U.
ENU 6972—Research for Engineer's Thesis (1-15) S/U.
ENU 7979—Advanced Research (1-12) 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. S/U.
ENU 7980—Research for Doctoral Dissertation (1-15) S/U.

Nursing

College of Nursing

Graduate Faculty 2004-2005

Dean: K. A. Long. *Graduate Coordinator:* J. Richard. *Eminent Scholar:* C. Ash. *Professor:* D. D. Williams. *Associate Professors:* J. H. Elder; K. Godbey; A. C. Gregg; A. L. Horgas; J. V. Jessup; M.A. Rowe; S. F. Seymour; S. H. Simpson; M. J. Snider; J. K. Stechmiller; D. Treloar; H. N. Yarandi. *Assistant Professors:* L. Beebe; S. Kneipp; C. A. Krueger; B. Lutz; N. N. Menzel; D. C. Neff; A. H. Poe; S. D. Schaffer; B. A. Weber; S. J. Yoon.

The nationally ranked College of Nursing offers the graduate degrees of Master of Science in Nursing and Doctor of Philosophy in nursing science. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The master's degree (thesis or nonthesis option) prepares nurses for advanced practice 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 clinical contents and relevant experiences. The College offers master's degrees and post-master's certification for nurse midwifery and the following nurse practitioner roles: acute care, adult, family, pediatric, and neonatal. One track prepares psychiatric/mental clinical nurse specialists/nurse practitioners and clinical nurse specialists in medical-surgical nursing. An additional track prepares clinical nurse leaders to coordinate, manage and evaluate care for groups of patients in complex health care systems. Graduates are eligible for Florida and national certification.

The College's doctoral program prepares scientists, scholars, and leaders in nursing. Comprehensive research preparation is achieved by pairing students with faculty researchers. Students have access to an array of faculty members for interdisciplinary study and research. A core curriculum includes knowledge development, theory, ethics, a selected nonnursing minor, and advanced research. Individually directed dissertation research is a major aspect. Research in the College includes aging and health, women's health, biobehavioral interventions, and health policy.

Applicants are considered for admission to the master's degree program when they have fulfilled the general requirements for admission to the Graduate School including the three components of the GRE and have presented the following credentials for evaluation: completion of an undergraduate nursing program substantially equivalent to the baccalaureate program at the University of Florida; eligibility for licensure to practice as a registered nurse in Florida; references attesting to professional and academic competence; a statement of academic and professional goals, personal data form, and a resume. Progression in the program is dependent upon the student's ability to meet academic standards and clinical competencies as defined by college policy.

Nurses are considered for admission to the doctoral program when they have fulfilled the general requirements for admission to the Graduate School and presented the following credentials for evaluation; completion of a master's degree in nursing or health-related field from a nationally accredited program; eligibility for licensure to practice as a registered nurse in Florida; references attesting to the applicants' potential for doctoral studies; a curriculum vitae; a statement of professional goals and research focus. A personal interview is preferred to establish a faculty mentor who will work with the student to individualize the academic program and structure each student's research focus.

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 offers a combined bachelor's/master's degree program. Additional information about our programs is available at http://www.nursing.ufl.edu or (352) 273-6400.

NGR 5934—Cultural Influences on Health Care (2)
NGR 6002C—Advanced Health Assessment (4) *Prereq: Prereq or coreq: NGR 6140. Required core course.* Diverse clients across life span with emphasis on data analysis and diagnostic reasoning.
NGR 6005—Principles of Clinical Outcomes Management II (2) *Prereq: NGR 6081, 6727; coreq: NGR 6803, 6726, 6771.* Health care management utilizing principles of evidence-based practice.
NGR 6020C—Advanced Neonatal Health Assessment and Diagnostic Reasoning (4) *Prereq: NGR 6320C, 6140.* Symptom/health problem assessment in neonate and interpretation of screening and diagnostic tests to formulate a differential diagnosis.
NGR 6052C—Adult Nursing: Diagnostics and Procedures (1) *Prereq: NGR 6002C, 6101, 6140, 6636; prereq or coreq: NGR 6241, 6241L or 6245L, 6192, 6803.* Selected advanced practice nursing interventions utilized in care of acutely ill adults.
NGR 6053C—Acute Care Nurse Practitioner: Diagnositcs and Procedures for the Critically Ill (1) *Prereq: NGR 6002C, 6101, 6140, 6636; prereq or coreq: NGR 6052C, 6241, 6241L or 6245L, 6192, 6803.* Necessary nursing skills for care of critically ill in acute care settings.
NGR 6081—Principles of Clinical Outcomes Management I (3) *Prereq: NGR 6130, 6193, 6770; coreq: NGR 6002C, 6636, 6101, 6727.* Health care management of client aggregates.
NGR 6101—Theory and Research for Nursing (3) Critical examination of theory and research from nursing and related fields. Emphasis on relationships among theory, research, and practice.
NGR 6130—Ethical Perspectives in Nursing (2) *Prereq: NGR 6101. Required core course.* Analysis of theories of value acquisition, models of ethical decision making, and critical ethical incidents in nursing practice and research.
NGR 6140—Physiology and Pathophysiology for Advanced Nursing Practice (4) *Required core course.* Human physiology including normal changes throughout the life span, pathophysiology, and their implications for nursing.
NGR 6150—End of Life Care (3) Issues faced by individuals with terminal diagnoses across the lifespan.
NGR 6175—Pharmacotherapeutics for Advanced Practice Neonatal Nursing (3) *Prereq: NGR 6320C, 6020C, 6140.* Selection and management of drug therapy and monitoring therapeutic responses in neonate.

NGR 6190—Health Care Policy and Organizational Delivery (2) *Required core course.* Overview of health care policy and framework for understanding and evaluating organizational implication for delivery of health care.

NGR 6192—Pharmacotherapeutics for Advanced Practice Nursing (4) *Prereq: NGR 6140/6992C. Required core course.* Selection and management of clinical drug applications in advanced nursing practice in primary care settings.

NGR 6193—Policy, Organization, and Finance of Health Care Systems (4) *Prereq: NGR 6101.* Social policy and principles of economic and behavioral management in health care delivery.

NGR 6237—Acute Care Nursing for Adults I (3) Advanced nursing management of pulmonary, cardiovascular, and infectious disease health problems.

NGR 6237L—Clinical Laboratory for Acute Care Nursing for Adults I (1-4; max: 4) Clinical experience in advanced nursing management of pulmonary, cardiovascular, and infectious disease health problems in acute care settings. S/U.

NGR 6238—Acute Care Nursing for Adults II (2) Advanced nursing management of gastrointestinal, genitourinary, and musculoskeletal health problems.

NGR 6238L—Clinical Laboratory for Acute Care Nursing for Adults II (1-4; max: 4) Clinical experiences in advanced nursing management of gastroinestinal, genitourinary, and musculosketal health problems in acute care settings. S/U.

NGR 6239—Acute Care Nursing for Adults III (3) Advanced nursing management of neurological, mental health, hematological/oncological, and endocrine health problems.

NGR 6239L—Clinical Laboratory for Acute Care Nursing for Adults III (1-4; max: 4) Clinical experiences in advanced nursing management of neurological, mental health, hematological/oncological, and endocrine health problems in acute care settings. S/U.

NGR 6240—Primary Care for Adults (3) *Prereq: Prereq or coreq: NGR 6140, 6002C. Required core course.* Primary care and nursing management of adults experiencing common alterations in their health.

NGR 6241—Adult Nursing: Common Health Problems (4) *Prereq: NGR 6002C, 6636, 6101, 6140; prereq or coreq: NGR 6052C, 6192, 6241L or 6245L, 6803.* Advanced nursing management of common health problems. Focus on care of adults wing single and multisystem diseases in acute and out-patient settings.

NGR 6241L—Adult Nurse Practitioner: Common Health Problems Laboratory (2) *Prereq: NGR 6002C, 6636, 6101, 6140; prereq or coreq: NGR 6241, 6052C, 6192, 6803.* Clinical application of advanced nursing management by nurse practitioners of common health problems in adults with single and multisystem diseases in acute and out-patient settings.

NGR 6243—Acute Care Nurse Practitioner: Critically Ill Adult (4) *Prereq: NGR 6052, 6053, 6241, 6241L; coreq: NGR 6243L.* Focus on care of physiologically unstable adults with multiple complex health problems requiring critical care and emergency stabilization.

NGR 6243L—Acute Care Nurse Practitioner: Critically Ill Adult Laboratory (2) *Prereq: NGR 6052, 6053, 6241, 6241L; coreq: NGR 6243.* Clinical application of advanced management of critically ill adults. Focus on care of physiologically unstable adults. S/U.

NGR 6244—Adult Nursing: Chronic Health Problems (2) *Prereq: NGR 6052, 6241, 6241L; coreq: NGR 6244L or 6246L, 6255.* Advanced nursing management of chronic health problems. Focus on care of adults with multisystem health problems requiring ongoing management in acute and out-patient settings.

NGR 6244L—Adult Nurse Practitioner: Chronic Health Problems Laboratory (2) *Prereq: NGR 6052, 6241, 6241L; coreq: NGR 6244, 6255.* Clinical application of advanced nursing management of health problems in adults. Focus on provision of adult care in acute and out-patient settings. S/U.

NGR 6255—Advanced Nursing Care of Older Adult (2) *Prereq: NGR 6241, 6241L, 6240, 6192; coreq: NGR 6244, 6244L.* Health care problems that result from normal and pathologic aging. Emphasis on gaining knowledge necessary to prevent, diagnose, and manage both acute and chronic age-related health problems.

NGR 6320C—Neonatal Care I (2) *Prereq/coreq: NGR 6101, 6020C, 6140, 6636.* Advanced theory and care of low risk neonates.

NGR 6321C—Neonatal Care II (5) *Prereq: NGR 6320C; prereq/coreq: NGR 6175, 6803.* Advanced theory and care of high risk and critically ill neonates.

NGR 6323C—Neonatal Care III (5) *Prereq: NGR 6321C.* Advanced theory and care of high risk infants with complex and chronic health problems.

NGR 6331C—Pediatric Primary Care I (6) *Prereq: NGR 6002C, 6140, 6240, 6636; coreq: NGR 6192.* Advanced study in nursing for the maintenance of health and prevention of diseases in children.

NGR 6332C—Pediatric Primary Care II (6) *Prereq: NGR 6331C.* Nurse practitioner management of common pediatric health problems.

NGR 6450C—Nurse-Midwifery Care I (7) *Prereq: NGR 6002C, 6140, 6192, 6240.* Management of women seeking gynecological, antepartal, intrapartal, or postpartal care and care of newborns.

NGR 6451C—Nurse-Midwifery Care II (6) *Prereq: NGR 6450C.* Management of at-risk women seeking gynecological, antepartal, intrapartal, or postpartal care and at-risk infants.

NGR 6500C—Individual and Family Therapy for Psychiatric-Mental Health Nursing (6) *Prereq: NGR 6002C, 6101, 6140, 6192, 6538, 6636.* Assessment, prevention and/or treatment and rehabilitation of clients with major psychiatric disorders and their families.

NGR 6501C—Group Therapy and Community Interventions for Psychiatric-Mental Health Nursing (6) *Coreq: NGR 6500C.* Current theories in group therapies for adult clients with dysfunctional interpersonal patterns and communities with dysfunctional patterns.

NGR 6538—Psychopharmacology for Psychiatric Nursing (3) *Prereq: six credits in psychiatric nursing.* Knowledge base for prescription and management of psychotropic medications in treatment of psychiatric disorders.

NGR 6601C—Family Nurse Practitioner I (6) *Prereq: NGR 6140, 6002C, 6240, 6636.* Theories and practice in health care of reproductive families and children from infancy through adolescence.

NGR 6602C—Family Nurse Practitioner II (6) *Prereq: NGR 6601C.* Theories and practice in the health care of individuals in early, middle, and late adulthood.

NGR 6621—Public Health Nursing Competencies (3) *Prereq: NGR 6636.* Examination of foundations of public health and public health nursing.

NGR 6636—Wellness Promotion and Disease Prevention (3) *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 (3) *Prereq: NGR 6727, 6081; coreq: NGR 6803, 6005, 6771.* Functions of health care team in maintenance of high quality care.

NGR 6727—Organizational and Financial Structure of Health Care Delivery Systems (3) *Prereq or coreq: NGR 6101. Required core course.* Theories, research, principles of economic and budget management, and organizational behavioral systems related to advanced nursing practice.

NGR 6728C—Perspectives on Nursing Care Management (4) *Prereq or coreq: 6733C, 6803.* Nursing and organizational theories related to integrated managed care systems with emphasis on professional role of nursing in patient care delivery models.

NGR 6729C—Nursing Management in Complex Health Care Organizations (3) *Prereq: NGR 6733C.* Redesign and reengineering of structures, processes, and outcomes related to complex client care systems. Consultation and project management.

NGR 6732C—Nursing Management in a Changing Health Care Environment (4) *Prereq: NGR 6190, 6729C; Prereq or coreq: NGR 6727.* Organizational, developmental, and behavioral processes of U.S. health care delivery systems.

NGR 6733C—Resources Management for Nursing Care (3) *Prereq or coreq: NGR 6636, 6193, 6803..* Human resource management including staffing, budget, and financial processes necessary for client care management.

NGR 6739—Seminar: Role Integration for Nurse Managers (2) *Prereq or coreq: NGR 6729C.* Role integration incorporating concepts of client care delivery, organizational development, management and financial systems, and human resources.

NGR 6740—Role Transition: Issues in Advanced Practice Nursing (2) *Prereq: 1 clinical course, NGR 6636.* Analysis of current practice issues and roles of nurses in advanced practice.

NGR 6751—Seminar: The Nurse Midwife (2) *Prereq or coreq: NGR 6450C. Required for nurse-midwifery students.* Analysis and synthesis of role behaviors of the nurse-midwife as a clinical specialist in selected settings.

NGR 6770—Leadership/Role of Clinical Nurse Leader (2) *Prereq: admission to CNL track of M.S.Nsg. program.* Introduction to role.

NGR 6771—Clinical Nurse Leader Role Seminar (2) *Prereq: NGR 6081, 6727; coreq: NGR 6803, 6005, 6726.* Synthesis of concepts presented within clinical nurse leader curriculum.

NGR 6801—Research Methods and Interpretation for Nursing (3) *Prereq: NGR 6101. Required core course. Second of 3-course sequence including NGR 6101 and 6802.* Critical theory and research to develop evidence-based practice.

NGR 6802—Research Utilization (2) *Prereq: NGR 6101, NGR 6801. Required core course. Third of 3-course sequence including NGR 6101 and 6801.* Written synthesis of major findings in literature related to specific nursing practice question or problem. Formulation of recommendations for evidence-based practice. S/U.

NGR 6803—Research Methods and Utilization for Nursing (3) *Prereq: NGR 6101.* Knowledge and skills to critique theory and research from nursing and related fields as basis for evidence-based practice.

NGR 6815—Foundations of Qualitative Research in Nursing (3) *Prereq: NGR 6101 or equivalent and NGR 6803 or equivalent.* Introduction to philosophical, historical, and theoretical bases.

NGR 6840—Applied Statistical Analysis I (3) *Prereq: NGR 6803 or equivalent and doctoral statistics orientation.* Advanced procedures for data analysis and statistical inference in nursing research.

NGR 6845—Applied Statistical Analysis II (3) *Prereq: NGR 6840.* Analysis and application of advanced multivariate statistical procedures to develop design for individual research questions.

NGR 6905—Individual Study (1-3; max: 6)

NGR 6930—Special Topics in Nursing (1-3; max: 6)

NGR 6941—Practicum in Nursing (3-6; max: 6) *Prereq: satisfactory completion of core and clinical courses. Required for all students.* S/U.

NGR 6942—Clinical Nurse Leader Residency/Internship (3) *Prereq: all required courses in CNL track.* Full-time residency experience to provide opportunity for immersion in CNL role. S/U.

NGR 6944—Individual Clinical Practice (1-4; max: 6) *Prereq: enrollment in or completion of graduate level courses in clinical nursing.* Additional opportunities for advanced nursing practice. Objectives to be developed collaboratively by student and faculty. S/U.

NGR 6947—Oncology Nursing I (4) *Coreq: NGR 6947L.* Specialized knowledge related to prevention, diagnosis, and treatment of cancer.

NGR 6948—Oncology Nursing II (4) *Coreq: NGR 6948L.* Focus on management of disease and treatment-related high incidence problems experienced by clients with cancer.

NGR 6970—Research for Master's Project (1-4) S/U.

NGR 6971—Research for Master's Thesis (1-15) S/U.

NGR 7115—Philosophy of Nursing Science (3) Critical examination of the meaning, method, and logical structures of science and nursing sciences with emphasis on the logical methodological analyses of aims, methods, criteria, concepts, laws, and theories.

NGR 7124—Theory Development in Nursing (3) *Prereq: NGR 7115.* Analysis of existing paradigms, theories, and theoretical models, derived or tested through research in nursing.

NGR 7133—Ethical Theories and Rational Decision Making in Health Care (3) *Prereq: NGR 6130, 7115.* Analysis of ethical theories and testing of theory applicability within nursing.

NGR 7814—Qualitative Field Methods for Nursing Science (3) *Prereq: NGR 6815.* Data collection methodologies used in qualitative nursing research.

NGR 7816—Quantitative Research Design and Measurement in Nursing (3) *Prereq: NGR 6101 or equivalent and NGR 6803 or equivalent.* Evaluation of quantitative research methods and designs with attention to internal and external validity.

NGR 7817—Qualitative Epistemologies and Methods (3) *Prereq: NGR 7815.* Selected epistemologies and methods used in nursing research.

NGR 7979—Advanced Research (1-12) 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. S/U.

NGR 7980—Research for Doctoral Dissertation (1-15) S/U.

Occupational Therapy

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chair: W. C. Mann. *Associate Chair and Director of Advanced Graduate Program:* C. A. Velozo. *Director of Entry-Level Graduate Program:* J. J. Foss. *Director of Distance Learning Graduate Program:* E. Pugh. *Professors:* W. C. Mann; C. A. Velozo. *Associate Professors:* L. Richards; O. Shechtman.

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—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. A course in basic statistics is required, three letters of reference, and a letter of application.

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.

Preceding their professional preparation, 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 prior to initiating the M.O.T. program.

Students are only admitted into the program in summer semester and graduate at the end of the fall semester following 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.

OTH 5002—Foundations of Occupational Therapy (3) Foundations, development, and professional ethics, values and responsibilities of profession.

OTH 5017—Applied Kinesiology (3) *Prereq: OT graduate student.* Application of kinetics and kinematics.

OTH 5018—Preclinical Seminar for Occupational Therapy Graduate Students (2) *Prereq: OT graduate student.* Foundations of clinical and professional roles and skills for entry-level occupational therapist.

OTH 5113C—Practicum in Applied Therapeutic Activities (1) Occupational therapy activity programs in community projects.

OTH 5115C—Therapeutic Skills (3) *Prereq: OT graduate student.* Activity and its relationship to human occupation and occupational therapy.

OTH 5205—Applied Human Development I (3) *Prereq: OT graduate student.* Overview of human development from conception through childhood as it pertains to occupational therapy.

OTH 5324—Psychosocial Intervention (4) *Prereq: OT graduate student.* Historical and current models for application of occupational therapy to psychosocial problems.

OTH 5326—Theory and Application: Psychosocial Dysfunction (1) *Prereq: admission to OT.* Group process for occupational therapists.

OTH 5419—Nervous Systems and Disorders (4) *Prereq: OT graduate student.* Comprehensive foundation in neuroanatomy, neurophysiology, and neuropathology.

OTH 5425C—Theory and Application: Biomechanical Rehabilitation (3) *Prereq: OT graduate student.* Biomechanical and rehabilitative occupational therapy approaches for persons with physical dysfunction.

OTH 5427C—Theory and Application: Neurorehabilitation (3) *Prereq: OT graduate student.* Neurorehabilitative occupational therapy approaches for persons with physical dysfunction.

OTH 5503C—Theory and Application: Pediatric Dysfunction II (2) *Prereq: OT graduate student.* Principles of occupational therapy for infants and children with neurological dysfunction and at risk for disabilities.

OTH 5505—Theory and Application: Pediatric Health and Dysfunction I (3) *Prereq: OT graduate student.* First in two-part series: theory, evaluation, and treatment for infants, children, and their families.

OTH 5702C—Management for Occupational Therapy Leadership (2) *Prereq: OT graduate student.* Principles and skills for effective leadership.

OTH 5726C—Service Delivery and OT Management (3) *Prereq: OT graduate status.* Basic principles of management and systems in providing occupational therapy to individuals and organizations.

OTH 5770C—Critique of Occupational Therapy Research (3) *Prereq: OT graduate student.* Principles and skills necessary for critical review of the occupational therapy literature.

OTH 5812—Practicum I (2) *Prereq: OT graduate student.* Initial practicum site experience to aid socialization process into roles and styles of occupational therapists.

OTH 5816—Practicum II (3) *Prereq: OT graduate student.* Second of series designed to acquaint future professionals with practice skills such as documentation and activity analysis.

OTH 5848—Internship I (6) Initial full-time experience under direct supervision of licensed occupational therapist. S/U.

OTH 5849—Internship II (6) Second full-time experience under direct supervision of licensed occupational therapist. S/U.

OTH 6008—Neuroscience of Human Occupation (6) 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 (6) 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 6275—Wellness and Disease Prevention of Chronic Conditions: Application in Occupational Therapy (3) Vascular, nerve, and orthopedic disorders, tumors and trauma physiology and pathophysiology, and occupational therapy prevention and intervention.

OTH 6424—Application of Motor Learning and Motor Control in Occupational Therapy (3) Review of neuroanatomy and musculoskeletal fundamentals of motor control. Discussion of acquisition and teaching of motor tasks to patient populations who suffer from motor control problems.

OTH 6425L—Relation of Body Image and Perceptual Dysfunction to Occupation (2-3; max: 3) *Prereq: registered occupational therapist or consent of instructor.*

OTH 6539—Occupational Therapy Theory (3) Preparation for entry-level position through introduction of basic principles of management and systems.

OTH 6635—Principles of Occupational Therapy Screening and Evaluation I (3) 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 (4) *Prereq: 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 (4) Occupational therapy theory and treatment as it relates to infants, children, adolescents, and their families.

OTH 6642—Occupational Therapy Interventions II (6) *Prereq: OTH 6641.* Basic interventions for adults through elders using ICIDH systems as framework. Planning and applied treatment approaches including acquisition, restorative, and compensatory strategies.

OTH 6706—Occupational Therapy Management (2) *Prereq: OTH 4935 or equivalent.*

OTH 6707—OT Manager (6) Leadership development, developing independent practice for consultation, client and professional advocacy, case management, and business entrepreneurship.

OTH 6708—Issues in Occupational Therapy Practice I (1) Current health care issues.

OTH 6709—Issues in Occupational Therapy Practice II (3) Forum for debating points of view regarding current practice issues relevant to occupational therapy.

OTH 6720—Trends and Issues in Health Care (6) Managed health care, public policy, and intervention within social and behavioral contexts. Effects on occupational therapy service delivery.

OTH 6750—Single System Design (2) *Prereq: OTH 4935/5702/5770C.* Single system design and its application to occupational therapy programmatic research.

OTH 6760C—Protocol for Occupational Therapy (3) *Prereq: graduate level statistics course.* Individualized instruction in design of protocol for research projects; procedures for submission of research to appropriate human participation review bodies. S/U.

OTH 6763—Evidence Based Practice (6) Concepts and strategies for assessment of practice outcomes and program evaluation.

OTH 6765—Seminar in Occupational Therapy Theory (4) Review of work of major occupational therapists. Theoretical perspectives include occupation-based theories and theories of Reilly, Fidler, Mosely, Llorens, Ayres, Kielhofner, and Allen.

OTH 6771—Applied Research I (2) Introduction to qualitative research methods.

OTH 6772—Applied Research II (2) *Prereq: OTH 6771.* Continuation of OTH 6771. Experience with integral components of research, data collection, and research writing.

OTH 6780—Applied Research in Occupational Therapy (3) *Prereq: OTH 6771.* Continuation of OTH 6771 with emphasis on completion of a research project and its oral and written dissemination. S/U.

OTH 6861—Specialty Residency (2-9; max: 9) *Prereq or coreq: OTH 6780.* Field experience in clinical, community, educational, and administrative settings approved by the department.

OTH 6905—Individual Work (1-10; max: 10) Project related to teaching, research, administration, or clinical practice.

OTH 6907—Professional Development Project (6) 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 (2-9; max: 9) Selected topics in theory and research in occupational therapy.

OTH 6971—Research for Master's Thesis (1-6) S/U.

Oral Biology

College of Medicine

Graduate Faculty 2004-2005

Chairman: R. A. Burne. *Graduate Coordinator:* W. P. McArthur. *Professors:* T. A. Brown; R. A. Burne; E. K. Chan; C.H. Gibbs; J. D. Hillman; R. J. Lamont; N. I. Magnusson; W. P. McArthur; A. Progulske-Fox; C. B. Walker; W. N. Williams. *Associate Professor:* L. J. Brady. *Assistant Professor:* M. Handfield. *Research Assistant Professor:* M. Belanger.

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 interdisciplinary program (IDP) in medical 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, 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; microbial antibiotic resistance; and autoimmune disease. More information is available at http://www.dental.ufl.edu/offices/oral-bio/.

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 may be obtained from the Graduate Coordinator or the IDP office.

GMS 6039—Bacterial Pathogenesis (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on genetics and physiology of bacteria, their use as research tools, and role of bacteria in causing disease.

GMS 6040—Host-Pathogen Interactions (1) *Prereq: consent of instructor.* Survey of medical microbiology, focusing on host response and subsequent evasion of that response by pathogens.
GMS 6160—Introduction to Oral Biology I (2) Review of basic principles of prokaryotic and eukaryotic molecular biology, gene therapy, and tissue engineering; application of those principles to sutdy of normal and abnormal conditions of oral cavity.
GMS 6161—Introduction to Oral Biology II (2) *Prereq: 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 6173—Stomatognathic System: Form and Function (2) 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 (1) *Coreq: 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 (1) *Prereq: GMS 6176; coreq: BCH 6206 or consent of instructor.* 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 6193—Research Conference in Oral Biology (1 or 3; max: 8) *Required of graduate students in oral biology; open to others by permission of department.* Critical discussion and appraisal of current research within department by students and faculty. S/U.
GMS 7179—Journal Colloquy (1; max: 8) Critical presentation and discussion of recent original articles in the oral biology literature.

Pathology, Immunology, and Laboratory Medicine

College of Medicine

Graduate Faculty 2004-2005

Chair: J. M. Crawford. *Associate Chair:* E. J. Wilkinson. *Graduate Coordinator:* W. T. McCormack. *Graduate Research Professor:* H. M. Johnson. *Professors:* M. A. Atkinson; A. Barbet; R. C. Braylan; M. Clare-Salzler; J. M. Crawford; B. P. Croker; W. H. Donnelly; M. M. Goodenow; R. R. Grams; K. J. Kao; S. R. Khan; P. A. Klein; S. J. Normann; A. B. Peck; K. H. Rand; W. Reeves; J. C. Scornik; E. J. Wilkinson; W. E. Winter; J. R. Zucali. *Associate Professors:* D. Allred; R. Bertholf; W. Clapp; R. L. Freel; B. Goldberger; M. Hatch; W. T. McCormack; L. Morel; N. Terada; A. Yachnis. *Assistant Professors:* S. A. Litherland; C. Liu; L. Morel; D. A. Ostrov; B. Petersen.

The Graduate Faculty of the Department of Pathology, Immunology, and Laboratory Medicine 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 include cellular and molecular immunology, autoimmunity, immunogenetics, immunochemistry, immunopathology, immunology of infectious diseases, tumor biology and virology, membrane biochemistry, molecular biology, hepatobiliary pathobiology, and comparative and nutritional pathology.

The degree concentrations associated with the IDP emphasize basic research, whereas the specializations in clinical immunology, and clinical virology emphasize laboratory training for management and supervision of clinical laboratories. Careers in pathology offer a diversity of opportunities: basic research in immunology or pathology, service in diagnostic laboratories, and teaching. In addition to courses associated with the IDP, the Department of Pathology, Immunology, and Laboratory Medicine also offers a variety of other courses, listed below.
GMS 6031—Molecular Immunology (1) *Prereq: GMS 6001, 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 (1) *Prereq: GMS 6001, 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 (1) *Prereq: GMS 6001, 6006, or consent of instructor.* Biological and biochemical aspects of immunology, focusing on molecular and cellular basis of human disease.
GMS 6140—Principles of Immunology (3) *Prereq: GMS 6001 or consent of instructor.* Biological and biochemical aspects of hosts resistance and immunity; the chemical and physiochemical properties of the proteins of immune reactions.
GMS 6331—Stem Cell Biology (1) *Prereq: GMS 6001 or consent of instructor.* Recent progress in mammalian stem cell research.
GMS 6381—Special Topics in Pathology (1-4; max:12) *Prereq: permission of department.* Conference and supervised laboratory work. Topics selected to meet each student's needs.
GMS 6382—Special Topics in Immunology (1-3; max: 6) *Prereq: 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 6394—Seminar in Mammalian Genetics (1; max:12) Research report given by invited speakers, genetics faculty, and graduate students. S/U.
GMS 6921—Immunology/Microbiology Journal Colloquy (1; max: 12) *Prereq: GMS 6001, 6006, or consent of instructor.* Critical presentations and discussions of recent original articles.

Pharmaceutical Sciences–General

College of Pharmacy

Dean: W. Riffee.

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, pharmacy health care, and pharmacy which includes

pharmaceutics. There are two additional concentrations in the Master of Science in Pharmacy program in pharmaceutical sciences: forensic drug chemistry, and forensic serology and DNA. Both offered in a distance-learning, nonthesis format.

Complete descriptions of the minimum requirements for the M.S.P. and Ph.D. degrees are provided in the *General Information* 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 Office of Research and Graduate Studies, College of Pharmacy, P.O. Box 100484, Health Science Center.

PHA 5625—Pharmaceutical Industry Practical Training Externship (2-6; max: 12) *Prereq: 1 semester of didactic graduate program or 1 year of professional program.* Work experience in pharmaceutical industry setting.

PHA 6910—Supervised Research (1-5; max: 5) S/U.

PHA 6935—Selected Topics in Pharmacy (1-4; max: 6) Open to all departments in the College of Pharmacy.

PHA 6936—Advanced Topics in Pharmaceutical Sciences (1; max: 4) Written and oral presentation of research designs, protocols, papers, and critical appraisals with discussion and critical review of such topics.

PHA 6938—Research Seminar (1; max: 3) Seminar required of graduate students in the College of Pharmacy.

PHA 6940—Supervised Teaching (1-5; max: 5) S/U.

PHA 6971—Research for Master's Thesis (1-15) S/U.

PHA 7979—Advanced Research (1-12) 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. S/U.

PHA 7980—Research for Doctoral Dissertation (1-15) S/U.

Pharmaceutics

College of Pharmacy

Graduate Faculty 2004-2005

Chairman: H. Derendorf. *Graduate Coordinator:* J. Hughes. *Graduate Research Professor:* N. Bodor. *Distinguished Professor:* H. Derendorf. *Professors:* G. Hochhaus; L. Prokai; M. A. Schwartz. *Associate Professors:* J. Hughes; S. M. Sullivan. *Assistant Professor:* S. Song.

The Department of Pharmaceutics offers the Doctor of Philosophy in pharmaceutical sciences. Pharmaceutics is the scientific endeavor concerned with the design, formulation, evaluation, and use of drug delivery systems. A foundation in physical chemistry, chemistry, mathematics, as well as in the life sciences, is necessary. 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 general focus of research in the Department involves the study of the design and evaluation of traditional and novel dosage forms for the delivery of drug molecules and macromolecules. The design involves physical chemical studies and development of analytical techniques involving spectroscopy and chromatography. Evaluation includes the development of sensitive analytical techniques for the drug in biological fluids and the subsequent biopharmaceutical and clinical pharmacokinetic studies.

PHA 5171—Pharmaceutical Biotechnology (3) Principles of recombinant DNA technology necessary to interact and communicate as a pharmaceutical scientist within biotechnology field. Discussion of recombinant peptide and protein drugs, including protein purification, stability, quality control, and dosage form design.

PHA 6115—Equilibria, Complexations, and Interactions of Drugs (3) 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 (3) Effects of various disease states, age, genetic differences, stress, nutrition, and drug interactions on drug metabolism.

PHA 6118—Molecular Diversity (2) Combinatorial and high throughput methods to generate leads for drug discovery and accelerated drug development.

PHA 6125—Pharmacokinetics and Biopharmaceutics (3) Compartmental analysis with computers.

PHA 6170C—Pharmaceutical Product Formulation (3) The rationale and design of pharmaceutical dosage forms.

PHA 6416—Pharmaceutical Analysis I (3) Theory and applications of relevant analytical techniques for analysis of drugs in biological samples.

PHA 6417—Pharmaceutical Analysis II (3) Absorption, fluorescence, phosphorescence, and spectroanalysis of drugs and related compounds.

PHA 6440—Seminar in Drug Discovery (1; max: 8) Weekly presentations of research topics related to drug design and discovery. S/U option.

Pharmacodynamics

College of Pharmacy

Graduate Faculty 2004-2005

Chairman: M. J. Meldrum. *Graduate Coordinator:* J. Peris. *Professors:* M. J. Katovich; M. Keller-Wood; W. J. Millard; W. Riffee. *Associate Professors:* M. J. Meldrum; J. Peris. *Assistant Professors:* D. Ellis; J. Frazier; B. Liu.

The Department of Pharmacodynamics offers the Doctor of Philosophy and Master of Science in Pharmacy degrees in the pharmaceutical sciences with a concentration in pharmacodynamics. The Department participates in the interdisciplinary toxicology concentration (see *Interdisciplinary Graduate Studies* in this catalog). 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, menopause, neurotoxicity, and environmental physiology.

An undergraduate degree in pharmacy, chemistry, biology, or related sciences is required. In addition to graduate courses in pharmacy, courses are taken in in the College of Medicine and in statistics in the College of Liberal Arts and Sciences.

GMS 6403—Advanced Endocrinology (4) *Prereq: GMS 6400C, PHA 3500, 3501 or equivalent, consent of instructor.* Readings discussions, and lectures on recent advances in endocrinology.

PHA 5531—Neurotoxicology (2) *Prereq: biochemistry, physiology, and consent of instructor.* Survey of major classes of agents known to cause toxic effects in central and peripheral nervous systems. Emphasis on compounds' mechanism of action and experimental techniques for evaluation of neurotoxicity.

PHA 6512L—Experiential Research Training in Pharmacodynamics (2-6; max: 6) *Prereq: PHA 6521C.* Research rotations. Practical overview of hypothesis development and testing, research design and application of statistical analysis.

PHA 6521C—Research Techniques in Pharmacodynamics (3; max: 12)

PHA 6522L—ICBR Molecular Techniques Laboratory (2) S/U.

PHA 6540—Neurochemical Foundation of Pharmacodynamics (3) 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 7939—Journal Colloquy in Pharmacodynamics (1; max: 8) Critical presentation and discussion of recent original articles.

Pharmacology and Therapeutics

College of Medicine

Graduate Faculty 2004-2005

Chair: S. P. Baker. *Graduate Coordinator:* J. K. Harrison. *Distinguished Professor:* D. N. Silverman. *Professors:* S. P. Baker; L. G. Garg; M. Grant; W. R. Kem; A. N. Neims; N. T. Scarpace; P. J. Scarpace; K. T. Shiverick. *Associate Professors:* J. K. Harrison; E. M. Meyer; R. L. Papke; T. C. Rowe. *Associate Scientist:* C. K. Tu. *Assistant Professors:* B. S. Fletcher; B. K. Law. *Research Assistant Professor:* M. E. Law.

The Graduate Faculty of the Department of Pharmacology and Therapeutics participate in the interdisciplinary program (IDP) in medical sciences, leading to the Doctor of Philosophy degree, with specialization in one of the six advanced program areas of the IDP (see *Medical Sciences*). Departmental areas of research associated with the IDP include receptor and membrane pharmacology; signal transduction; autonomic, renal, developmental, endocrine, and neuropharmacology; fluid secretion and carbonic anhydrase inhibition; cancer chemotherapy and carcinogenesis; physical chemistry of enzymes; opioid peptides; drug metabolism; and environment and marine toxicology. In addition to courses associated with the IDP, the Department of Pharmacology and Therapeutics offers the courses listed below.

GMS 6500—Introduction to Pharmacology (6) *Prereq: elementary courses in biochemistry and physiology.* Overview of the field of pharmacology as study of interactions between living systems and foreign chemicals.

GMS 6563—Molecular Pharmacology (1; max: 3) *Prereq: 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 (1; max: 15) *Prereq: 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 (1) Discussion of recent papers in context of larger issues in therapeutics and neuroscience. Presentations by students and faculty. S/U.

GMS 6735—Neuropharmacology (1; max: 3) *Prereq: GMS 6007, 6009, or consent of instructor.* Identification, synthesis, metabolism, and pharmacology of neurotransmitters and their receptors, to include biogenic amines, neuropeptides, and other nervous system transmitters.

GMS 7593—Topics in Pharmacology and Toxicology (1-3; max: 12) Seminars, informal conferences, or laboratory work on selected topics.

Pharmacy Health Care Administration

College of Pharmacy

Graduate Faculty 2004-2005

Chairman: R. Segal. *Graduate Coordinator:* C. L. Kimberlin. *Eminent Scholar:* A. G. Hartzema. *Distinguished Professor:* C. D. Hepler *(Emeritus)*. *Professors:* D. B. Brushwood; C. L. Kimberlin; L. D. Ried; R. Segal. *Associate Professors:* D. H. Berardo; E. E. Lipowski. *Assistant Professor:* A. G. Winterstein.

The Department offers the Master of Science in Pharmacy and Doctor of Philosophy degrees in pharmaceutical sciences with a concentration in pharmacy health care administration. Requirements for the M.S.P. degree are the same as for the Master of Science degree. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Research in the Department emphasizes the epidemiological, socio-behavioral, administrative, legal, and economic aspects of drug therapy and pharmaceutical services, including assessment of safety, effectiveness, and efficiency aspects of patient-oriented pharmaceutical services.

Graduate studies include core curricula encompassing the drug use process, statistics and research design, behavioral sciences, epidemiology, and economics. Electives and required courses draw from the resources of the entire University. They provide necessary concepts, knowledge, and skills for practical problem-solving and basic research. Graduates are prepared for leadership positions in academia, public service, pharmaceutical industry, and practice management related to drug therapy and pharmacy practice.

Applicants with backgrounds in pharmacy, nursing, other health professions, or behavioral sciences are welcomed. Admission to the graduate program does not require a degree in pharmacy or another health profession although some familiarity with health care and health professions is recommended.

A graduate student whose native language is not English must score 45 or above on the Test of Spoken English (TSE) to hold a state-funded assistantship.

PHA 5211—Pharmaceutical Outcomes Management (3) *Prereq: enrollment in PharmD/MBA program or by permission of instructor.* Framework and tools to develop, deliver, and evaluate patient-centered pharmacy services. Emphasis on planing, organizing, directing, and controlling managerial functions.

PHA 5213—Pharmaceutical Outcomes Evaluation (2) *Prereq: enrollment in PharmD/MBA program or by permission of instructor.* Health care quality assessment and improvement at patient and system levels, including techniques for identification and analysis of problems in quality of care, and design, implementation, and evaluation of programs to improve quality of pharmaceutical care.

PHA 5233—Pharmaceutical Law (2) *Prereq: enrollment in PharmD/MBA program or by permission of instructor.* Focus on patient's right to responsible care and pharmacist's duty to provide responsible care.

PHA 5745—Professional Communications (2) *Prereq: enrollment in PharmD/MBA program or by permission of instructor.* Patient-centered communication and colleague-centered communication. Skills taught are specific to functions clinical pharmacists perform in practice.

PHA 6235—Advanced Pharmaceutical Law (2) 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 6250—The Patient in the Drug Use Process (3) Examination of psychological theoretical/foundations of research on patient's role in health care and drug use. Critique of research evaluating role of patient.

PHA 6251—Drugs in Society (3) Social, economic, and political issues related to U.S. health care system in general and profession of pharmacy in particular. Dynamics of drug use process, illness behavior, and health care utilization examined.

PHA 6252—Prescribing and the Medications Use Process (3) *Prereq: STA 6127 or equivalent.* Research issues in prescribing and medications use process from perspectives of health professionals: sources of professional information decision making, assessment of quality.

PHA 6262—Pharmacoeconomics and Health Technology Assessment (3) *Prereq: STA 6127 or equivalent, HSC 6507 or equivalent, and HSA 6436 or equivalent.* Introduction to major analytical techniques used in economic evaluation of medical technologies.

PHA 6265—Introduction to Pharmacy Health Care Administration I (2) Introduction for new Ph.D. students to psychological, social, and ethical issues regarding medication use in society.

PHA 6266—Introduction to Pharmacy Health Care Administration II (2) Introduction to drug distribution systems, pharmacoepidemiology, economic evaluation of drugs, and databases regarding medication use.

PHA 6717—Measurement in Pharmacy Administration Research (3) *Prereq: STA 6217 or equivalent.* Examination of some of the techniques adapted from the social sciences for research in the field of pharmacy administration.

PHA 6937—Topics in Pharmaceutical Administration (2) Analysis of special topics and recent developments in pharmaceutical administration, including innovations in the distribution of drugs and health-care services.

Philosophy

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman and Graduate Coordinator: R. D'Amico. *Professors:* R. J. Baum; J. I. Biro; D. Copp; R. D'Amico; E. S. Haring *(Emerita);* J. J. Zeman *(Emeritus). Associate Professors:* T. P. Auxter; M. M. Aydede; R. P. Haynes; C. Liu; K. A. Ludwig; M. Oshana; J. Palmer; G. Ray; D. Witmer. *Assistant Professors:* D. Kaufman; C. Thorpe.

The Department offers studies leading to the Master of Arts and Doctor of Philosophy degrees. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

All applicants for the graduate program must submit with their applications a sample of recent written work in philosophy. Admission to the Master of Arts program requires a bachelor's degree in philosophy or sufficient courses in philosophy. Admission to the Ph.D. program requires completion of an M.A. or its equivalent, as determined by the Department.

All graduate students take foundational courses, in their first four semesters, in the history of philosophy, logic, analytic philosophy, or continental philosophy. Students who lack preparation in a specific area may need to audit a 3000- or 4000-level course before beginning the required graduate course. Further information about the programs and admissions can be obtained by contacting the Graduate Coordinator, 330 Griffin-Floyd Hall, (352)392-2084, email dept@phil.ufl.edu.

PHH 5405—Modern Philosophy I (3) A thorough reading of authors such as Descartes, Spinoza, Leibniz.

PHH 5406—Modern Philosophy II (3) Major figures such as Locke, Berkeley, Hume.

PHH 5605—Studies in Continental Philosophy (3) Recent European philosophy represented in major writings of such thinkers as Husserl, Heidegger, and Sartre.

PHH 6105—Seminar in Ancient Philosophy (3; max: 18) *Prereq: PHP 5005 or 5015, depending on topic.* Sustained examination of particular topic or theme in philosophy of Greek and Roman antiquity.

PHH 6425—Seminar in Modern Philosophy (3; max: 18) *Prereq: PHH 5406 or permission of instructor.* Sustained examination of particular topic or theme in philosophy of seventeenth and eighteenth centuries.

PHI 5135—Graduate Logic (3) Propositional calculus, quantificational logic through completeness, and an introduction to modal logic.

PHI 5225—Philosophy of Language (3) Survey of central issues in philosophy of language.

PHI 5325—Philosophy of Mind (3) Contemporary philosophy of mind, surveying basic issues as approaches to mind-body problem, theories of mental content and consciousness, mental causation, methodology in psychology.

PHI 5365—Epistemology (3) A systematic examination of major theories of knowledge and truth.

PHI 5405—Philosophy of Science (3) Issues involving scientific inquiry, the nature of scientific method, and the differences between natural and social science.

PHI 5425—Philosophy of Social Science (3) Study of issues in philosophy relevant to the social sciences: reduction, covering laws, rational reconstruction, interpretation, and causation.

PHI 5505—Metaphysics (3) Contemporary metaphysics, surveying basic issues: existence, identity, universals and abstract objects, nature of particulars, modalities, causation, and special metaphysical issues.
PHI 5665—Ethical Theory (3) Central issues in ethical theory.
PHI 5905—Individual Work (1-6; max: 6) *Prereq: approval of instructor, graduate coordinator, and chair.* Problem, author, or topic not treated in available courses.
PHI 5934—Topics in Philosophy (3; max: 18)
PHI 5935—Proseminar (3) Mandatory for entering students. Methods of inquiry and research. S/U.
PHI 6105—Seminar in Logic (3; max: 18) *Prereq: PHI 5135.* Advanced seminar in logic, covering topics in model theory and recursion theory, beyond level of PHI 5135, but of particular moment for philosophy graduate students. Careful treatment of Godel's incompleteness theorems and a modest study of undecidability.
PHI 6226—Seminar in Philosophy of Language (3; max: 18) Research seminar. Variable topics.
PHI 6306—Seminar in Epistemology (3; max: 18) *Prereq: PHI 5365 or PHP 5785.* Advanced studies in philosophical topics of epistemic justification, skepticism, and foundationalism.
PHI 6326—Seminar in Philosophy of Mind (3; max: 18) Advanced research seminar. Relatively focused topics investigated in detail. Sample topics: theories of mental representation, mind-body explanatory gap, nativism, problem of mental causation.
PHI 6406—Seminar in Philosophy of Science (3; max: 18) *Prereq: PHI 5136 and 5405.* Advanced studies in philosophical issues concerning scientific explanation, laws, and theories of space and time.
PHI 6506—Seminar in Metaphysics (3; max: 18) Contemporary metaphysics, surveying basic issues: existence, identity, universals and abstract objects, nature of particulars, modalities, causation, and special metaphysical issues
PHI 6667—Seminar in Ethics (3; max: 18) Research seminar in ethical theory. In-depth advanced investigation of particular problems and issues. Sample topics: noncognitivism, moral realism, virtue ethics, consequentialism.
PHI 6787—Seminar in Continental Philosophy (3; max: 18) *Prereq: PHH 5505, 5406, or 5405.* Advanced studies in either topics or figures of 20th-century continental tradition.
PHI 6910—Supervised Research (1-5; max: 5) S/U.
PHI 6934—Special Topics (1-4; max: 18)
PHI 6940—Supervised Teaching (1-5; max: 5) S/U.
PHI 6971—Research for Master's Thesis (1-9) S/U.
PHI 7979—Advanced Research (1-12) *Prereq: permission 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. S/U.
PHI 7980—Research for Doctoral Dissertation (1-12) S/U.
PHP 5005—Ancient Philosophy I (3) Examination of central themes in Plato's thought through close reading of several major dialogues.
PHP 5015—Ancient Philosophy II (3) Historical and critical study of major aspects of Aristotle's logic, epistemology, physics, metaphysics, and philosophy of mind.
PHP 5785—Foundations of Analytic Philosophy (3) Foundational readings in analytic philosophy from Frege to Quine.
PHP 6415—Seminar in Kant (3; max: 18) *Prereq: PHH 5406 or consent of instructor.* Intensive examination of the first Critique and selections from other major works.
PHP 6795—Seminar in Analytic Philosophy (3; max: 18) Research seminar. Focus on work of particular philosopher or philosophical problem treated from analytic perspective.
PHP 6930—Seminar in a School or Thinker (3; max: 18) Work of one or more, usually pre-twentieth century, thinkers.

Physical Therapy

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chair: K. Vandenborne. *Assistant Chair and Director for Education:* J. Day. *R.S.D. Graduate Coordinator:* A. Behrman. *M.P.T. Curriculum Coordinator:* G. Miller. *Associate Professors:* A. Behrman; S. Kautz; K. Light; A. D. Martin; K. Vandenborne. *Clinical Associate Professor:* J. Day. *Assistant Professors:* T. Chmielewski; D. Fuller; S. George.

Master of Physical Therapy (M.P.T.)—The M.P.T. program is a two-year plan of graduate study which incorporates 4 semesters of classroom study and slightly greater than 1.5 semesters (22 weeks) of clinical internship. Students must be prepared for transportation, lodging, and food costs associated with all clinical educational experiences. Students enter the program after completing a bachelor's degree. The students are awarded the M.P.T. degree after completing 78 credit hours of graduate course work. A master's thesis is not required but students must achieve a B average in all course work, receive a positive evaluation on all clinical internships, and successfully complete a final examination which involves preparing and defending a case study. The faculty adviser serves as the student's supervisory committee.

The curriculum emphasizes the scientific method and the requirements of the scientific process in clinical practice. All courses require the student to rely on published scientific evidence for justification of their practice. This weaving of the scientific method is bolstered by a logically organized and sequential building of learning experiences. The student is provided with numerous opportunities for interactive discussions and presentations. The basic science courses, which have a prominent lecture format, incorporate either directly or indirectly, the clinical implications of basic physiological, biomechanical, and behavior mechanisms underlying patient care. The laboratory based clinical courses incorporate clinical problem solving modules in which students review and discuss their rationale for planning and delivering treatment. These laboratory experiences make use of patient demonstrations, which actively engage the student in direct patient contact, make use of videotapes of patients with physical disabilities, and require case study presentations by students. Some courses may be presented in the online format. Students are required to demonstrate appropriate behaviors and clinical skills used in assessment, evaluation, and treatment with both patients and peers.

A complete description of the requirements for the M.P.T. degree is provided in the *General Information* section of this catalog.

PHT 5024—Professional and Scientific Basis of Physical Therapy Practice (2) *Prereq: STA 3023. M.P.T. student.* Communication (verbal, nonverbal, and written), individual and cultural differences, professional behavior, ethics, legal issues and responsibility for professional development. Role of science and

research as it relates to critical thinking and decision making in PT practice.

PHT 5116C—Human Anatomy I (2) *Prereq: BSC 2010/2010L, 2011/2011L. M.P.T. student.* Lecture and laboratory sessions involving regional cadaveric dissection of upper extremity under supervision of instructors.

PHT 5156—Exercise Physiology (3) *Prereq: M.H.S. student.* Metabolic, muscular, cardiovascular, and pulmonary responses to acute and chronic exercise with application to patient populations.

PHT 5170C—Biomechanics (3) *Prereq: permission of department. M.P.T. student.* Introduction to biomechanics of human motion: joint structure and function, forces that affect motion and resultant kinematics.

PHT 5218C—Physical Therapy Management of Soft Tissue Injuries and Pain (3) *Prereq: PHY 2004/2004L, 2005/2005L.* Techniques to assess, evaluate, and treat patients with such injuries.

PHT 5257C—Assessment of Physical Therapy Patient (3) *Prereq: permission of department.* Evaluation and measurement of muscle strength, function, and joint motion as well as evaluation of posture, bulbar evaluation, and sensory examination.

PHT 5280C—Clinical Applications of Exercise Training (2) *Prereq: PET 2350C.* Exercise training in treatment of physical therapy patient.

PHT 5306C—Medical Surgical Disorders and Pharmacology in Physical Therapy Practice (3) *Prereq: permission of department.* Basic pathology, physical therapy management, and pharmacological treatment of selected systems. Visits to clinics within 65-mile radius are required.

PHT 5805—Clinical Affiliations—Internship I (6) *Prereq: M.P.T. student.* Six-week clinical internship in acute, subacute, or orthopedic setting. S/U.

PHT 6117C—Human Anatomy II (3) *Prereq: PHT 5113C.* Regional cadaveric dissection under supervision of instructors.

PHT 6125C—Concepts in Clinical Biomechanics (3) *Prereq: PHT 6105C.* Analysis of joint biomechanics and forces acting on those joints during human motion. Description of their relationship to injury and rehabilitation.

PHT 6127C—Control of Gait and Posture (3) Influence of central and peripheral mechanisms on control of gait posture in healthy and patient populations.

PHT 6161C—Neurotherapeutics (4) *Prereq: permission of department.* Current principles of motor control and learning as applied to individuals with movement dysfunction from neurologic disorders. Eclectic and integrated problem solving approach to treatment.

PHT 6166—Applied Neuroanatomy for Physical Therapy (3) Neuroanatomy emphasizing motor and sensory pathways. Emphasis on special sensory systems and normal rather than abnormal mechanisms.

PHT 6167C—Applied Neurophysiology for Physical Therapy (3) *Prereq: PHT 6166C.* Neurophysiological basis of movement, posture, sensation, and special sensory systems with functional application to physical therapy evaluation and treatment.

PHT 6168C—Neuroscience in Physical Therapy (4) *Prereq: permission of department.* Broad survey of structure and function of human nervous system with emphasis on neurophysiological processes as they relate to patients in physical therapy.

PHT 6171C—Applied Biomechanics (3) *Prereq: permission of department.* Review of kinesiological principles of gait analysis. Introduction to prosthetics and orthotics.

PHT 6236C—Neurological Dysfunction as Applied to Physical Therapy (4) Advanced peripheral and central nervous system neurology, evaluation, and therapeutic methods for neurological dysfunction.

PHT 6281C—Therapeutic Applications (2) *Prereq: permission of department.* Basic treatment and patient care techniques of strengthening, stretching, and assistive device prescription for improving patient function.

PHT 6316—Neurological Aspects of Orthopedic Rehabilitation (3) Current concepts of neuroscience and motor control and their implications to orthopedic rehabilitation. Recent and relevant literature. Emphasis on incorporating both basic and clinical science evidence in design of therapeutic interventions.

PHT 6319C—Neurorehabilitation (5) *Prereq: permission of department.* Neurologic diseases and disorders common to clients evaluated and treated by physical therapists.

PHT 6322—Pediatric Physical Therapy (2) *Prereq: permission of department.* Current developmental therapy with emphasis on developmental concepts related to therapeutic intervention.

PHT 6374—Geriatric Physical Therapy (2) *Prereq: permission of department.* Overview of physical and psycho-behavior aspects of aging in adulthood. Pathological change with aging and problem solving relevant to older clients in physical therapy setting.

PHT 6381C—Cardiopulmonary Disorders (3) *Prereq: permission of department.* Physical therapy evaluation and treatment of cardiopulmonary problems.

PHT 6521—Health Care Delivery and Management Principles for Physical Therapy (3) *Prereq: permission of department.* Managerial and procedural aspects of professional physical therapy, including ethical and legal practice, scope of practice and role in health-care team, as well as principles and application of planning, budgeting and delivery of physical therapy services.

PHT 6603—Development of a Case Study I (2) *Prereq: permission of department.* Overview of how reports are compiled and written. Importance of case studies to profession, basics of report, essentials of literature review, measurement theory, and writing techniques reviewed.

PHT 6604—Development of a Case Study II (2) *Prereq: permission of department.* Case study (publication ready paper for submission to peer review journal) and oral presentation on patient treated on final clinical internship

PHT 6615L—Research Instrumentation in Physical Therapy (3) Current theory and practical application of techniques for the understanding and design of research projects related to physical therapy. S/U.

PHT 6718—Neuroplasticity: A Foundation for Neurorehabilitation (3) Review evidence for plasticity following injury or disease, examine factors that influence recovery, address medical approach to enhance recovery, and explore potential approaches in physical rehabilitation to facilitate and optimize plasticity.

PHT 6724C—Orthopaedic Physical Therapy (7) *Prereq: permission of department.* Techniques and rationale used in evaluation and treatment of musculoskeletal dysfunction. Visits to clinics within 65-mile radius are required.

PHT 6824—Clinical Affiliations—Internship II (12) *Prereq: permission of department.* Two 8 week clinical internships in rehabilitation (neuro), acute care, outpatient, and pediatric settings. Acute-care and rehabilitation (neuro) internships required for graduation.

PHT 6915—Applied Research in Physical Therapy (1-8; max: 12) *Prereq: PHT 6615 and STA 6200.* Independent study of students' selected research topic under supervision of graduate

adviser. S/U.

PHT 6935C—Seminar in Physical Therapy I (1-3; max: 9) *Prereq: consent of instructor.* Current topics in physical therapy.

PHT 6949—Advanced Internship in Physical Therapy (3-12; max: 12) *Prereq: completion of didactic course work in the advanced program in physical therapy.* Clinical experiences in physical therapy facilities selected to meet the individual needs and interests of each student. S/U.

PHT 6971—Research for Master's Thesis (1-15) S/U.

Physics

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: A. T. Dorsey. *Graduate Coordinator:* M. W. Meisel. *Distinguished Professors:* G. Mitselmakher; P. Ramond; D. B. Tanner. *Professors:* P. R. Avery; J. R. Buchler; S. L. Detweiler; A. T. Dorsey; J. W. Dufty; F. E. Dunnam; R. D. Field; J. N. Fry; A. F. Hebard; S. Hershfield; P. J. Hirschfeld; G. G. Ihas; J. K. Ingersent; J. R. Ipser; J. R. Klauder; P. Kumar; M. W. Meisel; H. J. Monkhorst; K. A. Muttalib; D. H. Reitze; J. R. Sabin; L. E. Seiberling; P. Sikivie; C. J. Stanton; G. R. Stewart; N. S. Sullivan; Y. Takano; C. B. Thorn; S. B. Trickey; B. Whiting; R. P. Woodard; J. M. Yelton. *Associate Professors:* D. E. Acosta; H.-P. Cheng; S. J. Hagen; S. O. Hill; A. Korytov; D. Maslov; S. Obukhov; Z. Qiu; A. G. Rinzler. *Associate Scientists:* B. Andraka; R. L. Coldwell; J. Konigsberg. *Assistant Professors:* L. Baudis; A. Biswas; H. B. Chan; Y. Lee; K. T. Matchev; G. Muller.

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. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog.

Specific 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.

AST 6416—Physical Cosmology (3) Introduction to the observational background and to the theory of cosmology.

PHY 5277—Physics of Accident Reconstruction and Biomechanics (2) *Prereq: undergraduate mechanics; calculus.* Introduction, with emphasis on forces experienced in accidents and associated damage to tissue and bone.

PHY 5905—Individual Work (1-4; max: 12 including PHY 6905) *Prereq: permission 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 (3) 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 (3) 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 (3) *Prereq: PHY 6346.* Continuation of PHY 6346.

PHY 6536—Statistical Mechanics I (3) *Prereq: PHY 6645 and 6246.* Equilibrium ensembles for classical and quantum systems, fluctuations, applications to normal fluids, phase transitions and critical phenomena, plasmas.

PHY 6555C—Cryogenics (4) *Prereq: PHY 3101 and permission 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 (3) *Prereq: 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 (3) *Prereq: PHY 6645.* Time dependent perturbation theory, scattering theory, identical particles and second quantization, Dirac equation.

PHY 6648—Quantum Field Theory I (3) *Prereq: PHY 6646.* The Poincare group; the Dirac equation; quantization of free fields; the scattering matrix; applications.

PHY 6905—Individual Work (1-4; max: 12 including PHY 5905) Treatment of an experimental or theoretical problem or topic assigned on the basis of student's needs and interests.

PHY 6910—Supervised Research (1-5; max: 5) S/U.

PHY 6920—Departmental Colloquium (1; max: 14) Summary presentation of contemporary topics by visiting and local researchers. S/U.

PHY 6932—Seminar in Molecular and Computational Physics (1; max: 10) *Prereq: senior or graduate standing.* Invited speakers on topics of current interest in computation and theory in dynamics, and molecular and solid state physics. S/U.

PHY 6943—Internship in College Teaching (2,4,6; max: 6) *Prereq: 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 (1-15) S/U.

PHY 7097—Advanced Topics in Theoretical Physics (3; max: 10) Special studies in mathematical methods and applications of current interest at the forefront of one or more specialities in theoretical physics.
PHY 7669—Quantum Field Theory II (3) *Prereq: PHY 6648.* Path integral quantization; perturbation theory; renormalization; quantization of gauge fields; applications.
PHY 7939—Special Topics (2; max: 12) Assigned reading program, seminar, or lecture series in a rapidly advancing specialty of physics.
PHY 7979—Advanced Research (1-12) 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. S/U.
PHY 7980—Research for Doctoral Dissertation (1-15) S/U.
PHZ 5155C—Physical Modeling and Simulation (3) 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 (3) *Prereq: 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 (3) *Prereq: permission of instructor.* Descriptive survey of particle and nuclear phenomena and states: conserved quantities and quantum numbes, invariance principles.
PHZ 5405—Introduction to Solid-State Physics (3) *Prereq: PHY 4605 or permission 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 (2) *Prereq: 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 (3) *Prereq: PHY 6246, 6346, 6536, 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 6247—Chemical Physics (3) *Prereq: PHY 6645 or permission of instructor. Identical to CHM 6520.* Intermolecular forces, molecular dynamics; electromagnetic properties of molecular systems; solid surfaces; theoretical and computation methods.
PHZ 6355—Elementary Particle Physics I (3) *Prereq: 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 (3) 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 (1; max: 12) S/U.
PHZ 6392—Seminar in Particle Physics (1; max: 12) S/U.
PHZ 6426—Solid State I (3) *Prereq: 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 (1; max: 12) S/U.
PHZ 6607—Special and General Relativity (3) *Prereq: 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 (3) *Prereq: PHZ 6355.* Continuation of PHZ 6355. Extensions of the standard model. Calculations of QCD corrections.
PHZ 7359—Standard Model of Elementary Particles II (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: PHZ 6426.* Greens 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 (3) *Prereq: 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 (3) *Prereq: PHZ 6607.* Relativistic stars, black holes, gravitational radiation; advanced topics in general relativity and cosmology.

Physiology and Functional Genomics

College of Medicine

Graduate Faculty 2004-2005

Chair: C. E. Wood. *Graduate Coordinator:* B. R. Stevens. *Professors:* P. Anderson; G. A. Gerencser; P. Kalra; M. I. Phillips; M. Raizada; B. R. Stevens; C. Sumners; C. E. Wood. *Assistant Professors:* H. Bose; H. Kasahara; P. S. Oh; P. Sayeski.

The Graduate Faculty of the Department of Physiology and Functional Genomics participates 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 include topical problems in various aspects of human physiology. In addition to courses associated with the IDP, the Department of Physiology and Functional Genomics offers the courses listed below.

GMS 6008—Fundamentals of Physiology and Functional Genomics (2) *Prereq: GMS 6001 or consent of instructor. Designed for first-year graduate students.* Fundamental physiological concepts. Emphasis on impact of functional genomics technology on contemporary physiology.

GMS 6400C—Principles of Physiology (6) *Prereq: consent of instructor.* Physiology of mammalian organ systems, with special reference to the human.

GMS 6403—Advanced Endocrinology (4) *Prereq: GMS 6400C, PHA 3500, 3501 or equivalent, consent of instructor.* Readings discussions, and lectures on recent advances in endocrinology.

GMS 6405—Fundamentals of Endocrine Physiology (1) *Prereq: 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 (1) *Prereq: GMS 6001 or consent of instructor.* Human body pulmonary/respiratory system physiology.

GMS 6408—Fundamentals of Renal Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Human body gastrointestinal system physiology.

GMS 6410—Physiology of the Circulation of Blood (2) Physiology of the component parts of the circulation, relation of structure and function, emphasis on control mechanisms.

GMS 6411—Fundamentals of Cardiovascular Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Human body cardiovascular system physiology.

GMS 6412—Human Physiology for Biomedical Engineering (4) *Prereq: consent of instructor. For students in biomedical engineering.* Fundamentals of human physiology, processes, and regulatory mechanisms of major organ systems.

GMS 6415—Fundamentals of Gastrointestinal Physiology (1) *Prereq: GMS 6001 or consent of instructor.* Gastrointestinal system of human body.

GMS 6490C—Research Methods in Physiology (2-4; max: 6) Special needs of each student are met by conferences and laboratory work, S/U.

GMS 6491—Journal Club in Physiology (1; max: 12) Timely research papers in all areas of physiology; namely, cellular physiology, molecular physiology, and functional genomics. S/U.

GMS 6495—Seminar in Physiology (1) S/U.

GMS 6496—Recent Advances in Physiology (1) Content varies from year to year.

GMS 6497—Seminar on Vision (2) Current research and theory on visual function. Literature survey and design of an experiment relevant to recent theory.

GMS 6621—Vision (3) *Prereq: consent of instructor.* Introduction to methodology, anatomy, and function of vision.

Plant Molecular and Cellular Biology

Colleges of Agricultural and Life Sciences, and Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director: H. J. Klee. *Graduate Coordinator:* D.G. Clark. *Eminent Scholars:* A. D. Hanson; H. J. Klee. *Graduate Research Professor:* R. R. Schmidt *(Emeritus). Professors:* G. Bowes; C. D. Chase; P. S. Chourey; K. C. Cline; R. J. Ferl; D. W. Gabriel; W. B. Gurley; C. L. Guy; L. C. Hannah; E. Hiebert; J. B. Jones; K. E. Koch; D. R. McCarty; G. A. Moore; D. R. Pring. *Associate Professors:* D. G. Clark; J. M. Davis; M. Gallo-Meagher; A. C. Harmon; G. F. Peter; B. Rathinasabapathi; C. E. Vallejos. *Assistant Professors:* F. Altpeter; K. Folta; B. A. Hauser; Z. Mou; J. A. Rollins; A. M. Settles; W. Y. Song.

The interdepartmental program in plant molecular and cellular biology offers the Master of Science and Doctor of Philosophy degrees with specialization in plant molecular genetics, biochemistry, molecular biology, cell biology, pathology, and physiology. Complete descriptions of the Master of Science and Doctor of Philosophy degree requirements are provided in the *General Information* section of this catalog.

Faculty participating in this degree program are drawn from seven academic unitsAgronomy, Botany, Environmental Horticulture, Forest Resources and Conservation, Horticultural Sciences, Microbiology and Cell Science, and Plant Pathologyin two colleges. Specific areas of research include biochemical genetics; molecular genetics; physiological genetics; regulation of gene expression; metabolism, growth, and development; genome structure and function; host/pathogen interactions; protein trafficking; signal transduction; cell and tissue culture; and plant biotechnology.

Applicants should have a strong undergraduate background in biological sciences, biochemistry, calculus, chemistry through organic, physics, and genetics. Deficiencies may be made up during the first year of graduate study. All students are required to take five core courses which include BCH 6206 or BOT 6516; BCH 6740; FOR 6934; PCB 5065; and PCB 6528. In addition to the core courses, the following courses count as graduate major credit: AGR 5307—Molecular Genetics for Crop Improvement, HOS 5306—Molecular Biology of Plant Hormones, HOS 6116—Developmental Morphology of Flowering Plants, HOS 6231—Biochemical Genetics of Higher Order Plants, HOS 6345—Environmental Physiology, HOS 6767—Advanced Plant Metabolism, PCB 6555—Quantitative Genetics, and PLP 6303—Molecular Plant Pathology. Additional courses are tailored to the student's interest and are drawn from over 50 electives taught by departments in the Colleges of Agricultural and Life Sciences, Medicine, and Liberal Arts and Sciences.

In order to provide exposure to a variety of faculty and experimental systems, new students are encouraged to rotate among three laboratories during the first six months of enrollment before selection of a dissertation research area and supervisory committee. For additional information, write to the Graduate Coordinator, Plant Molecular and Cellular Biology, P.O. Box 110690, IFAS.

PCB 6528—Plant Molecular Biology (3) *Prereq: BCH 6415 and PCB 5065 or equivalents.* Structure, function, and analysis of plant genomes, genes, and gene products. Lecture format with frequent discussion of recent papers. Genome structure, transformation, gene tagging, transcription, signal transduction, organelles, protein trafficking. Offered in spring semester.

PCB 6910—Supervised Research (1-5; max: 5) S/U.

PCB 6937—Special Topics in Plant Molecular and Cellular Biology (1-4; max: 8) *Prereq: graduate course work in genetics, biochemistry, or molecular biology areas.* Contemporary research.

PCB 6971—Research for Master's Thesis (1-6) S/U.

PCB 7922—Journal Colloquy in Plant Molecular and Cellular Biology (1; max: 8) *Prereq: Required for PCMB majors.* Critical discussion and presentation of recent journal articles in area of plant molecular and cellular biology.

PCB 7979—Advanced Research (1-12) 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 doctoral program. Not appropriate for students who have been admitted to candidacy. S/U.
PCB 7980—Research for Doctoral Dissertation (1-15) S/U.

Plant Pathology

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: G. C. Wisler. *Graduate Coordinator:* J. B. Jones. *Eminent Scholar:* W. O. Dawson. *Professors:* R. D. Berger; G. M. Blakeslee; R. H. Brlansky; R. Charudattan; P. S. Chourey; L. E. Datnoff; M. J. Davis; K. Derrick; M. L. Elliott; D. W. Gabriel; S. M. Garnsey; J. H. Graham; E. Hiebert; D. L. Hopkins; J. B. Jones; J. W. Kimbrough; T. A. Kucharek; R. F. Lee; J. J. Marois; R. T. McMillan; D. J. Mitchell; K. L. Pernezny; R. C. Ploetz; J. E. Polston; C. A. Powell; D. R. Pring; R. N. Raid; R. A. Schmidt; J. O. Strandberg; L. W. Timmer; G. C. Wisler; F. W. Zettler. *Associate Professors:* J. A. Bartz; D. O. Chellemi; M. L. Elliott; T. R. Gottwald; N. A. Harrison; R. J. McGovern; M. T. Momol; D. J. Norman; P. D. Roberts; D. P. Weingartner. *Assistant Professors:* E. L. Barnard; J. A. Rollins; W. Y. Song; C. M. Stiles.

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.

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.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

Courses in nematology are offered by the Department of Entomology and Nematology.

PLP 5005C—General Plant Pathology (4) *Prereq: 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 (3) *Prereq: PLP 3002C/5005C or equivalent.* Plant disease control: concepts, strategies, methods, restrictions, health and environmental concerns, future. Offered spring semester in odd-numbered years.
PLP 5115C—Citrus Pathology (3) *Prereq: PLP 3002C/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 (3) *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 5656C—Mycology (5) *Prereq: BOT 2011C, 3303C, or PLP 3002C/5005C.* Morphology, development, and taxonomy of fungi with field and laboratory exercises emphasizing the ecology and economic importance. Offered fall semester in even-numbered years.
PLP 6223C—Plant Virology (4) *Prereq or coreq: PLP 3002C/5005C.* Principles of plant virology; symptomatology, transmission, insect vector relationships, properties of viruses, purification, electron microscopy, morphology, serology, and control of viral diseases. Offered fall semester in odd-numbered years.
PLP 6241C—Bacterial Plant Pathogens (3) *Prereq: PLP 3002C/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 (4) *Prereq: PLP 3002C/5005C or 5656C.* History, ecology, genetics, physiology, taxonomy, and management of plant pathogenic fungi. Offered spring semester.
PLP 6291—Plant Disease Diagnosis (3) *Prereq: PLP 3002C/5005C, 6262C.* Methods used in diagnosing plant diseases caused by fungi, bacteria, viruses, and abiotic conditions. Offered fall semester.
PLP 6303—Molecular Plant Pathology (3) *Prereq: PLP 6502.* Molecular biology of host-parasite interactions and biochemical mechanisms of pathogenesis. Offered spring semester in even-numbered years.
PLP 6404—Epidemiology of Plant Disease (4) *Prereq: PLP 3002C/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 (3) *Prereq: PLP 3002C/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 6905—Problems in Plant Pathology (1-4; max: 6) Study of any field of plant pathology including diseases of all major crop groups.
PLP 6910—Supervised Research (1-5; max: 5) S/U.
PLP 6921—Colloquium in Principles of Plant Pathology (1; max: 4)
PLP 6932—Seminar in Plant Pathology (1; max: 4) Discussion of the literature, techniques, and research pertaining to plant pathology. S/U.
PLP 6940—Supervised Teaching (1-5; max: 5) S/U.
PLP 6942—Professional Internship in Plant Disease Clinic (3) *Prereq: PLP 6262C and 6291.* Practical training, under supervision of faculty member, in diagnosing plant diseases and formulating recommendations for their management or control. S/U.
PLP 6971—Research for Master's Thesis (1-15) S/U.
PLP 7945—Plant Pathology Extension Internship (3) S/U.

PLP 7946—Plant Pathology Internship (1-10; max: 10) Off-campus internship. S/U.
PLP 7979—Advanced Research (1-12) 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. S/U.
PLP 7980—Research for Doctoral Dissertation (1-15) S/U.

Political Science

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: P. J. Williams. *Graduate Coordinator:* J. S. Barkin. *Manning Dauer Eminent Scholar:* L. Dodd. *Distinguished Professors:* M. M. Conway *(Emeritus);* G. S. Hyden. *Professors:* J. W. Button; S. C. Craig; W. L. Francis *(Emeritus);* D. M. Hedge; K. R. Legg *(Emeritus);* A. R. Matheny; T. L. McCoy; W. A. Rosenbaum *(Emeritus);* R. K. Scher; B. E. Swanson *(Emeritus);* L. P. Thiele; K. D. Wald; P. J. Williams. *Associate Professors:* L. E. Anderson; M. L. Brown; M. Chege; R. S. Conley; W. A. Kelso; M. D. Martinez; I. Oren; M. J. Scicchitano; D.A. Smith; L. Villalon. *Assistant Professors:* J. S. Barkin; A. A. Hozic; R. J. Johnson.; M. L. Kohn; A. Margheritis; B.J. Moraski; B.A. Rosenson; P.J. Woods.

The Department of Political Science offers two degree programs, political science and political scienceinternational relations. Three degrees are offered in each program: Master of Arts in Teaching (nonthesis), Master of Arts (thesis or nonthesis option), and Doctor of Philosophy. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of 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. Applications for spring term are accepted, but discouraged. The core sequence begins in the fall semester, providing basic knowledge that students need in later semesters.

In evaluating candidates for admission, the Department considers (1) prior academic achievement, (2) GRE scores, (3) letters of recommendation from three faculty members or others familiar with the academic potential or work habits of the applicant, and (4) a statement of purpose that conveys intellectual ambitions, indicates how the program of study satisfies the student's interests and goals, and how the student would contribute to the program.

The fields of specialization offered by the Department include American government and politics, comparative politics, international relations, public policy, political theory, and political behavior.

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 Conduct of Inquiry (POS 6736) and Statistical Methods in Social Research I (STA 6126). Students may complete their M.A. degrees with or without writing a thesis. Students electing the M.A. with thesis 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 are required to 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 certificate programs in Political Campaigning, Public Affairs, and International Development Policy and Administration. 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 employed by campaigns. Students take a total of 39 hours from four major areas: (1) the courses required of all M.A. students; (2) courses oriented to practical aspects of political campaigning, including a 3-credit campaign-related internship; (3) courses placing campaigning in the broader context of American politics; and (4) 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, 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.*

International Development Policy and Administration—This certificate program enables students to understand the processes and structures of policy-making aimed at improving conditions in developing countries. For the incoming student with professional experience, it provides an opportunity for upgrading credentials while reflecting on previous experience. For those without practical experience, the program combines academic learning with an opportunity for a professional internship. The program includes basic courses in policy analysis and evaluation,

statistical methods, public administration, policy process, and opportunities for elective courses. This unique program is comparative in focus and engages policy in the context of politics. The University's interdisciplinary strengths in environmental conservation, African studies, and Latin American studies add to the program's vitality and depth. Students are expected to complete 42 credit hours. In addition to the M.A. degree in political science, students receive the *Certificate in International Development Policy and Administration.*

M.A. International Relations—The M.A. degree in political scienceinternational 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 relationsinternational 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 scienceinternational 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 four 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 upon 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. 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 scienceinternational 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 (1) a score of 1200 or greater on the GRE (verbal and quantitative portions), (2) 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, (3) 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 the University of Florida 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 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 are required to complete (1) core seminars in Conduct of Inquiry (POS 6736), Scope and Epistemologies (POS 6716), Data Analysis (POS 6737), and Politics and Theory (POT 6502); (2) course work in a major and two minor fields of study; (3) qualifying examinations in a major field and one minor field; and (4) a dissertation.

Fields of study open to Ph.D. students include comparative politics, American politics, public policy, international relations, political behavior, and political theory. 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.

Ph.D. students are required to offer a major field of study and two minor fields. Qualifying examinations (with both written and oral components) must be completed in the major field of study and one minor field. The other minor field may be completed through course work.

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 on these graduate programs, please consult http://www.clas.ufl.edu/polisci/ on the Internet.

CPO 5935—Advanced Topics in Comparative Politics (3; max: 6) *Prereq: consent of the department.*

CPO 6046—Politics in Advanced Industrial Societies (3) Comparative analysis of typical political, economic, and social problems confronting governments of advanced industrial states.

CPO 6077—Social Movements in Comparative Perspective (3) Examination of major classical and contemporary theoretical approaches to field of collective action and social movements.

CPO 6091—Introduction to Comparative Political Analysis (3) Introduction to major theoretical and methodological approach to study of comparative politics.

CPO 6206—Seminar in African Politics (3) Study of African politics in comparative perspective.

CPO 6307—Latin American Politics I (3) *Prereq: knowledge of Spanish or Portuguese; French may be substituted with consent of instructor.*

CPO 6732—Democratization and Regime Transition (3) *Prereq: CPO 6091.* Review of structural, institutional, and cultural dimensions of democratization, with special attention to Latin America, Africa, and Eastern Europe.

INR 5935—Advanced Topics in International Relations (3; max: 6) *Prereq: consent of the department.*

INR 6039—International Political Economy (3)

INR 6213—Seminar: Politics of the European Union (3) 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 6305—Politics of American Foreign Policy Making (3) Interaction between foreign policy and domestic political variables.

INR 6337—Survey of International Security (3) Some principal problems and issues in area of international security considered on basis of examination of sample of scholarly literature in subfield.

INR 6352—International Environmental Relations (3) Introduction to theories. Processes and results of cooperation between/among states to deal with environmental issues that cross boarders. Design and implementation of international environmental institutions and negotiation of treaties that create institutions.

INR 6507—International Organization (3) *Prereq: 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 (3) Basic forces, problems, and developments in international politics and organization.

PAD 5935—Advanced Topics in Public Administration (3; max: 6) *Prereq: prior approval of department.*

PAD 6108—Public Administration Theory (3) 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 (3) Decision making; budget planning and formulation.

PAD 6434—Leadership and Ethics in Public Agencies (3)

PAD 6865—Development Administration (3) *Prereq: consent of instructor.* Public administration practices in developing societies.

PAD 6946—Internship in Government (3) *Prereq: consent of department.* S/U.

POS 5935—Advanced Topics in Political Science (3; max: 6) *Prereq: consent of the department.*

POS 6045—Seminar in American Politics (3) Introduction to major conceptual approaches to the American political system and to the history of the study of American politics.

POS 6127—State Government and Politics (3) The bibliography, methodology, and research topics of American state and local governments.

POS 6146—Urban Politics (3) Exploration of processes, actors, and institutions in local U.S. politics, along with a brief look at significant issue areas including fiscal crisis, racial conflict, and education.

POS 6157—Community Analysis (3) Development of social, economic, and political profiles in understanding trends, projections, and public policy alternatives.

POS 6207—Political Behavior (3) Consideration of participation, political culture, and public opinion including classic and current research.

POS 6208—Empirical Political Research (3) *Prereq: 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 6247—Seminar in Political Socialization and Political Cognition (3) Review of literature on political socialization, social influence, personality, and political cognition.

POS 6274—Political Campaigning (3) Overview of tasks and challenges, including strategy, uses of campaign polls, organization, management, communication, and mobilization.

POS 6278—Advanced Campaign Strategy (3) *Prereq: POS 6274.* Strategy implications of media production on campaigns, party management, direct mail, polling, and fundraising.

POS 6292—Religion and Politics (3) Interplay between religion and politics from perspective of relevant social science approaches.

POS 6427—Legislative Process (3) Examination of role of legislative institutions in American government.

POS 6453—Political Parties and Interest Groups (3) Examination of structure and functions of political parties and interest groups in the United States.

POS 6712—Empirical Theories of Politics (4) Development of theory as part of empirical inquiry, particularly as it relates to dissertations. Attributes that make a theory compelling and useful, examination of major traditions of empirical theory in political and social sciences. Assistance in creation of theory.

POS 6716—Scope and Epistemologies of Political Science (3) Overview of development of political science as discipline and pluralistic introduction to epistemological perspectives that characterize field.

POS 6736—The Conduct of Inquiry (3) Empirical research methodology in political science.

POS 6737—Political Data Analysis (3) Introduction to quantitative methods and techniques.

POS 6747—Topics in Political Research Methodology (3) Review of recent applications of advanced research methods to different types of political science data.

POS 6757—Survey Research (3) Methods of survey research in context of field investigation. Formulation of research hypotheses; construction of measuring instruments, collection, analysis of data.

POS 6909—Individual Work (1-4; max: 12)

POS 6910—Supervised Research (1-5; max: 5) S/U.

POS 6933—Special Topics (1-3; max: 6)

POS 6940—Supervised Teaching (1-5; max: 5) S/U.

POS 6971—Research for Master's Thesis (1-15) S/U.

POS 7979—Advanced Research (1-12) 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. S/U.

POS 7980—Research for Doctoral Dissertation (1-15) S/U.

POT 5935—Advanced Topics in Political Theory (3; max: 6) *Prereq: consent of department.*

POT 6067—Contemporary Political Theory (3) 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 6314—Democratic Theory (3) 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 6505—Politics and Theory (3) Investigation of nature of political theory and normative issues in politics.
PUP 5935—Advanced Topics in Public Policy (3; max: 6) *Prereq: consent of the department.*
PUP 6006—Policy Evaluation (3) An examination of methodologies appropriate to the analysis of public policies.
PUP 6007—Policy Process (3) 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 (3) 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 6015—Comparative Policy Analysis (3) Examination of various approaches to policy analysis in comparative perspective.
PUP 6315—Race, Gender, and Politics (3) Politics and cultural discrimination, political power, political behavior, and public policy.

Psychology

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: M. Heesacker. *Graduate Coordinator:* G. J. Neimeyer. *Graduate Research Professors:* P. J. Lang; P. Teitelbaum; W. B. Webb. *Professors:* J. Archer; W. K. Berg; M. N. Branch; H. J. Brockmann; W. C. Cunningham; W. W. Dawson; D. A. Dewsbury; F. R. Epting; E. B. Fennell; I. S. Fischler; M. A. Fukuyama; R. A. Griggs; T. D. Hackenberg; M. Heesacker; B. Iwata; J. H. Johnson; C. M. Leonard; C. M. Levy, Jr.; M. H. Lewis; M. E. Meyer; P. H. Miller; S. A. Miller; J. I. Morgan; G. J. Neimeyer; H. S. Pennypacker, Jr.; J. L. Resnick; K. Rice; N. E. Rowland; P. G. Schauble; B. R. Schlenker; L. J. Severy; R. D. Sorkin; A. C. Spector; D. Stehouwer; D. I. Suchman; C. M. Tucker; C. J. VanHartesveldt; C. J. Vierck; D. W. Walker; R. West; R. C. Ziller. *Research Professor:* M. M. Bradley. *Associate Professors:* D. Albarracin; M. Diehl; F. D. Eyler; M. J. Farrar; M. R. Fondacaro; J. A. Graber; B. R. Karney; J. A. Shepperd; T. R. Vollmer; K. D. White. *Assistant Professors:* L. Abrams; D. P. Devine; A. E. Stewart.

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 *General Information* section of this catalog. Students are not accepted for a terminal master's degree.

Doctoral areas of specialization include the teaching and research areas of cognition and sensory processes, comparative, developmental, behavior analysis, behavioral 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 psychology 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 with GRE scores lower than 1200 are usually not admitted to graduate study in psychology.

Psychology/Law Joint Degree Program—The Department of Psychology and the College of Law offer a joint degree program leading to a Ph.D. degree in psychology and a juris doctorate in law. Students wishing to pursue the joint program must be admitted to both the Graduate School and the College of Law. Admission to one may precede the other. A maximum of 12 credit hours for course work in psychology will be approved for application toward the law degree. For further information write to the Graduate Coordinator, Department of Psychology, P.O. Box 112250.

Co-major—The Department offers two co-major programs in conjunction with the Department of Educational Psychology leading to the Doctor of Philosophy degree in psychology and either educational psychology or research and evaluation methodology.
CBH 6056—Comparative Psychology (3; max: 9) *Prereq: consent of instructor.* A survey of literature.
CLP 6169—Seminar: Psychology and Deviant Behavior (3; max: 6) Analysis of specific deviant behaviors, with emphasis on theory and research related to diagnosis and clinical management.
DEP 6057—Advanced Developmental Psychology I (3) Surveys research literature on developmental changes during infancy and cognitive development during childhood.
DEP 6058—Advanced Developmental Psychology II (3) Advanced coverage of child social/personality development and cognitive/personality development in adolescence through old age.
DEP 6059—Seminar: Special Topics in Developmental Psychology (1-3; max: 12) Examination of theory and research in selected topic.
DEP 6099—Survey of Developmental Psychology (2-3; max: 3) *Prereq: graduate status.* Empirical, theoretical, and methodological foundations of developmental psychology.
DEP 6406—Advanced Adulthood and Aging (3) Overview of major theories and research in psychology in relation to aging.
DEP 6409—Seminar: Adult Development and Aging (3; max: 9) Topics in the psychology of aging, with emphasis on theory, research, and methodology.
DEP 6799—Current Research Methods in Developmental Psychology (3) Methods for study of development, including experimental and observational techniques.
DEP 6936—Current Research in Developmental Psychology (1-2; max: 20)
DEP 7608—Theories of Developmental Psychology (3) Theoretical perspectives and major theorists in child and developmental psychology.
EAB 5436—Behavioral Pharmacology (3) *Prereq: 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 (2-3; max: 3) *Prereq: admission to graduate status or permission 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 (3) *Prereq: 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 (3) Research methods. Measurement, reliability, experimental design, extension of basic research to applied settings.

EAB 6716—Behavior Analysis in Developmental Disabilities (3) *Prereq: 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 (3) *Prereq: EAB 6707.* Advanced study of a scientific approach to investigating human behavior in applied settings.

EAB 6750—Quantitative Methods (3) Introduction to quantitative methods in single-case research.

EAB 6937C—Seminar: Special Topics in Experimental Analysis of Behavior (1-4; max: 9) *Prereq: EAB 6099.* Current research, theory, and instructional techniques.

EAB 6939—Seminar: Special Topics in Applied Behavior Analysis (1-3; max: 9) Current research, technological developments, and professional issues.

EAB 7089—Advanced Seminar: Experimental Analysis of Behavior (3; max: 9) *Prereq: 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 (3) *Prereq: EAB 6118.* Current empirical and theoretical issues relevant to functional analysis of verbal behavior.

EXP 5256—Human Factors I (3) Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems.

EXP 6099—Survey of Cognition and Sensory Processes (2-3; max: 3) *Prereq: graduate status.* Empirical and theoretical foundations.

EXP 6609—Seminar: Cognition (3; max: 9) *Prereq: 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 (3; max: 9) *Prereq: consent of instructor.*

GEY 7408—Psychotherapy with Older Adults (3) *Prereq: 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.

MHS 6430—Introduction to Family Counseling (3) *Prereq: MHS 6401, 7800.*

MHS 6440—Marriage Counseling (3)

MHS 7431—Advanced Family Counseling (4) *Prereq: MHS 6430.*

PCO 6057—Psychology of Counseling I (3) *Prereq: graduate status in the counseling psychology program.* Theory, research, and skills in therapeutic approaches to counseling psychology.

PCO 6058—Psychology of Counseling II (3) *Prereq: graduate status in counseling psychology program.* Theory, research, and skills in short-term approaches to counseling psychology.

PCO 6059—Psychology of Counseling III (3) *Prereq: PCO 6058.* Theory, research, and skills in psychodynamic approaches to counseling psychology.

PCO 6316C—Psychological Assessment I (3) *Prereq: 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 (3) *Prereq: consent of instructor.* Consideration of the fundamental theories of personality and individual assessment of personality. Included will be practicum-type administration of personality tests.

PCO 6931—History and Contemporary Issues in Counseling Psychology (3) Introduction to foundations of counseling psychology and its research. Contemporary literature of discipline.

PCO 6939—Seminar: Current Topics in Counseling Psychology (3; max: 15) *Prereq: MHS 6401 or consent of instructor.* Emphasis on theoretical background and implications for applied work.

PCO 7217—Professional Ethics and Skills in Counseling Psychology (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: graduate student status and permission of instructor.* Examination of major theories and research with emphasis on vocational assessment.

PCO 7944—Practicum in Counseling Psychology (1; max: 12) *Prereq: PCO 7217.* For second year doctoral students in counseling psychology, 12 hours per week of on-site clinical work plus individual and group supervision. S/U.

PCO 7945—Advanced Practicum in Counseling Psychology (1; max: 4) *Prereq: PCO 7217, 7947.* For advanced students in counseling psychology, on-site clinical work at approved mental health agencies. Twelve to 15 hours per week of work including individual and group supervision. S/U.

PCO 7949—Internship in Counseling Psychology (2; max: 12) *Prereq: 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.

PPE 6059—Seminar in Personality (3; max: 9) Personality development and dynamics.

PPE 6308—Research Methods II (3) *Prereq: PPE 6307 or consent of instructor.* Theoretical, methodological, and procedural aspects of research in social-personality. Emphasis on issues encountered in the design and analysis of experiments.

PSB 5445—Drug Use and Abuse (3) *Prereq: 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 (1-3; max: 10) *Prereq: PSB 3004 or 3054 and STA 3023.* Selected topics in behavioral neuroscience. S/U option.

PSB 6082—Neuroethology (3) *Prereq: 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 (3) 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 (3) *Prereq: PSB 6087.* Behavioral studies involving physiological manipulations and measures, and criticism of the scientific inferences therein.

PSB 6099—Survey of Physiological and Comparative Psychology (2-3; max: 3) *Prereq: graduate status.* Empirical and theoretical foundations of physiological and comparative psychology.

PSB 7248—Neurobehavioral Relations (3) *Prereq: 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 (3) *Prereq: PSB 6087.* Recent and specialized topics in brain-behavior relations.
PSY 6608—History of Psychology (2-3; max: 3)
PSY 6905—Individual Work (1-3; max: 10) Reading or research areas in psychology.
PSY 6910—Supervised Research (1-3; max: 5) S/U.
PSY 6930—Topics in Psychology (1-3; max: 9)
PSY 6939—Seminar: The Teaching of Psychology (1-3; max: 10) *Prereq: 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 lecturers.
PSY 6940—Supervised Teaching (1-3; max: 5) S/U.
PSY 6971—Research for Master's Thesis (1-6) S/U.
PSY 7979—Advanced Research (1-12) 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. S/U.
PSY 7980—Research for Doctoral Dissertation (1-12) S/U.
SOP 6099—Survey of Social Psychology (2-3; max: 3) *Prereq: graduate status.* Empirical and theoretical foundations of social psychology.
SOP 6219C—Advanced Research Techniques in Social-Personality Psychology (3; max: 12) *Prereq: consent of instructor.*
SOP 6409—Seminar: Current Topics in Social-Personality Psychology (3; max: 12)
SOP 6419—Seminar: Attitudes and Social Cognition (3; max: 12) *Prereq: graduate status.* Seminar addressing topics such as attitude change, attribution, social perception, social cognition, etc.
SOP 6509—Seminar: Interpersonal Relations and Group Processes (3; max: 12) *Prereq: graduate status.* Seminar addressing topics such as impression management, leadership, small group behavior, conflict and accord, and race relations.
SOP 6929—Colloquium in Research in Social-Personality Psychology (1; max: 8) *Prereq: graduate status in social-personality psychology.* On-going colloquium series intended for graduate students in social-personality psychology involving the presentation and discussion of research initiatives.

Public Health

Colleges of Health and Human Performance, Public Health and Health Professions, and Medicine

Graduate Faculty 2004-2005

Director: M. Peoples-Sheps. *Assistant Director:* P. Vickery. *Distinguished Professor:* A. Agresti. *Professors:* N. Asal; G. Casella; M. Chang; W. Chen; J Delfino; T. Dolan; R. P. Duncan; L. C. Gapenski; M. Ghosh; A. Hartzema; J. Heaney; R. Marks; M. Perri; S. Roberts; M. Robinson; R. Rozensky; S. Sears; R. Segal; C. Sims; S. Tomar; L. Young. *Associate Professors:* Y. Q. Chen; M. Daniels; R. Davidson; S. Hanson; M. Marsiske; N. L. McKay; K. Portier; W. Properzio; R. Wu. *Assistant Professors:* D. Barber; R. Barnett; M. J. Cote; M. Devidas; C. Garvan; D. Janicke; S. Kneipp; C. H. Lemak; W. London; L. Lopez; D. Pereira; L. Tian; A. Winterstein; S. Wu.

Public Health

The College of Public Health and Health Professions offers the Master of Public Health degree program in partnership with several other college units and the states area health education centers. This nonthesis program is designed to prepare students to become effective public health practitioners, scientists, and educators. Students select one of five concentration areas: (a) biostatistics; (b) environmental health; (c) epidemiology; (d) public health management and policy; or (e) social and behavioral sciences. Students are encouraged to select electives which, as a group, comprise a clear area of emphasis. A variety of potential emphases including aging, disability, and community/social health are possible. Both a 48-credit program for students without terminal health care degrees and a 36-credit program for working health care professionals are offered. A combined bachelors/master of public health program is available as well as a 15-credit college certificate program. Students interested in pursuing any of these options can find information on how to apply at the public health program website www.mph.ufl.edu.

48-Credit Master of Public Health—Students who do not hold a professional degree in a health care discipline are eligible to apply for the 48-credit program. The program provides comprehensive coverage of core public health knowledge and allows selection of a concentration. Students must complete 15 credits of core public health course work, 6 credits of an integrative seminar and special project, and 27 credits of concentration and elective courses, determined by the concentration selected. The course work representing these requirements is described below.

36-Credit Working Professional Master of Public Health—Students who hold a terminal degree (professional or doctoral degree) in their health care discipline may be eligible for the 36-credit working professional program. This program requires completion of 15 credits of core public health course work, 15 credits of concentration course work, and 6 credits of a special project and/or other course work accepted by the supervisory committee.

A complete description of the requirements for the M.P.H. degree is provided in the *General Information* section of this catalog.

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. Juniors and seniors with any undergraduate major are eligible for consideration for the combined degree program as long as they have an undergraduate GPA of at least 3.2, a combined score of 1100 on the verbal and quantitative portions of the GRE, and their career interests match the graduate program. Students accepted into the combined degree program complete 15 credits of public health course work while still an undergraduate, 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

Students in the biostatistics concentration must take STA 6207. Students in other concentrations may choose between PHC 6050 and STA 6207. All students must take at least three credits of special project selected from PHC 6912, 6913, or 6946. The following core courses are required of all students, regardless of concentration, except as noted above.

PHC 6001—Principles of Epidemiology in Public Health (3) *Prereq:* Distribution and determinants of health-related states or events in specific populations and application to control of health problems.

PHC 6050—Statistical Methods for Health Science I (3) 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.

PHC 6102—Introduction to Public Health Administrative Systems (3) Overview of public health concepts and practice; focus on comprehensive understanding of organization, structure, and administration of U.S. public health system.

PHC 6313—Environmental Health Concepts in Public Health (3) Survey of major topics of environmental health. Sources, routes, media, and health outcomes associated with biological, chemical, and physical agents in environment. Effects of agents on disease, water quality, air quality, food safety, and land resources. Current legal framework, policies, and practices associated with environmental health and intended to improve public health.

PHC 6406—Psychological, Behavioral, and Social Issues in Public Health (3) Health and behavior from social and community perspective, including comparison of various theories regarding social and behavioral approaches to public health.

PHC 6912—Special Project: Directed Independent Research (1-6; max: 6) *Prereq: consent of instructor and 18 credits of major course work.*

PHC 6913—Biostatistics Project (3) *Prereq: enrolled in last year of M.P.H. program.* Develop a research project and assume responsibility for statistical analysis of public health application.

PHC 6930—Integrated Public Health Seminar (3) Integration, synthesis, and application of material learned to unique public health problems that require multiple specialties for solution.

PHC 6946—Special Project: Public Health Internship (1-6; max: 6) *Prereq: consent of instructor and 18 credits of major course work.* In lieu of research project, fieldwork at approved site. Focus on practical application of skills in student's specialty area. Required final paper. S/U.

STA 6207—Basic Design and Analysis of Experiments (3) *Prereq: STA 4211, 4322.* 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.

Biostatistics

The contribution of biostatisticians is far reaching and includes both core public health research and consultation with other health professionals. The biostatistics concentration prepares students to apply quantitative and analytical methods to public health research and evaluation. Students must take nine credits in the concentration core courses, STA 6176, 6177, and 6329, described below. In addition, students must take six credits of the following concentration electives: STA 5223, 5325, 5328, 5503, 5507, 5701, 5823, 5930, and 6208. Students also must take 12 credits of public health electives6 credits can be taken from concentration electives above or public health course work from other concentrations.

STA 6176—Introduction to Biostatistics (3) *Prereq: STA 6207, 6326.* Analysis of epidemiological studies, measures of morbidity and mortality, methods for rates and proportions, bioassay, longitudinal data analysis.

STA 6177—Advanced Topics in Biostatistics (3) *Prereq: STA 6327.* Survival analysis, Kaplan-Meier estimates, proportional hazards model, related tests, phase I, II, and III clinical trials, designs and protocols.

STA 6329—Matrix Algebra and Statistical Computing (3) *Prereq: 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.

Epidemiology

Epidemiology focuses on the study of the distribution and determinants of health states in populations and communities. It is a scientific foundation of public health research and contributes to other areas of public health via understanding the spread of disease as well as normal population changes. This concentration is designed to train students to apply the principles and methods of epidemiological investigation to prevent or lessen the spread of disease. Students must take the following 9 credits of the concentration core: PHC 6000, PHC 6002, and PHC 6003, described below.

In addition, students must take nine credits of the following biostatistics core: STA 6147, 5507, and 6207. Students also choose six epidemiology elective credits from the following: BMS 5822, BMS 5823, PHC 6405 and three credits of public health electives from other specializations.

PHC 6000—Epidemiology Methods I (3) *Prereq: approval of department.* Overview of epidemiology methods used in research studies that address disease patterns in community- and clinic-based populations.

PHC 6002—Epidemiology of Infectious Diseases (3) Epidemiology, prevention, and control of infectious diseases impacting 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 (3) Overview of epidemiology of chronic diseases and disabilities prevalent in various populations and introduction of contemporary methods for surveillance including risk factors, etiology, and changes over time.

Environmental Health

The environmental health concentration addresses current environmental threats to health and offers particular depth in risk assessment. Students receive training in general toxicology, specific toxic substances, and human health and environmental risk assessment. Students must take 10 credits of concentration core courses: VME 6602, 6607, and 6930.

In addition, students must choose 14 credits from the following: PHC 6000, PHA 6425, PHA 5521, GMS 7593, VME 6606, VME 6603, ALS 5106, ABE 5707C, ABE 5815C, ALS 6933, ANG 5467, ANG 5700, FOS 5205, FOS 5732, FOS 5225C, EES 5207, EES 5107, EES 6405, EES 5245, EES 5307, INR 6352, PHC 6309. Students also select 3 credits from public health concentration course work offered by other tracks.

VME 6602—General Toxicology (3) *Prereq: background in biochemistry, physiology, and pharmacology.* General principles of toxicology and mechanisms by which toxic effects occur in target organs and tissues.

VME 6606—Ecological Risk Assessment (3) *Prereq: VME 6602.* Indepth information on signs, symptoms, underlying mechanisms, diagnosis, and management of bpoisoning by drugs and chemicals.

VME 6607—Human Health Risk Assessment (4) Conceptual approaches and computational techniques for quantitative health risk assessment.

Public Health Management and Policy

This concentration is designed to provide students with the skills necessary for effective management of public health organizations. In addition, students are prepared to interpret and evaluate government policy as it affects the official public health system, the health care system, and access to care by the public. Students must take the core courses described below (15 credits). In addition, students identify and take six credits in public health management, public policy, or pharmacoeconomics. For public health management, students may select six credits from the following courses: PHC 6112, PHC 6146, PHC 6586, PHC 6700, and selected HSA courses approved by the concentration coordinator. For public policy, students select six credits from the following: PUP 6009, PUP 6007, PUP 6006, POS 6127. For pharmacoeconomics, students select six credits from PHA 6250, PHA 6252, PHA 6262, PHA 5263. Students also take six credits of public health electives.

HSA 5103—Introduction to the U.S. Health Care System (3) Overview of organization, delivery, and financing. Historical antecedents, patients, providers, payers, and health policy.

HSA 5119—Introduction to Management of Health Services Organizations (3) Organizational principles and practices as applied to management. Organizational theory, managerial role, managing groups, work design, organization design.

HSA 5153—Overview of U.S. Health Policy (3) Politics versus policy, health policy process, implementation of health-related policy, roles of federal, state, and local levels of government.

HSA 5177—Fundamentals of Health Care Finance (3) Introduction to basic theory and principles of finance as applied to health care industry. Financial statements, cost measurement, budgeting, and capital investment decisions.

PHC 6105—Organization and Administration of Public Health Programs (3) Structure and function of local, state, and federal programs, including official agencies, voluntary agencies, and health-related private sector activities in relation to current emphases on health promotion and chronic disease control.

Social and Behavioral Sciences

The social and behavioral sciences concentration is based on 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). Through classroom instruction, research, and field practice, students explore the unique issues faced by diverse groups and populations and apply the skills they acquire to achieve social and behavioral change. Students are required to take 15 credits of core courses, PHC 6700, PHC 6112, PHC 6586, and PHC 6146, and 1 of the following courses that provide opportunities for exploring a wide breath of substantive areas deemed public health priorities: NGR 6930, SYO 6406, FYC 6660, PHC 6585, PHC 6418 These core courses enable students to acquire and apply new knowledge and tools in social and behavioral theory, research methods, public health interventions, need and asset assessment and surveillance, and ultimately program planning and evaluation. In addition, students are able to choose up to 12 credits from a unique selection of elective courses that allow them to tailor their education to meet their specific substantive interests and career goals. Electives may be chosen from the following: PHC 6413, PHC 6543, PHC 6544, HSA 5103, FYC 6330, NGR 6930, HSC 5135, HSC 5138, HSC 5142, HSC 5576, HSC 5626, HSC 6571, HSC 6575, HSC 6625, HSC 6935, HSC 5315C, HSC 6567, HSC 6576, SYP 6735, SYP 6736, SYD 6706, SYD 6436, SYD 6707, SYD 6807, SYO 6107, SYO 6405, SYO 6535, SYP 6065, SYP 6550, SYP 6525, FYC 6302, FYC 6020, FYC 6421, FYC 6422. Finally, students are given the opportunity to apply their new understanding and skills to a real-world experience through participation in a mentored organizational or community-based public health internship.

PHC 6112—Assessment and Surveillance in Public Health (3) First of three courses designed to provide skills to execute public health programs. Examination of diverse definitions of community and routine health surveillance systems at the local, state, and federal levels and approaches for conducting comprehensive community health assessments necessary for designing interventions that impact social and behavioral factors in health and illness.

PHC 6146—Public Health Program Planning and Evaluation (3) Third of three courses designed to provide the skills to develop and implement public health programs. Focus on six steps in rational planning process. Evidence-based public health principles, organizational influences, and other contemporary themes of program planning emphasized.

PHC 6586—Interventions for Public Health (3) 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 6700—Social and Behavioral Research Methods (3) Research methods and their specific applications to public health issues.

PHC 6946—Special Project: Public Health Internship (1-6; max: 6) *Prereq: consent of instructor and 18 credits of major course work.* In lieu of research project, fieldwork at approved site. Focus on practical application of skills in student's specialty area. Required final paper. S/U.

General Classes

Additional required and elective courses not listed below are described in their respective departmental/program sections in this catalog.

PHC 6153—Public Policy and Aging (3) Examination of policies relevant to older residents, such as national and state initiatives, presidential and gubernatorial leadership, implementation processes and consequences in policy process. Focus 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 6309—Environmental Justice Issues in Public Health (3) *Prereq: approval of department.* Key components as they relate to public health. Environmental justice refers to tenet that certain populations bear disproportionate burden of environmental hazards.

PHC 6418—Foundations in Aging and Public Health Policy and Epidemiology (3) General overview of varied aspects of public health and aging, including biopsychosocial, environmental, and policy issues impacting the social welfare of older adults.

PHC 6543—Community Practice of Behavioral Health Risk Prevention (3) Application of skills for 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—Community Behavioral Health Interventions (3) Review of models and development of interventions for existing health problems at community and individual levels with focus on overcoming barriers to treatment and service utilization.

PHC 6585—Health Promotion and Disease Prevention (3) History, current theories, and application of methodologies of health promotion and disease prevention.

PHC 6905—Independent Study (1-6; max: 6) *Prereq: consent of instructor.*

PHC 6917—Directed Research (1-6; max: 6) *Prereq: consent of instructor.*

PHC 6937—Special Topics in Public Health (1-6; max: 12)

PHC 6945—Public Health Practicum (1-6; max: 6) *Prereq: approval of practicum site and consent of instructor.*

VME 6606—Ecological Risk Assessment (3) *Prereq: VME 6602.* In-depth information on signs, symptoms, underlying mechanisms, diagnosis, and management of poisoning by drugs and chemicals.

Public Health and Health Professions–General

College of Public Health and Health Professions

Dean: R. G. Frank.

The following courses are offered under the supervision of the office of the dean by an interdisciplinary faculty and deal with specialized topics or material involving two or more health professions areas. These courses are also open to students of other colleges, with the permission of the course instructor.

HSC 5938—Special Topics (1-6; max: 12)

HSC 6905—Independent Study (1-3; max: 12)

HSC 6939—Special Topics (1-5; max: 10) S/U option.

HSC 6940—Supervised Teaching (1-5; max: 5) S/U.

Rehabilitation Counseling

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Chairman: H. W. Sawyer. *Graduate Coordinator:* L. R. Shaw. *Professors:* H. W. Sawyer; J. P. Saxon. *Associate Professors:* L. R. Shaw; R. J. Spitznagel. *Assistant Professor:* S. R. Pruett.

The Department offers the Master of Health Science degree (thesis and nonthesis options) in rehabilitation counseling. A complete descriptions of the minimum requirements for this degree is provided in the *General Information* section of this catalog.

The program is accredited by the Commission on Rehabilitation Education. The program is designed to prepare professional personnel to assist people to overcome mental, physical, or emotional handicaps toward personal and vocational independence. Students may specialize through selecting appropriate practicum and internship experiences and elective courses. Areas of specialization may be arranged with approval of the Department. The program consists of four to five semesters, including the equivalent of a one-semester full-time internship. Appropriate course selection meets requirements for national and state licensure and certification in rehabilitation counseling and mental health counseling.

In addition to the requirements of the Graduate School, acceptance into the program is dependent upon the completion of an appropriate undergraduate degree, relevant vocational background, and demonstrated interest in the helping professions.

RCS 5062—Orientation to Disabilities (3) Introduction to psychological, social, vocational, adjustment barriers and techniques used to overcome these hindrances to rehabilitation.

RCS 5245—Psychosocial and Cultural Foundations of Rehabilitation Counseling (3) Intersection of psychological, social, and cultural factors in adaptation to physical and mental disabilities.

RCS 5410—Introduction to Rehabilitation Counseling (3) Orientation to the rehabilitation process, including a survey of history, principles, philosophy, and legal aspects of rehabilitation and related fields.

RCS 5803—Advanced Rehabiltative Services Practicum (3) *Prereq: RCS 4415 and 4800.* Service in rehabilitative service agency under close supervision of agency staff. Participation in staff training and seminars.

RCS 5805—Advanced Rehabilitative Agency Practicum (3) *Prereq: RCS 4415.* Observation in depth of practices and procedures of two selected rehabilitative service agency programs.

RCS 6066—Rehabilitation Issues in Human Growth and Development (3) 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 (3) 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 (3) *Prereq: RCS 6320.* Utilization of career development theory, vocational, and other relevant information in facilitating vocational outcomes.

RCS 6255C—Individual Evaluation and Assessment in Rehabilitation Counseling (3-4; max: 4) Measurement concepts and use of 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 6320—Occupational Aspects of Rehabilitation Counseling (3) Work behavior development and adjustment; work environmental factors; job analysis and adaptation; planning, placement, and follow-up.

RCS 6412—Rehabilitation Counseling Theory and Practice (3) Individual and group counseling theories and applications to persons with disabilities.

RCS 6458—Substance Abuse and Disability in Rehabilitation Counseling (3) Rehabilitation implications of drug and alcohol use in workplace and society. Emphasis on identification, prevention, treatment, and follow-up services.

RCS 6470—Human Sexuality and Disability (3) Physiological and psychological aspects of human sexuality and impact of disability and chronic illness on sense of sexuality and sexual functioning.

RCS 6625—Community Counseling and Case Management (3) Orientation to functions comprising counseling and case management roles in diverse settings.

RCS 6641—Applied Case Management and Consultation in Rehabilitation Counseling (3) *Prereq: consent of instructor.* Case management strategies and rehabilitation consultation with individuals with acquire disabilities. Emphasis on medical and vocational information in case management and in legal area.

RCS 6740—Rehabilitation Research (3) Research design and methodology, programmatic evaluation, research utilization.

RCS 6780—Ethical, Legal, and Professional Issues in Rehabilitation (3) Overview of professional issues in rehabilitation counseling with emphasis on ethical and legal issues, credentialing, and professional roles.

RCS 6801—Rehabilitation Counseling Practicum (3) *Prereq: RCS 6412.* Supervised counseling in a rehabilitation agency or facility. The emphasis is on counselor-client relationships in personal and adjustment counseling.

RCS 6802C—Rehabilitation Counseling Skills and Techniques (3) Basic knowledge and skills in individual and group counseling techniques.

RCS 6825—Internship in Rehabilitation Counseling (6-12; max: 12) Intensive supervised experience in rehabilitation setting or facility. Works with a caseload providing counseling, assessment, placement, and follow-up services to disabled clients.

RCS 6905—Individual Work (1-4; max: 4) Work not available in other courses.

RCS 6910—Supervised Research (1-5; max: 5) S/U.

RCS 6931—Special Topics (1-3; max: 9) Study of topics in research and practice in rehabilitation counseling.

RCS 6940—Supervised Teaching (1-5; max: 5) S/U.

RCS 6945—Advanced Rehabilitation Counseling Practicum (2-3; max: 6) *Prereq: RCS 6412, 6800, 6801.* Supervised counseling and casework with emphasis on process and outcome of rehabilitation procedures.

RCS 6971—Research for Master's Degree (1-15) S/U.

Rehabilitation Science

College of Public Health and Health Professions

Graduate Faculty 2004-2005

Director: W. C. Mann. *Professors:* M. A. Crary; P. W. Duncan; R. A. Hayes; W. C. Mann; H. W. Sawyer; J. P. Saxon. *Clinical Professors:* J. Hall; J. Rosenbek. *Associate Professors:* A. L. Behrman; M. Horodyski; S. Kautz; C. Levy; K. E. Light; A. D. Martin; L. G. Richards; O. Shechtman; L. R. Shaw; R. J. Spitznagel; K. Vandenborne; C. Velozo. *Assistant Professors:* T. Chmielewski; N. R. Chumbler; C. Faircloth; D. Fuller; S. George: H. K. Seung.

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. In addition, students design their own specialty areas within the broad categories of movement dysfunction, social and behavioral integration, or communication neuroscience. Upon successful completion of the program, graduates take positions in education, research, and management not typically available to individuals with entry-level clinical degrees.

A complete description of the requirements for the Ph.D. degree is provided in the *General Information* section of this catalog.

To be considered for admission, students must possess an entry-level professional degree (occupational therapy, physical therapy, rehabilitation counseling, speech pathology, etc.), have professional experience in a rehabilitation related area, and be committed to scholarly work in rehabilitation and an interdisciplinary educational philosophy and training model. 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. 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.

RSD 6110—Rehabilitation Science Theory and Application I (3) Review of philosophical and theoretical foundations, history of development of rehabilitation services and funding, and evolution of health care systems in U.S.

RSD 6112—Rehabilitation Science Theory and Application II (3) *Prereq: 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 6400—Models and Principles of Motor Learning and Control: Application in Rehabilitation Science (3) Major themes, theoretical frameworks and principles drawn from motor learning and control research that influencing evidence-based therapeutic practice and research.

RSD 6705—Research Methods in Rehabilitation (4) *Prereq: graduate-level statistics.* Research measurement and theory applied to rehabilitation. Research design.

RSD 6900—College ClassroomTeaching Process and Practice (3) Information and skills required for successful teach faculty in college classroom.
RSD 6905—Individual Work (1-4; max: 12) *Prereq: RSD 6112, consent of adviser, and approval of project.* Special project or research.
RSD 6910—Supervised Research (1-5; max: 5) S/U.
RSD 6930—Special Topics in Rehabilitation Science (1-4; max: 9) *Prereq: RSD 6112, 6705.*
RSD 6940—Supervised Teaching (1-5; max: 5) S/U.
RSD 7979—Advanced Research (1-4; max: 12) 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. S/U.
RSD 7980—Research for Doctoral Dissertation (1-15) S/U.

Religion

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: D. G. Hackett. *Graduate Coordinator:* B. Taylor. *Eminent Scholar of Religion and Ethics:* B. Taylor. *Professors:* V. R. Narayanan; A. L. Peterson. *Associate Professors:* R. C. Foltz; D. G. Hackett; S. R. Isenberg; J. R. Mueller; G. R. Thursby; M. A. Vasquez. *Assistant Professors:* L. Hochman; G. Kessler; J. Neelis; M. Poceski; Z. Simmons.

The Department of Religion offers the (1) Master of Arts and (2) Doctor of Philosophy degrees in three fields of specialization: religion in the Americas, religions of Asia, and religion and nature. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The first two specializations provide advanced education in the academic study of religion with an inclusive focus on the religions and religious experiences of peoples in 1) North, Central and South America or 2) South and East Asia as well as in the Asian diasporas. The third specialization addresses in a systematic way the religious and ethical dimensions of human attitudes and practices regarding the natural world. Specific and current requirements for each these three fields of study are found online under "Graduate Program" at http://religion.ufl.edu. In special instances, and with the agreement of the graduate advisory committee and two sponsoring faculty members, master's degree students may choose an area outside the three designated 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:

1) Three recommendation letters from persons competent to evaluate the applicant's potential for graduate work and 2) an essay of three to five double-spaced, typewritten pages identifying the applicant's goals and particular interests within the three available fields of study; and 3) a writing sample.

Master of Arts—*Purpose:* 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 fields of specialization. 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 fields), and six hours of thesis research credits. The additional hours shall consist of further courses in the area of specialization, other graduate seminars, and up to six hours of research language study.

Language study: All M.A. students are required to demonstrate competency in a scholarly language other than English prior to beginning the thesis. Most languages are acceptable, though students should consult the individual field requirements. The chosen language must be approved by the students 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—*Purpose:* The Ph.D. program trains future scholars to conduct original research and teach in colleges, universities, and other educational, governmental, and nongovermental institutions. A student usually enters with a religion masters degree either from this or another institution. All students are admitted into one of the three specialty fields and must fulfill the requirements of that field, as outlined in the field descriptions. In addition, students in all fields are encouraged to take courses in other departments to support work in their field of specialization.

Course requirements: The University of Florida requires 90 hours of course work for the Ph.D. 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. Each field of study specifies these requirements.

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 members of 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 prospectus: Each doctoral candidate submits a formal dissertation proposal to the chair of the supervisory committee at least three weeks prior to the end of the semester following the completion of the qualifying examinations.

Admission to candidacy: Upon successful completion of the qualifying examinations and of the dissertation prospectus, 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 soon after admission to the program, based on expressions of faculty interest and the students intended area of concentration. The mentor and graduate coordinator answer questions and provide support for the student in choosing courses and planning a program. After the second semester of study, the student must establish a supervisory committee.

Combined Program—The Department offers a bachelor's/master's degree program. Contact the graduate coordinator for information.

For details about the programs listed above, visit http:www.religion.ufl.edu.

REL 5187—Nature in Asian Religions (3) Exploration of themes such as interconnectedness and interdependence, nonexclusivity, and biocentrism in ethical systems of religious traditions of Asia.

REL 5195—Topics in Religion and Society (3; max: 6) Investigation of the interaction between religious bodies and the structures of the societies in which they function, with particular attention to the United States.

REL 5297—Topics in Biblical Studies (3; max: 9) Study of the methods of interpretation of particular texts or themes chosen from Hebrew scriptures or the Christian New Testament.

REL 5338—Topics in Asian Religions (3; max: 9) Study of the religious traditions which are indigenous to India, China, or Japan.

REL 5365—Studies in Islam (3; max: 9) Historical study of development of selected doctrines, institutions, and practices, using primary and interpretative material.

REL 5396—Religion and Animals (3) Place of animals within cosmologies and ethical systems of world's diverse religions.

REL 5495—Topics in Religious Thought (3; max: 9) Investigation of particular themes in a religious tradition or the comparative approach to intellectual dimensions of religious communities.

REL 5549—Studies in Christianity (3; max: 9) Historical study of development of selected Christian practices, doctrines, and institutions, using primary sources and interpretative material.

REL 5696—Topics in Jewish Thought (3; max: 9) Themes, issues, and personalities in the Jewish tradition, from the biblical period through modern times.

REL 5906—Individual Work (1-5; max: 12) Study of chosen materials under the individual direction of a member of the Graduate Faculty. Plan of study and method of evaluation must be approved by the graduate committee in advance.

REL 5937—Topics in Religious Studies (3; max: 9) Issues and methods in the study of religion; generally more than one religious tradition is studied.

REL 6035—Method and Theory I (3) *Prereq: graduate standing. Required of all religion graduate students.* Examination of classical formulations of approaches to study of religion and to development of religious studies as academic discipline.

REL 6036—Method and Theory II (3) *Prereq: REL 6035 and graduate standing; required of all religion graduate students.* Study of religion in light of recent challenges within humanities and social sciences. Special attention to concept of religion and its origins in Christian culture of Western Europe and to engagement of religion within colonial culture.

REL 6107—Core Seminar in Religion and Nature (3) Religious dimensions of relationships between what humans call "nature" and "culture."

REL 6125—Religion and Politics in the Americas (3) Relationship between socio-political change and religion in the Americas from pre-colonial period until present.

REL 6129—Hindu Traditions in America (3) Exploration of cultural, religious, and social issues.

REL 6137—Religion in North America (3; max: 6) Examination of the religious bodies in the United States, from historical, sociological, and theological perspectives.

REL 6138—New Religious Movements (3) New, emerging, or alternative religious groups likely to receive pejorative label of cult; types of leadership, organization, ritual, and ideology of such groups.

REL 6139—Religion in the Americas (3) Origins and interactions of religions in the Americas.

REL 6167—Radical Environmentalism (3) Critical examination of emergence and social impact of radical environmental groups.

REL 6181—Ethics and the Natural Sciences (3) Perspectives on intersection of ethics and natural sciences, focusing on bioethics and health care, evolution, ecology, and ethology.

REL 6183—Religion and Environmental Ethics (3) Explorations in classic and contemporary theories and applications of environmental ethics, with special attention to religion.

REL 6186—Nature in Western Traditions (3) Introduction to major issues and approaches in relations between humans and nature in western religious traditions.

REL 6196—Globalizing the Sacred (3) Ways in which religion shapes current multifaceted episode of globalization.

REL 6319—Interpreting Asian Religions (3) Critical assessment of world-religions model for interpreting Asian religions.

REL 6339—Women in the Hindu Tradition (3) Classical Hindu typologies of womanhood in comparison to alternative modern and contemporary models.

REL 6346—Buddhist Traditions (3) Comprehensive survey of main traditions.

REL 6347—American Buddhism (3) Exploration of relationship between Buddhism and American culture.

REL 6368—Islam in Asia (3) Survey of spread, development, and diversification of Muslim societies across Asia.

REL 6385—Native Religions in the Americas (3) Indigenous religious communities and traditions in North, Central, and South America.

REL 6386—Religion and the Latin American Diaspora (3) Exploration of how transnationalism interacts with religion to produce new forms of identity and community life among Latinos.

REL 6387—Religions in Latin America (3) Important historical developments and contemporary expressions of religions in Latin America.

REL 6397—Hindu Sacred Texts and Their Ritual Context (3) Focus on notion of aural revelation, exploration of social and ritual context of sacred text. Traditions of recitation, music, verbal, and performative commentaires associated with transmission of holy words.

REL 6910—Supervised Research (1-5; max: 5) S/U.

REL 6940—Supervised Teaching (1-5; max: 5) S/U.

REL 6957—Overseas Studies in Religion (1-3; max: 9) S/U.

REL 6971—Research for Master's Thesis (1-15) Required of all candidates for the M.A. degree. S/U.

REL 7979—Advanced Research (1-15) *Prereq: permision 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. S/U.

REL 7980—Research for Doctoral Dissertation (1-15) S/U.

Romance Languages and Literatures

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: D. A. Pharies. *Graduate Coordinators:* S. Armon *(Spanish);* S. R. Baker *(French)*. *Graduate Research Professor:* W. Calin. *Professors:* A. O. Avellaneda; S. R. Baker; E. Barradas; D. Boxer; B. Cailler; C. J. Murphy; G. C. Nichols; C. A. Perrone; D. A. Pharies. *Associate Professors:* M. Alas-Brun; S. Armon; S. Blum; A. F. Bolanos; M. E. Ginway; R. Jimenez; G. Zachmann. *Assistant Professors:* T. A. Antes; H. Blondeau; R. Bloom; J. Camps; G. Lord; A. Lynch; A. Sow; M. Watt.

The Department offers programs leading to the Ph.D. in Romance languages and literatures, with a concentration in French or Spanish, and the M.A. in French or Spanish (either with or without thesis). Complete descriptions of the minimum requirements for the M.A. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Candidates for the master's degree in French or Spanish have a choice of two options, one oriented toward literature and culture, the other toward language and linguistics. In conjunction with their master's or doctoral work, students specializing in Spanish may also earn a Certificate in Latin American Studies. Though a graduate degree is not given in Portuguese, extensive course offerings permit students to develop a strong specialization in Portuguese language and Brazilian literature.

Prerequisite for admission to graduate work is an undergraduate major in the language, including advanced courses in both literature and language, or the equivalent. All M.A. and Ph.D. students in French must take Introduction to Graduate Study and Research (FRW 6805). All M.A. and Ph.D. students in Spanish, literature track, must take Introduction to Graduate Study and Research (SPW 6806).

All M.A. and Ph.D. students in French must take Romance Language Teaching Methods (FRE 6940, 6943). All French M.A. Option A candidates are strongly urged to take French Critical Theory (FRW 6825) in addition to the two required courses mentioned above. Additional courses are also required of doctoral students in French. For literature students, the additional requirements are French Critical Theory (FRW 6825) and History of the French Language (FRE 6845). Linguistics students must take either History of the French Language (FRE 6845) or Introduction to Romance Linguistics (FOL 6735).

All M.A. and Ph.D. students in Spanish must take Romance language teaching methods (SPN 6940, 6943).

The other requirements vary with degree and specialization; for details, consult the appropriate graduate coordinator. The Department is able to offer most students a teaching assistantship which covers tuition and provides a modest stipend on which to live. Contingent on positive performance in teaching and graduate work, normally a master's student has at least four semesters of support and an M.A./Ph.D. student has at least ten. In addition there are several fellowships for which students may apply. Incoming students are encouraged to apply as early as possible, preferably a full year ahead since some deadlines for submitting applications occur during the fall of the year prior to enrollment.

All materials must be sent by February 1 for applicants to the Spanish program.

The most current information about the graduate programs in the Department is available on the Internet at http://web.rll.ufl.edu/.

FOL 6326—Technology in Foreign Language Education (3) *Prereq: SPN 6943, FRE 6943, or equivalent.* Technology in classrooms, and interface between pedagogy and technology.

FOW 6930—Special Study in Romance Languages and Literatures (1-3; max: 9) Rotating topics in literary theory, cultural studies, or literary study involving two or more Romance languages.

French

FRE 6060—Beginning French for Graduate Students I (3) For students with no formal preparation who need a reading knowledge. S/U.

FRE 6061—Beginning French for Graduate Students II (3) *Prereq: FRE 6060 or the equivalent.* For students who need proficiency in reading. S/U option.

FRE 6466—Advanced Translation and Stylistics (3) 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 (3) Rotating topics relevant to second language acquisition, sociolinguistics, and/or theoretical linguistics.

FRE 6785—French Phonetics and Phonology (3) Introduction to French phonological processes, providing explanatory evidence for production of speech sounds, for classification of sounds, for their interrelationship with one another (gliding, nasalization, assimilation), for morphological and syllable structure, for specifically French phenomena such as liaison, elision, final consonant drop, schwa drop, and for relationship of morphology to phonology, especially verb system.

FRE 6845—History of the French Language (3) Phonological, morphological, syntactic, and lexical evolution of French language.

FRE 6855—Structure of French (3) Exploration of French language as system of communication and mental representation. Analysis of morphological, syntactic, and semantic aspects of contemporary French. Emphasis on historical, psychological, and sociological dimensions of linguistic investigation.

FRE 6940—Supervised Teaching (1-5; max: 5) Practical training in teaching elementary French courses. S/U.

FRE 6943—Romance Language Teaching Methods (2, 4, 6; max: 6) *Prereq: graduate standing.* Required for students needing practice and direction in college-level teaching.

FRE 6945—Practicum in Advanced College Teaching (2; max: 6) Practical training and orientation for advanced doctoral students in teaching upper-division courses. By working closely with mentor in all areas of teaching process, career experience is gained in teaching at upper level. S/U.

FRE 6956—Overseas Studies in French (1-5; max: 5) *Prereq: permission of graduate coordinator (French).* Course work in French as part of approved study-abroad program.

FRW 6217—Seventeenth-Century French Prose (3) Exploration of major prose works of classical period marked by fermentation in philosophical and moral thought that characterized early modern period France. Cartesian thought, new science, Jansenism, libertines, and moralistes figure here, as well as texts by La Fayette and Sevigne.

FRW 6276—Readings in Eighteenth-Century Literature (3) Rotating topics: theater, novel, image of the Orient, Anglo-French connection, women writers of the Old Regime.

FRW 6288—Twentieth-Century French Novel (3) Analysis of representative novels. Emphasis on literary modernism, surrealism, and the new novel in light of pertinent cultural discourses and literary history.
FRW 6315—Seventeenth-Century French Drama (3) Theory and practice of dramaturgy in classical period as reflected in plays of Corneille, Molire, and Racine. Close textual analysis to disengage aesthetic and ideological problematics posed by each play.
FRW 6328—Twentieth-Century French Theater (3) Critical and historical study of representative plays. Emphasis on theater as both genre and cultural and political space. Discussion of theoretical writings. Viewing of selected plays on film.
FRW 6346—French Poetry of the Renaissance (3)
FRW 6355—Modern French Poetry (3) Historical approach combined with close readings of poetic texts. Students introduced to number of theoretical and critical writings. In addition to poetic texts taken from traditional cannon, less frequently taught poets are presented.
FRW 6396—French Cinema (3) Critical and historical study of representation of gender and ethnicity in French films.
FRW 6416—Later French Medieval Literature (3)
FRW 6536—The Romantic Period (3) Development and main tenets of nineteenth-century French Romanticism. Various themes and genres (including poetry, theater, novel, etc.) exploited by "romantic" artists as well as 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 among topics.
FRW 6556—French Realism and Naturalism (3)
FRW 6715—The Philosophic Movement (3) Readings of works by major figures such as Voltaire, Montesquieu, Diderot, and Rousseau as well as of historiography of period. Examination of key issues of Enlightenment (religious tolerance, women's rights, slavery, etc.) and key institutions of eighteenth century (newspaper, encyclopedia, and salon).
FRW 6780—Studies in Francophone Literature and Culture (Excluding the Caribbean and Sub-Saharan Africa (3; max: 9) Literature and cultures of Francophone world from either Quebec, North Africa, Vietnam, Middle East, Belgium and Switzerland, or regions of France.
FRW 6805—Introduction to Graduate Study and Research (3) Tools, problems, and methods of literary and linguistic research.
FRW 6825—French Critical Theory (3) Review and comparative analysis of approaches to literature from Romanticism to Deconstructionism. 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.
FRW 6900—Special Study in French Literature (3; max: 9) Selected topic or problem (varied each semester).
FRW 6905—Individual Work (1-3; max: 9) *Available only by special arrangement with graduate adviser.*
FRW 6910—Supervised Research (1-5; max: 5) S/U.
FRW 6938—Seminar in French Literature (3; max: 15) Intensive research study of an author or topic.
FRW 6971—Research for Master's Thesis (1-15) S/U.
FRW 7979—Advanced Research (1-12) 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. S/U.
FRW 7980—Research for Doctoral Dissertation (1-15) S/U.

Portuguese

POW 6276—Twentieth-Century Brazilian Novel (3) Readings in narrative from avante-garde of 1920s and neo-regionalism of 1930s to instrumentalism in 1950s and 1960s, and various manifestations of late-century prose fictions.
POW 6385—Brazilian Lyric (3) Theory and practice of poetry including Modernist legacy, experimental trends, political verse, song, youth movements, and contemporary phenomena.
POW 6386—Brazilian Drama (3) Theory of dramatic literature and theatre, from origins in nineteenth century through Modernism and contemporary practices.
POW 6905—Individual Work (1-3; max: 9) *Available only by special arrangement with program coordinator or graduate adviser.*
POW 6930—Rotating Topics in Brazilian or Portuguese Literature (3; max: 9) Diverse themes of Lusophone world, including Portuguese Modernism, Brazilian northeast, Afro-Brazilian world, culture of dictatorship, popular music, science fiction, postmodernism, or focus of major authors (Machado de Assis, Guimaraes Rosa, Clarice Lispector).

Spanish

SPN 6166—Teaching Spanish for the Professions (3) Practical training and orientation for graduate students. Focus on business Spanish, but also includes issues related to Spanish for health care (and other professions), languages across the curriculum, and professional development (e.g., technology in classroom, scholarly networking, and job search).
SPN 6315—Advanced Composition and Syntax (3) Extensive practice in production of various types of academic writing in Spanish. Discursive and grammatical features that distinguish different styles.
SPN 6715—Formal Instruction and Acquisition of Spanish (3) Examination of 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 (3; max: 12) Varying topics of Spanish linguistics relevant to second language acquisition, sociolinguistics, and historical linguistics.
SPN 6785—Advanced Spanish Phonetics (3) Precise description of Spanish pronunciation, with some attention to dialect features and contrastive English phonetics.
SPN 6827—Sociolinguistics of the Spanish-Speaking World (3) *Prereq: SPN 6785.* General overview of issues of contemporary Spanish-speaking world: language variation, language contact, discourse analysis, language attitudes, policy and planning, social factors in language acquisition and use.
SPN 6835—Spanish and Spanish-American Dialectology (3) *Prereq: 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 (3) Phonological, morphological, syntactic, and lexical evolution of Spanish language from Latin.
SPN 6848—Medieval Spanish Linguistics (3) *Prereq: 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 (3) Exploration of morphological syntactic, and semantic aspects of the Spanish language.
SPN 6856—Spanish in Contact: Issues in Bilingualism (3) 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 6940—Supervised Teaching (1-5; max: 5) Required for all graduate teaching assistants in Spanish. Practical training in teaching elementary Spanish courses. S/U.

SPN 6943—Romance Language Teaching Methods (2; max: 6) *Prereq: graduate standing.* Required of all graduate students who will be involved in teaching and have not had a similar course elsewhere.

SPN 6945—Practicum in Advanced College Teaching (2; max: 6) Practical training and orientation for advanced doctoral students in teaching upper-division courses. By working closely with mentor in all areas of teaching process, career experience is gained in teaching at upper level. S/U.

SPW 6209—Colonial Spanish-American Literature (3) Readings, research, and discussion on literary, historical, and legal sixteenth-, seventeenth-, and eighteenth-century texts in Spanish written in/about colonial Latin America and dealing with contact among European, neo-European, and Native American cultures.

SPW 6236—Spanish-American Narrative from the origins to Criollismo (3) 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 (3) Survey of Spanish narrative beginning with romantic cuadros de costumbres and folletin. Emergence of realist and naturalist narrative from 1870s to 1890s, emphasis on Valera, Galdos, Clarin, and Pardo Bazan.

SPW 6278—Postwar Spanish Fiction (3) Contextualized approach to representative works and significant authors of fiction published in Spain after 1939. Textual analysis to be complemented by critical and historical readings.

SPW 6285—Contemporary Spanish-American Narrative I (3) 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 (3) The 1960s fiction and after, including the New narrative, the Boom, and the Post-Boom; broader cultural characteristics; theories of understanding area and literature of period.

SPW 6306—Spanish-American Theater (3) Analysis of selected plays and films and introduction to history, theory, and practice of theatrical arts in region, with some comparison to theater elsewhere. Focus on the twentieth century.

SPW 6315—Spanish Drama of the Golden Age (3) Comedia in theory and practice. Sacramental, entremes, comedia, religious, and historical drama of sixteenth- and seventeenth-century Spain.

SPW 6337—Golden Age Poetry (3) Analysis of multiple uses of artifice in Renaissance and Baroque Spanish poetry by both major and minor poets.

SPW 6345—Twentieth-Century Spanish Poetry (3) Introductory survey of major poets. Topics include gender, periodization, aesthetics, historicity, and relationship of poetry to politics. Close reading of texts contextualized by contemporary literary theory.

SPW 6356—Spanish-American Poetry from Romanticism to Vanguardismo (3) Major movements from middle of the nineteenth century to 1930s. Special attention to "Modernismo" to present. Seminal works of poets such as Marti, Casal, Cario, Lugones, Mistral, Storni, Huidobro and Vallejo, among others.

SPW 6357—Contemporary Spanish-American Poetry (3) Some central aspects of Spanish-American poetry since "Vanguardism" to present. Organized around specific theme, genre, country, region, theoretical problem, or subperiod.

SPW 6366—Spanish-American Essay (3) 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 6400—Medieval Spanish Literature (3) Readings, research, and discussion on varying topics.

SPW 6606—Cervantes (3) Situates Don Quijote I, II within cultural nexus of early modern Spain. Surveys contemporary currents in Cervantine criticism.

SPW 6729—The Generation of 1898 (3) Fin de siecle crisis, rise of literary modernity and nationalism, and creation of modern intelligentsia in early twentieth century in works of Unamuno, Costa, Maeztu, Antonio Machado, Baroja, and Valle-Inclan.

***S*PW 6806—Introduction to Graduate Study and Research (3)** Tools, problems, and methods of literary research.

SPW 6902—Special Study in Spanish or Spanish-American Literature (3; max: 15) Selected topic or problem (varied each semester).

SPW 6905—Individual Work (1-3; max: 9) *Available only by special arrangement with graduate adviser.*

SPW 6910—Supervised Research (1-5; max: 5) S/U.

SPW 6934—Seminar in Spanish American Literature and Culture (3; max: 9) Analysis of themes and directions in contemporary Spanish American literature and culture, including feminist literary and cultural criticism through reading and discussion of key theoretical texts produced in U.S., Europe, and Latin America. Graduate students from other disciplines welcome.

SPW 6938—Seminar in Spanish Literature and Culture (3; max: 9) *Prereq: or coreq: SPW 6806.* Variable topics. Close consideration of single literary or critical or cultural problem arising in context of Spanish letters or culture.

SPW 6971—Research for Master's Thesis (1-15) S/U.

SPW 7979—Advanced Research (1-12) 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. S/U.

SPW 7980—Research for Doctoral Dissertation (1-15) S/U.

Sociology

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: J. C. Henretta. *Graduate Coordinator:* W. Marsiglio. *Professors:* L. Beeghley; J. C. Henretta; R. Hollinger; A. J. LaGreca; W. Marsiglio; M. K. Miller; J. H. Scanzoni; C. Shehan; H. Vera; C. Wood. *Associate Professors:* M. Ardelt; M. Borg; T. Mills; K. Parker; C. Peek; M. Pena; B. A. Zsembik. *Assistant Professors:* K. Broad; C. Gattone; T. Koropeckyj-Cox; S. Perz.

The Department of Sociology offers the Master of Arts degree with both a thesis and a nonthesis option and the Doctor of Philosophy degree with these areas of special emphasis: families, gender, and sexual specialties; health, aging, and the life course; racial and ethnic studies; and Latin American studies. Complete

descriptions of the requirements for the M.A. and Ph.D. degrees are provided in the *General Information* section of this catalog.

Admission to the master's degree program requires a bachelor's degree in sociology or relevant social science as approved by the Department. Students may also enter the master's program through the combined B.A./M.A. program. The Department and the College of Law offer a joint M.A./J.D. program. The thesis and nonthesis M.A. options each require completion of 36 credit hours. Admission to the Ph.D. program requires a master's degree in sociology or related field as approved by the Department. Students planning to apply for admission should take the Graduate Record Examination at the earliest possible date.

SYA 5933—Special Study in Sociology (3; max: 6)

SYA 6125—Classical Sociological Theory (3) Study of sociological theory from its inception in the early 19th century to about 1930. Deals with the ideas of Comte, Spencer, Marx, Weber, Simmel, Durkheim, Pareto, Mead, and others.

SYA 6126—Contemporary Sociological Theory (3) The study of modern sociological theories; roughly 1930 to the present.

SYA 6305—Methods in Social Research I (3) Survey of quantitative and qualitative methods of social research, design, data collection.

SYA 6306—Methods in Social Research II (3) *Prereq: SYA 6305.* Evaluation and completion of topics and projects from SYA 6305.

SYA 6315—Qualitative Research Methods (3) Fieldwork, observation, participant observation, and other qualitative data collection, and analysis techniques.

SYA 6407—Quantitative Research Methods (3) *Prereq: STA 6126.* Application of selected quantitative methods to sociological research problems; extensive practice in application of the methods.

SYA 6905—Individual Work (1-4; max: 3 for M.A. and 6 for post-M.A. including SYA 5905) Designed to permit work on subjects not available in currently offered courses.

SYA 6910—Supervised Research (1-5; max: 5) S/U.

SYA 6942—Applied Social Research Project (3) Supervised individual or team applied research project.

SYA 6971—Research for Master's Thesis (1-15) S/U.

SYA 7135—Sociology of Knowledge (3) Examination of variations in the social origin of knowledge and knowledge systems.

SYA 7933—Special Study in Sociology (3; max: 9)

SYA 7935—Advanced Study in Sociology (3; max: 6) *Prereq: M.A. or equivalent degree in sociology.*

SYA 7979—Advanced Research (1-12; max: 24, including SYA 7980, may be counted in 90 hours required for Ph.D.) 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. S/U.

SYA 7980—Research for Doctoral Dissertation (1-15; max: 24, including SYA 7979, may be counted in 90 hours required for Ph.D.) S/U.

SYD 6436—Metropolitan Growth and Development (3) *Prereq: 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 6706—Racial and Ethnic Relations (3) Overview on racial-ethnic oppression, stratification, and conflict in U.S.

SYD 6707—Black and White Americans: Sociological Perspectives (3) Critical and comprehensive overview of current social science research, including creation of racial images and perspectives, racial attitudes, images in media, responses to discrimination, and public policies such as affirmative action.

SYD 6807—Sociology of Gender (3) Theoretical and empirical literature about social construction of gender, providing overview of key literature.

SYD 7808—Reproduction and Gender (3) *Prereq: graduate standing.* Key reproductive issues with U.S. context, gendered nature of reproductive realm. How cultural and social structures shape individuals' feelings, thinking, and actions in terms of specific reproductive choices.

SYO 6107—American Families (3) Impact of rapid social changes upon families: racial, class, and ethnic variations. Liberation of women and changing family roles. Alternative life styles and the future's families.

SYO 6175—Topics in Family Research (3) Seminar in the major empirical approaches to the analysis of family relationships.

SYO 6535—Social Inequality (3) The unequal distribution among individuals and groups of wealth, power, and prestige; the effect of class systems upon society; the effect of class membership on individuals; social mobility.

SYO 6806—Gender and Society (3) Review of recent literature and field research on women, gender, and sexism, with emphasis on barriers such as everyday discrimination.

SYP 6065—Sociology of Human Sexuality (3) Theoretical and conceptual issues, empirical research, and social policies germane to human sexuality with primary focus on U.S. Sexual identity and orientation; sexuality from childhood to later years of life; sexual behavior in and out of committed relationships; incest; social control of sexuality including prostitution and pornography; social implications of STIs and HIV/AIDS; coercive sexuality; gender relations and sexuality; and relationship between sexuality and sociopolitical process.

SYP 6115—Seminar in Symbolic Interaction (3) 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 6515—Deviance (3) Advanced study of theoretical and empirical literature on deviance and its social construction.

SYP 6735—Sociology of Aging and the Life Course (3) 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 (3) A survey of major sociological issues and concepts relating to aging and the aged; social stratification, family, social norms, social networks, community. Economic security, health, housing, and retirement are also discussed.

Soil and Water Science

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chairman: K. R. Reddy. *Graduate Coordinator:* N. B. Comerford. *Graduate Research Professor:* K. R. Reddy. *Distinguished Professor:* P. K. Nair. *Professors:* R. B. Brown; M. E. Collins; N. B. Comerford; D. A. Graetz; J. H. Graham; E. A. Hanlon; W. G. Harris; Q. L. Ma; P. Nkedi-Kizza; T. A. Obreza; G. A. O'Connor; H. L. Popenoe; J. E. Rechcigl; R. D. Rhue; J. B. Sartain; C. D. Stanley. *Scientist:* L. T. Ou. *Associate Professors:* R. Devereux; S. Jose; Y. Li; M. Norland; A.V. Ogram; A. C. Wilkie. *Assistant Professors:* P. J. Bohlen;

M. W. Clark; S. H. Daroub; S. Grunwald; Z. He; J. Jawitz; C. Mackowiak; S. R. Mylavarapu; V. D. Nair; J. Newman; S. Newman; Y. Ouyang; J. Scholberg; T. Schuur; J. Sickman; G. Sigua; P. C. Wilson.

The Soil and Water Science Department offers the Master of Agriculture, Master of Science (thesis or nonthesis option), and Doctor of Philosophy degrees in soil and water science with the following specializations: soil science and environmental science. Complete descriptions of the requirements for the M.Ag, M.S., and Ph.D. degrees are provided in the *General Information* section of this catalog.

In addition students can also develop specializations in several interdisciplinary areas including biogeochemistry, ecology, hydrologic science, tropical agriculture, turfgrass management, and wetland science. The Department also offers Master of Science (thesis or nonthesis option) specialization in environmental science via distance education for place bound students (http://soils.ifas.ufl.edu/distance/). The research efforts are organized into the following general areas: (1) management of nutrients, pesticides, and wastes, (2) remediation of contaminated water, soils, and aquifers, (3) soil quality and ecological indicators, (4) wetlands and aquatic systems, and (5) soil-landscape analysis.

Interests of the student and faculty, the facilities, and the funding available will determine the area of specialization for the research problem. 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; 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 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 science. Those students not meeting the above requirements will normally be expected to make up any deficiencies early in their graduate programs. Students will also be held responsible for such basic undergraduate courses as are deemed necessary for the pursuit of their special programs.

The Department offers a combined bachelor's/master's degree program. Contact the graduate coordinator for information.

CWR 6536—Stochastic Subsurface Hydrology (3) *Prereq: 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 (3) *Prereq: MAP 2302 or 4341 or equivalent; CGS 2420 or equivalent; SOS 4602C or ABE 6252 or CWR 5125 or 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 emphasized.

SOS 5050—Soils for Environmental Professionals (3) Fundamentals of soil properties and processes that explain central role soils play in environment. Geared to environmental professionals with little knowledge of soil science.

SOS 5050L—Soils for Environmental Professionals Laboratory (1) *Coreq: SOS 5050 or consent of instructor.* Hands-on laboratory experience with many tools and techniques used in soil and water science in relation to environment. S/U.

SOS 5116—Environmental Nutrient Management (3) *Prereq: SOS 3022 or 5050.* Consumption, manufacture, properties, and reserves of fertilizer materials. Methods of application, effects on soil reaction, and plant requirements of fertilizer nutrients inform students relative to specific fertilizer reactions. Also offered as distance education course.

SOS 5132—Tropical Soil Management (3) *Prereq: SOS 3022 or 5050.* Characteristics and management of tropical soils with emphasis on technologies which minimize industrial inputs.

SOS 5234—Environmental Soil, Water, and Land Use (3) 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 distance education course.

SOS 5235—South Florida Ecosystems (3) Five modules addressing major disciplines of science and interest. Modules focus on broad subject areas critical to understanding framework as well as man's interaction with South Florida ecosystems.

SOS 5242—Wetlands and Water Quality (3) *Prereq: CHM 2040.* Introduction to natural and constructed wetland ecosystems with emphasis on problems associated with eutrophication and water quality. Hydrology, soils, and biogeochemistry. Also offered as distance education course.

SOS 5245—Water Resource Sustainability (3) Quantitative description of effects of human impacts on hydrologic ecosystems (aquifers, watersheds, coastal zones, lakes and wetlands). Case studies illustrate detrimental effects of unsustainable resource utilization and beneficial management strategies. Also offered as distance education course.

SOS 5247—Hydric Soils (2) Concepts, field identification, and delineation of hydric soils. Instruction in accordance with National Technical Committee for Hydric Soils and with regulatory agencies.

SOS 5305C—Soil Microbial Ecology (3) *Prereq: SOS 3022 or 5050, MCB 2000C.* Occurrence and activities of soil microorganisms and their influence on soil productivity and environmental quality. Also offered as distance education course.

SOS 5406—Soil and Water Chemistry (3) *Prereq: SOS 3022 or 5050; CHM 3120.* Theoretical background and current methods of approach to agricultural and environmental problems. Also offered as distance education course.

SOS 5424C—Soil Chemical Analysis (3) *Prereq: CHM 3120.* Practical and theoretical aspects of instrumentation and techniques commonly used in the analyses of soils and plants.

SOS 5716C—Environmental Pedology (3) *Prereq: SOS 3022, 5050, or permission of instructor.* Soils in the environment. Heavily oriented toward field applications of pediogical principles and processes. Also offered as distance education course.

SOS 5720C—GIS in Land Resource Management (3) Introduction to basic concepts and use of "Arc GIS" to address land resource management issues.

SOS 6136—Soil Fertility (3) *Prereq: SOS 4115, 4213C, 5050 or 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.

SOS 6161—Bioavailability of Soil Nutrients (3) *Prereq: SOS 3022 or 5050, 4115 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.

SOS 6262—Soil Contamination and Remediation (3) *Prereq: SOS 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.
SOS 6323—Ecological Diversity of Soil Microorganisms (2) *Prereq: SOS 5305C or consent of instructor.* Phylogeny and evolution; diversity of habitat; genetic exchange.
SOS 6366—Biodegradation and Bioremediation (3) 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.
SOS 6373L—Techniques in Soil Molecular Ecology (2) Community diversity studied by analysis of DNA directly extracted from soil. Each student chooses particular phylogenetic group. Isolation of DNA from soils, PCR and cloning of PCR products from mixed templates, and rudimentary sequence analysis.
SOS 6448—Biogeochemistry of Wetlands (3) 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.
SOS 6454—Advanced Soil and Water Chemistry (3) *Prereq: 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.
SOS 6456—Advanced Biogeochemistry (3) Global elemental cycles in terrestrial, wetland, and aquatic systems as related to water quality, carbon sequestration, and climate change.
SOS 6464C—Soil Mineralogy (4) *Prereq: consent of instructor.* Classification, structure, surface chemistry, equilibria, genesis, weathering, and distribution of soil minerals. Influence of minerals on soil properties.
SOS 6622—Vadose Zone Hydrology (3) *Prereq: SOS 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.
SOS 6717—Soil Genesis and Classification (3) *Prereq: SOS 4715C.* Philosophic concept of soil, role of soil models, development and nomenclature of diagnostic horizons, and an analysis of soil taxonomy. Several field trips are required.
SOS 6722C—Soil-Landscape Modeling (3) *Prereq: SOS 5720C, STA 6166, SOS 5716, or equivalent, or consent of instructor.* Various concepts and quantitative methods to model and understand spatial distribution of soil properties.
SOS 6905—Special Problems (1-4; max: 8) *Prereq: 15 credits of soil science.* Laboratory, library, and/or field study and research in a particular aspect of soils. H.
SOS 6910—Supervised Research (1-5; max: 5) S/U.
SOS 6931—Seminar (1; max: 3) Presentation of literature, methods of proposed thesis research, and selected topics.
SOS 6932—Topics in Soils (1-4; max: 8) *Prereq: SOS 3022.*
SOS 6940—Supervised Teaching (1-5; max: 5) S/U.
SOS 6971—Research for Master's Thesis (1-15) S/U.
SOS 7979—Advanced Research (1-12) 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. S/U.
SOS 7980—Research for Doctoral Dissertation (1-15) S/U.

Special Education

College of Education

Graduate Faculty 2004-2005

Chair: J. L. McLeskey. *Graduate Coordinator:* P. R. Cox. *Distinguished Professor:* C. D. Mercer. *Professors:* V. I. Correa; M. K. Dykes; J. L. McLeskey; P. T. Sindelar; S. W. Smith. *Associate Professors:* M. T. Brownell; M. A. Conroy; C. C. Griffin; H. Jones; J. B. Repetto;D. L. Ryndak; T. M. Scott. *Assistant Professor:* H. B. Lane.

The Departments offers programs leading to the Master of Education or Master of Arts in Education degrees, the sixth year Specialist in Education degree, and the Doctor of Education or Doctor of Philosophy degrees. Complete descriptions of the requirements for these degrees are provided in the *General Information* section of this catalog. Program specializations include mild and severe disabilities. In addition to specializations, students may elect to emphasize disabling conditions at developmental levels ranging from preschool through vocational levels. Students interested in specializing in speech-language pathology should see courses listed under Communication Sciences and Disorders (for further information contact the graduate coordinator, 336 Dauer Hall).
EED 6241—Educational Programming for Children and Youths with Behavioral Problems (3) *Prereq: EED 4011 or EEX 3070 or 6051.* Structuring individualized remediation programs for children with behavioral disorders based upon psychoeducational evaluations. Curriculum materials and techniques to increase cognitive and affective dimensions of personal development.
EEX 5940—Supervised Student Teaching in Special Education (9) Intensive field experience while working with students with disabilities.
EEX 6052—Historical and Contemporary Perspectives in Mild Disabilities (3) Historical understanding of education of students with mild disabilities and current issues related to best practices.
EEX 6053—Students with Disabilities: Advanced Study of Characteristics and Services (3) 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 (3) Information and expertise related to meeting effectively academic and social needs of full range of students in inclusive settings.
EEX 6125—Interventions for Language and Learning Disabilities (3) Understanding language development and disorders and 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 (3) Reading process and dyslexia and, in particular, special educator's role in prevention and remediation of reading disabilities.
EEX 6222—Evaluation in Special Education (3) *Prereq: 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—Assessment, Curriculum, and Instruction for Students with Mild Disabilities (3) *Prereq: admission to graduate status.* Providing educational services to students with mild disabilities.

EEX 6234—Assessment, Curriculum, and Instruction for Students with Severe Disabilities (3) *Prereq: unified elementary courses 4th year.* Providing educational services for students with severe disabilities.

EEX 6235—Students with Autism, Physical, and Severe Disabilities in Inclusive Settings (3) Assessment, curriculum, and instructional practices.

EEX 6249—Advanced Strategies for Teaching Students with Disabilities (3) Designed to assist students in acquisition, proficiency, and application of best practices for teaching students with disabilities.

EEX 6521—Organization and Program Planning in Special Education (3) *Prereq: EEX 6053.* Control and management of special education programs, with emphasis on curriculum development based on needs assessment and evaluation.

EEX 6661—Teaching and Managing Behavior for Student Learning (3) Practical strategies and techniques for teaching children and youths with behavioral problems.

EEX 6750—Families and Transition for Students with Disabilities (3) Information and strategies for using family-centered approach to planning and implementing transitions for students with disabilities.

EEX 6786—Transdisciplinary and Transition Services in Special Education (3) *Prereq: EEX 6863.* Collaboration, transition planning, and professional development for serving children and youths with disabilities.

EEX 6835—Practicum in Special Education: Severe Disabilities (3) *Prereq: 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 (3) Field-based experience in educational settings that serve students with mild disabilities.

EEX 6863—Supervised Practice in Special Education (12) *Prereq: approval of special education faculty in area of specialization and Office of Student Teaching.* 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. S/U.

EEX 6905—Individual Work (1-4; max: 12) *Prereq: consent of department chairperson, approval of proposed project, and completion of at least 9 hours of graduate work.*

EEX 6910—Supervised Research (1-5; max: 5) S/U.

EEX 6936—Special Topics (1-3; max: 12) *Prereq: consent of department chairperson.*

EEX 6940—Supervised Teaching (1-5; max: 5) S/U.

EEX 6971—Research for Master's Thesis (1-15) S/U.

EEX 6973—Project in Lieu of Thesis (1-9) Development, testing, and evaluation of original educational technology, curricular materials, or intervention program. S/U.

EEX 7303—Inquiry in Special Education: Analysis of the Literature (3) *Prereq: 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 (3) *Prereq: 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 7865—Internship: Special Education (1-12; max: 12)

EEX 7867—Teacher Education in Special Education (3) 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 7934—Seminar: Trends in Special Education (3) *Prereq: 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 (1-12) 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. S/U.

EEX 7980—Research for Doctoral Dissertation (1-15) S/U.

EGI 6051—Education of the Gifted Child (3) 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 (3) School programs for the gifted. Educational provisions for the achieving and underachieving gifted individual.

Statistics

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: G. Casella. *Graduate Coordinator:* J. P. Hobert. *Distinguished Professors:* A. G. Agresti; M. Ghosh. *Professors:* G. Casella; M. N. Chang; A. I. Khuri; R. C. Littell; R. H. Randles; A. Rosalsky; D. D. Wackerly; M. C. K. Yang; L. Young. *Associate Professors:* M. Conlon; M. Daniels; J. P. Hobert; K. M. Portier; B. Presnell; R. Wu. *Assistant Professors:* M. Devidas; W. London; B. Mukherjee; C. Schoolfield; A. Trindade; S. Wu.

Graduate programs are available leading to Master of Science in Statistics, Master of Statistics, and Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

Both master's programs usually require two years of course work including material covered in STA 6207, 6208, 6326, 6327, 6246, and 6349. Students wishing an emphasis in biostatistics must also take STA 6176 and 6177. In addition to passing the master's comprehensive examination, requirements for the Ph.D. degree include STA 6466, 6467, 7249, and 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 administrationaccounting. 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.

STA 5106—Computer Programs in Statistical Analysis (1) *Prereq: STA 6166.* Utilization of library computer programs for analysis of balanced experimental data and regression analysis.

STA 5156—Industrial Statistical Methods (3) *Prereq: STA 3032, 4322, or 6166.* Design and analysis methods for industrial experiments, including response surface methods, factorial, fractional factorial, Plackett-Burman, and central composite designs. Use and design of control charts.

STA 5223—Applied Sample Survey Methods (3) *Prereq: STA 2023, 2122, 4322, 6126, or 6166.* Design and analysis of sample surveys. Sources of error; questionnaire design; simple random, stratified, systematic, and cluster sampling; plus practical application of concepts.

STA 5325—Fundamentals of Probability (3) *Prereq: 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 (3) *Prereq: STA 4321 or equivalent.* Direct continuation of STA 4321. Basic material for distribution theory, sampling distributions, properties of estimators, hypothesis testing, linear regression analysis, and analysis of variance. Good knowledge of calculus helpful.

STA 5503—Categorical Data Methods (3) *Prereq: STA 3024, 3032, 4210, 4322, 6127, or 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 (3) *Prereq: STA 2023, 3032, 4210, 4322, 6126, 6166. Intended for graduate students not majoring in statistics.* Introduction to nonparametric statistics, including one and two sample testing and estimation methods, one- and two-way layout models, and correlation and regression models.

STA 5701—Applied Multivariate Methods (3) *Prereq: STA 3024, 6127, 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 cannonical correlation. Multivariate classification techniques, discriminant and cluster analysis. Additional topics at discretion of instructor, time permitting.

STA 5823—Stochastic Process Methods (3) *Prereq: STA 4321 or 5325.* Mathematical foundations of elementary stochastic processes, including Poisson processes and Markov chains, branching, and renewal processes.

STA 6092—Applied Statistical Practice (3) *Prereq: STA 6207, 6208, 6209.* Introduction to communication, management, organizational, computational, and statistical thinking skills necessary to consulting in statistics. Integration of graphical and numerical computing tools, research design concepts, data summary and statistical inference methods.

STA 6126—Statistical Methods in Social Research I (3) 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 (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: STA 6166.* Analysis of covariance and general linear model. Factorial, nested, split-plot, and incomplete block designs. Analysis of count data.

STA 6176—Introduction to Biostatistics (3) *Prereq: STA 6207, 6326.* Analysis of epidemiological studies, measures of morbidity and mortality, methods for rates and proportions, bioassay, longitudinal data analysis.

STA 6177—Advanced Topics in Biostatistics (3) *Prereq: STA 6327.* 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 (3) *Prereq: STA 6327.* Biological and molecular basis. Likelihood ratio test, multinomial distribution and Bailey's theorem. Linkage analysis of qualitative traits. Twin and sibling studies. Computation of kinship coefficient by matrix method. Mapping of 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 construction of evolutionary trees by cluster analysis.

STA 6200—Biomedical Research Design and Analysis (3) *Prereq: no statistical, mathematical, or computing background required; interest in doing research highly desirable.* Choosing research objective, determining type of data to collect, repeated measures and blocking, choosing sample and randomization technique, designing data collection form. Applications to biomedical data.

STA 6201—Analysis of Research Data (3) *Prereq: STA 6200.* Introduction to the most commonly used statistical analyses for evaluating research data, with application to the biomedical sciences. Emphasis on choosing the appropriate procedure and evaluating the results properly, rather than on the computational aspects of the procedures.

STA 6207—Basic Design and Analysis of Experiments (3) *Prereq: STA 4211, 4322.* 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 6208—Regression Analysis (3) *Prereq: STA 6207.* Simple linear regression; multiple regression; model selection residual analysis; influence diagnostics; multicollinearity; ANOVA and regression; generalized linear models; nonlinear regression.

STA 6209—Design and Analysis of Experiments (3) *Prereq: STA 6207.* 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 (3) *Prereq: 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 (3) *Prereq: STA 6208, 6327, 6329.* Theory for analysis of linear models in univariate data; distributions of quadratic forms; full rank linear models; fixed effect models of less than full rank; balanced random and mixed models; unbalanced random and mixed models.

STA 6247—Advanced Topics in Design and Analysis (3) *Prereq: STA 6246, 6207, 6209.* First and second order response surface designs and models. The objectives of a response surface investigation. The determination of optimum conditions for response surface models. The integrated mean square error criterion for the choice of a design. Minimum bias estimation designs. The analysis of multiresponse experiments. Designs for nonlinear models. Some advanced topics in unbalanced mixed models.

STA 6326—Introduction to Theoretical Statistics I (3) *Prereq: 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 (3) *Prereq: 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 (3) *Prereq: 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 6466—Probability Theory I (3) *Prereq: MAA 5228, 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 6467—Probability Theory II (3) *Prereq: STA 6466.* 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 6505—Analysis of Categorical Data (3) *Prereq: STA 6327 and 6207 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 (3) *Prereq: STA 6327 or consent of instructor.* Inference based on rank statisticsone, two and k-sample problems, correlation and regression problems and analysis of contingency tables. Conditionally distribution-free rank tests. Pitman asymptotic relative efficiency.

STA 6662—Statistical Methods for Industrial Practice (3) *Prereq: STA 6207 and 6326; coreq: STA 6327 or consent of instructor.* Statistical techniques used in modern industry, including variance components analysis, control charting, estimation of process characteristics, evolutionary operation, fraction, factorials, screening experiments.

STA 6707—Analysis of Multivariate Data (3) *Prereq: 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 I (3) *Prereq: STA 6327.* Discrete time and state Markov process. Ergodic theory.

STA 6857—Applied Time Series Analysis (3) *Prereq: 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 6905—Individual Work (1-4; max: 10) *Prereq: permission of department.* Special topics designed to meet the needs and interests of individual students.

STA 6910—Supervised Research (1-5; max: 5) S/U.

STA 6934—Special Topics in Statistics (1-3; max: 8) *Prereq: permission of graduate adviser.*

STA 6938—Seminar (1; max: 15) *Prereq: permission of department.* Special topics of an advanced nature suitable for seminar treatment but not given in regular courses. S/U.

STA 6940—Supervised Teaching (1-5; max: 5) S/U.

STA 6942—Internship (1-3; max: 3) *Prereq: STA 6208 or equivalent and permission of graduate coordinator.* Supervised statistical consulting involving planning and/or analysis of research data. Whenever possible, student meets with researcher. Supervision by faculty member or delegated authority and post-internship report. S/U.

STA 6971—Research for Master's Thesis (1-15) S/U.

STA 7179—Survival Analysis (3) *Prereq: STA 6177.* Theoretical introduction to statistical inferential procedures useful for analyzing randomly right censored failure time data.

STA 7249—Generalized Linear Models (3) *Prereq: STA 6207, 6208, 6327.* Fitting of generalized linear models, diagnostics, asymptotic theory, overdispersion, estimating equations, mixed models, generalized additive models, smoothing.

STA 7334—Limit Theory (3) *Prereq: 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 I (3) *Prereq: STA 6327.* Decision rules and risk functions. Sufficiency, Minimax, and Bayes rules for estimation of location and scale parameters.

STA 7347—Statistical Inference II (3) *Prereq: STA 7346.* Bayesian statistical inference. Inference using large samples. Relative efficiencies of tests and estimates with special reference to Pitman and Bahadur efficiencies.

STA 7979—Advanced Research (1-12) 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. S/U.

STA 7980—Research for Doctoral Dissertation (1-15) S/U.

Taxation

Fredric G. Levin College of Law

Graduate Faculty 2004-2005

Director and Graduate Coordinator: M. K. Friel. *Culverhouse Eminent Scholar in Taxation:* L. A. Lokken. *Professors:* D. A. Calfee; P. E. Dilley; M. K. Friel; D. M. Hudson; M. J. McMahon; C. D. Miller; M. A. Oberst; D. M. Richardson; S. J. Willis.

Graduate study in the field of taxation leading to the Master of Laws in Taxation degree is available in the College of Law. A complete description of the minimum requirements for this degree is provided in the *General Information* section of this catalog.

Applicants for admission to the Graduate School for this degree must hold a law degree from an accredited law school 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.

LAW 7602—Income Taxation I (3) Tax problems of individual taxpayers; concept of gross income, deductions, identification of taxpayer; problems incident to the sale, exchange, and other disposition of property, including recognition and characterization concepts.

LAW 7604—Income Taxation II (2) Income tax accounting principles: the taxable year, accounting methods, installment and deferred payment sales, delayed payment for services, income averaging, and loss carry overs and carry backs.

LAW 7611—Corporate Taxation I (3) Tax considerations in corporate formations, distributions, redemptions, and liquidations, including Subchapter C and Subchapter S corporations. Some general consideration of tax alternatives relating to the sales of corporate businesses.

LAW 7613—Corporate Taxation II (2-3; max: 3) Reorganizations: corporate acquisitions and divisions, including transfer or inheritance of losses and other tax attributes; affiliated corporations, consolidated returns.

LAW 7614—U.S. International Tax I (2-3; max: 3) Tax definition of resident; distinction between domestic and foreign corporations, partnerships, and trusts; taxation of nonbusiness income of foreign persons; taxation of income of trades or businesses carried on by foreign persons in the U.S. ; special rules on U.S. real property interests; and branch profits and branch interest taxes.

LAW 7615—U.S. International Tax II (2) The foreign tax credit; special rules on controlled foreign corporations; foreign currencies; and cross-border transfers in nonrecognition transactions.

LAW 7617—Partnership Taxation (3) 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 (2 or 3 at option of department) Federal estate, gift, and generation-skipping transfer taxes.

LAW 7625—Income Taxation of Trusts and Estates (2) Taxation of income of trusts and estates, with emphasis on income required to be distributed currently, equivocal distributions of income or corpus; accumulation distributions and grantor trusts; other fiduciary tax problems including treatment of income in respect of decedent.

LAW 7626—Estate Planning (2) 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 (2) 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 (2) 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 (3) Taxpayer's relationships with the Internal Revenue Service, including requests for rulings; conference and settlement procedures; deficiencies and their assessment; choice of forum; tax court practice; limitation periods and their mitigation; transferee liability; tax liens; and civil penalties. Study of professional responsibility.

LAW 7641—Procedures in Tax Fraud Cases (2) 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 (2) Nature and purpose of state taxation, comparison of property and excise taxes; uniformity of taxation; assessment and collection procedures; remedies available to taxpayers.

LAW 7905—Independent Study (1-3; max: 4) S/U.

LAW 7910—Supervised Research (1-5; max: 5) S/U.

LAW 7911—Federal Tax Research (1-2; max: 2) Substantial research and writing project on a federal tax subject; instruction in tax research techniques. Students customarily register for the course and complete the project during two successive semesters. Credit is usually one hour each semester but may be varied in accordance with scope and nature of project. H.

LAW 7931—Current Federal Tax Problems (1 or 2 at option of department; max: 2) Significant current developments in tax law, often with emphasis on policy considerations. Variable content.

Teaching and Learning

College of Education

Graduate Faculty 2004-2005

Director: T. Dana. *Graduate Coordinator:* L. L. Jones. *Professors:* R. L. Allington; E. Bondy; N. L. Dana; T. M. Dana; D. Fu; P. S. George; J. W. Gregory; E. L. Kantowski *(Emerita);* L. L. Lamme; R. M. Lowery; A. McGill-Franzen; B. F. Nelms; D. D. Ross; A. White. *Associate Professors:* T. L. Adams; K. M. Dawson; Z. Fang; D. Fu; J. A. Hurt; L. L. Jones; K. M. Kemple; L. J. Mullally; B. G. Pace; C. W. Swain; J. S. Townsend. *Assistant Professors:* M. R. Coady; E. J. de Jong; R. E. Ferdig; C. A. Harper; R. Pringle; S. Terzian; D. Yendol-Hoppey.

The School of Teaching and Learning (http://www.coe.ufl.edu/school) offers programs leading to the Master of Education

(M.Ed), nonthesis), 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 in curriculum and instruction. 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 10 area of specialization: curriculum and teacher education, early childhood education, educational technology, elementary education, English education, ESOL/bilingual education, mathematics education, language and literacy education (including children's literature, language arts, and reading education), science and environmental education, and social studies education.

The nationally recognized PROTEACH graduate program leads to the M.Ed. degree and state certification as a classroom teacher. Secondary PROTEACH prepares teachers who have completed a bachelor's degree in the discipline they will teach. Elementary teachers who have completed the School's undergraduate elementary education program are eligible for admission to the elementary PROTEACH program. Prospective elementary teachers who already hold a bachelor's degree may want to consider the School's SITE program (Site-based Implementation of Teacher Education), which leads to the M.Ed. degree in elementary education and eligibility for certification in grades K-6.

Beyond the Graduate School and College of Education admission requirements, students should have academic preparation and teaching experience appropriate to the program being pursued. Students having deficiencies in their preparation will be required to follow a program to remove such deficiencies. A limited amount of support is available for graduate studies through fellowships, research assistantships, and teaching assistantships.

Students may not enroll for more than one special topics course within the same semester.

General Courses

EDE 7047—Issues in Teacher Education (3; max: 9) Current issues and theory in teacher education and teacher education reform.

EDG 6905—Individual Work (1-6; max: 12 including EDA 6905) *Prereq: Student must have approval of proposed project prior to registration in course.* For advanced students who wish to study individual problems under faculty guidance.

EDG 6910—Supervised Research (1-5; max: 5) S/U.

EDG 6931—Special Topics (1-4; max: 12 including EDA 6905) *Prereq: consent of instructor.*

EDG 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of adviser.* For graduate students serving as teaching assistants under the supervision of a faculty member. S/U.

EDG 6971—Research for Master's Thesis (1-15) S/U.

EDG 6973—Project in Lieu of Thesis (1-9) Development, testing, and evaluation of original educational technology, curricular materials, or intervention program. S/U.

EDG 7941—Field Experience in Curriculum and Instruction (1-4; max: 10) *Prereq: admission limited to advanced graduate students.* Supervised experiences appropriate to the student's professional goals.

EDG 7979—Advanced Research (1-12) 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. S/U.

EDG 7980—Research for Doctoral Dissertation (1-15) S/U.

Early Childhood Education

EEC 6205—Early Childhood Curriculum (3) Students will develop and/or implement instructional strategies consistent with their personal philosophies of early childhood education. Open to majors and nonmajors seeking introductory knowledge of the field.

EEC 6304—Creativity in the Early Childhood Curriculum (3) Techniques for teaching all areas of the early childhood curriculum so that these areas may be learned more creatively.

EEC 6525—Issues in Child Care Administration (3) Child care background, curriculum, organization, staffing, training of staff, parent education and involvement, funding, and research.

EEC 6615—Early Childhood Education: Background and Concepts (3) Trends in the teaching of nursery and kindergarten children as shown in past and current educational theory.

EEC 6946—Practicum in Early Childhood Education (1-6; max: 11) Supervised experience in a variety of early childhood settings with weekly seminars.

Educational Media and Instructional Design

EME 5054—Foundations of Educational Technology (3) *Prereq: permission of instructor.* History, foundations, and literature in educational technology.

EME 5207—Designing Technology Rich Curricula (3) *Prereq: EME 2040.* Advantages. Topics include complex databases, Web-based and non-Web-based searching techniques, simulations, and integrated environments. Contrasting views of curriculum development examined.

EME 5315—Communicating with Technology (3) *Prereq: EME 4406.* Exploration of communication process and how factors related to technology enhance or hinder this process.

EME 5316—Educational Technology Management Issues (3) *Prereq: EME 4406.* Exploration of classroom management issues through appropriate uses of educational technology.

EME 5403—Instructional Computing I (3) *Prereq: baccalaureate degree.* Exploration of uses of educational technologies and learning environments.

EME 5404—Instructional Computing II (3) *Prereq: EME 5403.* Overview of educational technologies in teaching and learning. Development of meaningful and engaging learning environments that foster critical inquiry in students.

EME 5405—Internet in K-12 Instruction (3) *Prereq: EME 5403 or 4406.* Preparation of preservice teachers, in-service teachers, and teacher educators to use Internet.

EME 5431—Integrating Technology into Mathematics Classroom (3) Examination of 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 (3) Educational technology tools available for integrating into curriculum. Multiple methods in which technology can be used to create and enhance appropriate learning environment.

EME 5433—Integrating Technology into Science Classroom (3) Examination of technology use. Applications of learning theory; philosophy of science instruction; computer applications in science; integration of science with other subject areas; assessment.

EME 6205—Digital Phtography and Visual Literacy (3)

EME 6208—Designing Integrated Media Environments I (3) 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 (3) *Prereq: EME 6208.* Project based. Application of skills and theories learned previously. Real-world problems.

EME 6220—Animation in Instruction (3) *Prereq: EME 6405, 6602.* Project based. Variables involved in evaluation of instructional materials. Interactive dynamics associated with continual stream of informational visual feedback found in simulations and other interactive forms.

EME 6405—Educational Technology and Teaching (4) *Prereq: EME 5403.* Students will develop a knowledge of computer technology in education and apply that knowledge to the solution of educational problems. Experience in working with computer systems will be provided.

EME 6458—Distance Teaching and Learning (3) *Prereq: 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 (4) Students will learn to plan, produce, use, and evaluate videotape programs for educational purposes. They will learn to operate the major components of a small, nonbroadcast television studio.

EME 6602—Human-Computer Interactivity and the Learner (4) *Prereq: EME 6208, 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—Instructional Development (4) *Prereq: EME 4102.* Understanding systems concepts, analyzing the instructional development process, and applying the process to a specific instructional problem in order to improve the instruction.

EME 6716—Organization and Administration of Educational Media Centers (3) Principles of organizational and administrative theory and procedures and issues related to the selection of instructional materials applied to the operation of EMCs at all levels of education.

EME 6935—Seminar: Distance Education Issues and Applications (1; max: 4) Mechanisms and logistics that support distance education development and delivery.

EME 6945—Practicum in Educational Media and Instructional Design (3-8; max: 8) Supervised experiences appropriate to the student's professional goals.

EME 7938—Seminar in Educational Media and Instructional Design (3; max: 9) Seminar for advanced degree graduate students.

Elementary Education

EDE 5940—Integrated Teaching and Learning (4) *Prereq: admission to master's certification program in elementary education plus 15 credits, EDF 6113, and RED 5316 or 5355.* Field experience in elementary school classroom concurrent with bi-weekly seminar. S/U.

EDE 6225—Practices in Childhood Education (3) *Coreq: EDE 6948.* Elementary school practices in relation to fundamental principles of curriculum development; selection, organization, and development of effective teaching-learning situations.

EDE 6266—Teaching and Learning in Elementary Classrooms (3) *Prereq: admission to master's certification program in elementary education.* Introduction to program.

EDE 6458—Guided Inquiry in Elementary Education (3) *Prereq: EDE 6948.* Methods of classroom inquiry and application to issue of professional significance. Original project.

EDE 6905—Individual Work (1-5; max: 12 including ESE 6905) For advanced students who wish to study individual problems in childhood education and/or early childhood education under faculty guidance.

EDE 6910—Supervised Research (1-5; max: 5) S/U.

EDE 6932—Special Topics (1-5; max: 10) *Prereq: permission of department chair.*

EDE 6948—Internship in Elementary Schools (3-12; max: 12) *Prereq: consent of the department; coreq: EDE 6225.* Supervised teaching in elementary grades K-6. S/U.

EDE 7935—Seminar in Elementary Education (1-6; max: 6) *Prereq: EDE 6948. Open to advanced graduate students.* Current research and an overview of the total program.

TSL 5142—ESOL Curriculum, Methods, and Assessment (3) *Prereq: TSL 3526.* Curriculum, methods, and assessment for second language learners in K-12 classrooms.

English Education

ESE 6344—Classroom Practices in Secondary Education (3) Practical applications of recent research on effective classroom practices.

LAE 6319—Language Arts in the Elementary School (3) Speaking, listening, writing, and language study in the elementary classroom.

LAE 6339—Curriculum, Methods, and Assessment in Secondary English Language Arts (3) *Prereq: 30 hours of upper-division English. Designed for Proteach students only.* Introduction to the theory and practice of teaching English.

LAE 6365—Language Arts: Language and Composition (3) 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 (3) Methods and materials 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 (3) *Prereq: 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 6616—Seminar in Children's Literature (3; max: 9) *Prereq: LAE 3005.* Trends and issues in children's literature and teaching literature. Topics rotate.

LAE 6635—Teaching Adolescent Literature in the Secondary School (3) Explorations into what adolescent literature is and into the theory and practice of teaching it in grades 7-12.

LAE 6714—Children's Literature in the Childhood Curriculum (3) Evaluating, selecting, and using fiction, biography, poetry, and informational books for instructional, informational, and recreational purposes.

LAE 6861—Technology and Media Literacy (3) *Prereq: LAE 6366.* Methods and materials for integrating technology and media in literacy study in secondary English classroom.

LAE 6939—Literacy, Family, and Culture (3) Examination of various literacy patterns of students with non-mainstream cultural, social, and linguistic backgrounds; exploration of impact of home literacy on school learning.

LAE 6945—Practicum and Assessment for Teachers of Secondary School English (3) *Prereq: consent of department chair.* Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, utilizing instructional moves, and diagnosing student progress. Field and laboratory settings.
LAE 7006—Language Acquisition and Education (3) First language acquisition and implications for curriculum and instruction.
LAE 7519—Language and Inquiry (3) Investigation of inquiry and implications for curriculum and instruction.
LAE 7715—Research in Children's Literature (3) Research and research methodologies in children's literature and teaching literature.
LAE 7934—Seminar in Composition Theory and Practice (3) Examination of theory and research of composition on impact of writing.
LAE 7936—Seminar in English Language Arts (3; max: 6) *Prereq: consent of instructor.* Contemporary developments and research in language arts education.

ESOL/Bilingual Education

FLE 6165—Bilingual-Bicultural Education (3) Principles and practices in the field of bilingual-bicultural education in the U.S. and in other nations. Examination of theories and practices related to issues, analysis of problems, curricular strategies.
FLE 6167—Cross-Cultural Communication for Teachers (3) Critical exploration of how educators can help to establish equitable classrooms for culturally and linguistically diverse learners.
TSL 6140—Curriculum and Materials Development for ESOL K-12 (3) Development and adaptation of standards-based curriculum and materials for L2 literacy learning, academic content area, and K-12 ESOL instruction.
TSL 6240—Language Principles for ESOL Teachers (3) Applied linguistics for teachers. Language and language acquisition theories as related to learning 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 (3) Effective language and literacy instruction for K-12 English language learners
TSL 6440—Testing and Evaluation of ESOL (3) Introduction to assessment issues and experience in developing assessment techniques for learners of English as a second language.

Foreign Language Education

FLE 6336—Teaching Foreign Languages in Elementary Schools (3) Theory and methods, historical influences, curriculum design, thought content, first and second language acquisition, applications, integration of culture in the foreign language classroom.
FLE 6337—Methods of Teaching and Assessing Foreign Language in Secondary School (3) Curricula patterns: teaching practices; preparation, selection, and use of instructional materials; laboratory experience and classroom teaching.
FLE 6946—Practicum in Teaching and Assessing Foreign Languages at Secondary Level (3) *Prereq: consent of department chair.* Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, utilizing instructional moves, and diagnosing student progress. Field and laboratory settings.

Mathematics Education

MAE 5318—Teaching Modern Math in Elementary School (3) *Prereq: EME 5403.*
MAE 5327—Middle School Mathematics Methods (3) Mathematics materials, planning, and presentation.
MAE 5332—Secondary School Mathematics Methods and Assessment (3) *Prereq: preparation in subject area equivalent to requirements for high school certification.* Patterns of mathematics curriculum; practices in teaching mathematics; preparation, selection, and use of instructional materials; assessment techniques.
MAE 5945—Practicum in Secondary Mathematics Teaching and Assessment (3; max: 6) Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, utilizing instructional moves, and diagnosing student progress. Field and laboratory settings.
MAE 6313—Problem Solving in Elementary Mathematics (3) Designed to present analysis of problem solving as underlying theme in elementary mathematics for preservice teachers. Emphasis on development of pedagogical content knowledge in elementary school mathematics.
MAE 6333—Problem Solving in Secondary School Mathematics (3) Skills and strategies in secondary mathematics for teachers; examination of current research related to problem solving for secondary classroom application.
MAE 6512—Laboratory in Diagnosing Mathematics Skills (3-6; max: 6) Diagnosis, correction, and prevention of mathematical learning difficulties; work with children in the applications of principles under study.
MAE 6615—Individualizing Instruction in Mathematics (3) Organizing a continuous progress program: objectives, diagnostic testing, placement of students, record keeping, evaluation, and reporting. Role of the teacher and team teaching as well as development of a bank of materials, games, and activities for an individualized mathematics program.
MAE 6641—Readings and Research in Mathematics Education (3; max: 6) Examination of readings and research that represent past, current, and future trends.
MAE 7899—Mathematics Education Seminar (3) *Prereq: MAE 6138.* Issues and problems in mathematics education, and investigation and planning of research relevant to selected problems.

Middle School Education

EDM 6005—The Emergent Middle School (3) Program, organization, and rationale of the newly emerging middle school in American school districts.
EDM 6235—Interdisciplinary Planning, Teaching, and Assessment (3) Investigation of interdisciplinary team organization, integrated curriculum, team planning, collaboration consultation, and strategies for assessment.

Reading Education

RED 5316—Emergent Literacy (3) Theory, research, and practice related to emergence and development of literacy among young children.
RED 5337—Reading in the Secondary School (3) Patterns of reading instruction in the secondary school; methods of teaching reading for teachers of all subject areas; preparations, selection, and use of instructional materials; selected field or micro-teaching experiences.

RED 5355—Reading in the Elementary School (3) Theory, research and practice related to teaching of reading in elementary grades.
RED 6346—Seminar in Reading (3-6; max: 9) *Prereq: consent of instructor.* Variable topics on reading/literacy.
RED 6520—Classroom Literacy Assessment and Instruction (3) *Prereq: minimum of 1 introductory reading instruction course.* Using classroom assessment information to guide literacy instruction.
RED 6546C—Diagnosis of Reading Disabilities (3) Focus on individual assessment techniques for locating difficulties in literacy acquisition.
RED 6548C—Remediation of Reading Disabilities (3) *Prereq: RED 6546C.* Advanced procedures and practices for remediating reading disabilities in classroom and clinic.
RED 6566—Trends in Reading (3; max: 9) Topical seminar focused on understanding current trends and issues in literacy education.
RED 6941—Practicum in Diagnosis and Remediation of Reading Difficulties (3) Diagnosis and remediation of reading difficulties with at-risk children in elementary grades.
RED 7019—Foundations of Literacy (3) Foundational understanding of theories and discussions related to, as well as research methods involved in, studying literacy and literacy education.
RED 7817—Understanding Reading Difficulties (3) *Prereq: RED 6546C, 6548C* Examination of reading difficulties from variety of perspectives, including cognitive, sociocultural, and linguistic.

Science Education

SCE 5316—Inquiry in Teaching Elementary Science (3) *Prereq: SCE 4310.* Inquiry into science content pedagogy and practice in elementary classrooms.
SCE 6045—Environmental Education Methods and Materials (3) Overview of current environmental education teaching approaches, activities, programs, and curricula in school and non-school settings.
SCE 6117—Science Education in the Elementary School (3) Current problems, new materials and teaching techniques, research and recent developments in the sciences.
SCE 6290—Science Instruction in Informal Settings (3) Review of theory and practice research regarding 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 (3) Introduction to theory and practice of teaching secondary school science with emphasis on planning, instruction, and assessment.
SCE 6947—Practicum in Secondary Science Teaching and Assessment (3) *Prereq: consent of department chair.* Directed experiences emphasizing instructional strategies, selecting instructional materials, sequencing student activities, utilizing instructional moves, and diagnosing student progress. Field and laboratory settings.

Secondary Education

ESE 6344—Classroom Practices in Secondary Education (3) Practical applications of recent research on effective classroom practices.
ESE 6345—Effective Teaching and Classroom Management (3) *Prereq: consent of department.* Advanced strategies for planning and presentation of the general academic content of mathematics, science, foreign language, social studies, and English in the secondary school.
ESE 6905—Individual Work (1-4; max: 12 including EDE 6905)
ESE 6939—Special Topics (1-4; max: 10)
ESE 6945—Student Teaching in Secondary School (3-9; max: 12) *Prereq: consent of instructor.* Supervised teaching in the secondary school, grades 7-12.
TSL 5143—Secondary ESOL Teaching Strategies (3) Teaching skills to be effective with ESOL students in mainstream content class.

Social Studies Education

SSE 5320—Middle School Social Studies Methods (3) Examination and application of instructional procedures and materials focusing on relevant cognitive and affective processes.
SSE 5945C—Practicum in Secondary Social Studies Teaching and Assessment (3) *Prereq: consent of department chair.* Directed experiences emphasizing instructional strategies, selecting instructional materials, and diagnosing student progress. Field and laboratory settings.
SSE 6046—Perspectives in Social Studies Education (3) Seminar in the analysis of works written by important social studies educators.
SSE 6117—Social Studies EducationElementary School (3) *Prereq: graduate curriculum course.* Contributions of social education to the total elementary school program, with emphasis on social interaction and programs and procedures in social studies area.
SSE 6133—Secondary School Social Studies Methods and Assessment (3) Patterns of social studies' curricula; practices in teaching social studies; preparation, selection, and use of instructional materials; laboratory experience and classroom teaching.

Theatre and Dance

College of Fine Arts

Graduate Faculty 2004-2005

Chair: K. A. Marshall. *Graduate Coordinator:* D. L. Shelton. *Graduate Research Professor:* D. Young. *Professors:* B. Korner; K. A. Marshall; D. L. Shelton; J. W. B. Williams. *Associate Professors:* R. Brandman; J. Frosch; S. Kaye; T. Mata; M. Pinkney; R. E. Remshardt; R. Rose. *Assistant Professors:* M. Ciupe; P. Favini; T Garland.

The graduate program offered by the Department of Theatre and Dance leads to the degree of Master of Fine Arts in theatre. A complete description of the minimum requirements for this degree is provided 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 admits approximately 12 to 18 students.

The student's artistic and academic progress will be reviewed at the end of each semester. The *Department of Theatre Handbook* gives details on the form and focus of each review.

At the beginning of 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.

ARC 6670—Lighting Design Seminar (3; max: 6) Design problems investigating theoretical, conceptual, and practical applications of illumination systems through speculative and analytical inquiry.

DAA 6757—Pilates Technique for the Dancer (1-3; max: 6) *Prereq: Permission of instructor.* Systematic achievement of strength, tone, flexibility, and posture for optimal physical performance in dance.

DAA 6905—Graduate Dance Project (1) Dance to enhance and develop skills in specific style of dance or movement study.

DAN 6436—Laban Movement Analysis (3; max: 6) *Prereq: Permission of instructor.* Experiential examination of movement from the integrated theoretical framework of body, effort, shape, and space.

THE 5238—African-American Theatre History and Practice (3) *Prereq: THE 2000 or 2020 or permission of instructor.* Origins and development of theatre by, for, about Black America from eighteenth century to present.

THE 5287—History of Decor and Architecture for the Stage (3) Architecture and decor from prehistoric time to 19th century as they reflect time and spirit in preparation for play production.

THE 6265—Costume History (3) *Prereq: admission to MFA.* Examination of history of fashion and costume, its relation to general intellectual, moral and cultural climate of era; and application of such analysis by theatrical designer.

THE 6525—History, Literature, and Criticism I (3) Historical development of dramatic literature and criticism from Aristotle through Goethe.

THE 6526—History, Literature, and Criticism II (3) Historical development of dramatic literature and criticism from Nietzsche through the modern period.

THE 6565—Seminar in Creative Process (3) Specialists in all areas of theatre explore the similarities in their creative thinking and methods.

THE 6905—Individual Study (1-9; max: 9) *Prereq: consent of instructor.* Reading, research, or performance project.

THE 6940—Supervised Teaching (1-5; max: 5) S/U.

THE 6941—Internship (1-9; max: 9) Practical experience in residence with a professional theatre or equivalent. S/U.

THE 6950—Applied Theatre (1-3; max: 9) Specialized practical experience achieved through participation in realized productions.

THE 6955—Summer Repertory Theatre (3-9; max: 9) *Prereq: consent of instructor.* Practical experience in repertory theatre with direct skills application in all areas of theatre production.

THE 6971—Research for Master's Thesis (1-15) S/U.

THE 6973C—Project in Lieu of Thesis (1-9; max: 9) *Prereq: admission to candidacy.* Creative project in lieu of written thesis. S/U.

TPA 5025—Lighting Design I (3) *Prereq: admission to MFA or permission of instructor.* Advanced applications. In-depth practice of design concept formulation, use of advanced equipment, and complex scenographic documentation. Introduction to CAD for lighting designer.

TPA 5047—Costume Design I (3) *Prereq: admission to MFA. Development of skills required for costume design.* Emphasis on character and play analysis for costume designer.

TPA 5067—Scene Design I (3) *Prereq: TPA 4066; admission to MFA or permission of instructor.* Study and practice of scenic design process. Development of scenic design techniques for theatre and dance. Emphasis on script analysis for scenic designer.

TPA 5072—Drawing and Rendering (3) *Prereq: 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 (3) *Prereq: TPA 2075 or admission to MFA.* Development of textural illusion, enhancement of volume through light and shadow.

TPA 5082—Advanced Theatre Graphics (3) *Prereq: TPA 4066; admission to MFA.* Rendering for theatrical design. Traditional techniques, computer aided applications, and model building.

TPA 5236—Costume Technologies Workshop (3; max: 9) *Prereq: permission of instructor.* Costume crafts work through realized projects. Possible topics: millinery, stage jewelry, masks, prosthetics, wigs, puppetry, footwear, and dyeing.

TPA 6005—Design I (2) Application of fundamental techniques of set, light, and costume design as applied to various styles of dramatic literature.

TPA 6006—Design II (3) *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 (3) *Prereq: admission to MFA.* Investigation of design theory, research, concept, and presentation used in production of theatre and dance.

TPA 6026—Lighting Design II (3) *Prereq: 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 (3) *Prereq: TPA 5047.* Advanced study. Specialized costume design problems for individual projects.

TPA 6054—Detail Design for Costume Designers (3; max: 6) *Prereq: TPA 6048 or permission of instructor.* Intensive study and practical application of designing specific motifes and accessories for costumes.

TPA 6069—Scene Design II (3) *Prereq: TPA 5067 or admission to MFA.* Design work in variety of genres. Complex multi-set productions.

TPA 6235—Costume Construction (3; max: 9) *Prereq: permission of instructor.* Detailed study of patterning and construction techniques utilized in men's and women's dress. Extensive hands-on work with contemporary and historical garments.

TPA 6237—Pattern Making: Flat Patterning (3; max: 6) *Prereq: permission of instructor.* Utilization of flat pattern techniques to create garments. Emphasis on period details.

TPA 6243—Pattern Making: Draping (3; max: 6) *Prereq:*

permission of instructor. Advanced study of draping methods of costume creation. Extensive hands-on work utilizing sculptural qualities of fabric and clothing.

TPA 6258—Computer Drafting 2D (3) *Prereq: admission to MFA.* Study of computer aided drafting for theatrical designer. Emphasis on techniques for scenic and lighting designer.

TPP 6237—MFA Company Acting Workshop (1-6; max: 24) Student actors study, experiment, and produce in laboratory emphasizing specialized skills and methods; emphasis on nonrealistic and period genres.

TPA 6357—Programming and Presentation for the Lighting Designer (3) *Prereq: TPA 5025, 6026.* Intensive use of high end software for programming and presentation of lighting design concepts for advanced designer.

TPP 6385—Directing (3) Exploration of the philosophy and psychology of directing and the director. Applied to scene study.

TPP 6946—Performance Practicum (3) Training in specialized areas of performance.

Tourism, Recreation, and Sport Management

College of Health and Human Performance

Graduate Faculty 2004-2005

Chair: S. Holland. *Graduate Coordinator:* M. Floyd. *Professors:* S. Anderson; C. Williams. *Associate Professors:* R. Beland; B. Cato; D. Connaughton; M. Floyd; H. Gibson; S. Holland; G. Trail; J. Zhang. *Assistant Professors:* G. Bennett; R. C. Burns; J. Confer; D. Gamble; L. Pennington-Gray; J. Spengler; B. Thapa.

The Department of Tourism, Recreation, and Sport Management offers two major programs under the Master of Science degree: sport management and recreation, parks, and tourism. The Department also participates in the Ph.D. program in health and human performance. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The master's program provides advanced preparation of tourism, recreation and park, and sport management professionals for positions of leadership in planning, developing, administering, and marketing of programs in a variety of employment settings. Students may choose the concentration in sport management or a specialization in recreation resource planning and management, tourism and commercial recreation, therapeutic recreation, campus recreation, or recreation administration and supervision. The doctoral program is offered through the College of Health and Human Performance with concentrations in natural resource recreation, sport management, therapeutic recreation, and tourism. These concentrations blend specialized course work and research.

The curriculum is individualized, and applicants with bachelor's degrees from unrelated fields are 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 one semester.

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 both the Tourism, Recreation, and Sport Management Department 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 students supervisory committee is comprised of both College of Law and Tourism, Recreation, and Sport Management Graduate Faculty members.

HLP 6515—Evaluation Procedures in Health and Human Performance (3) Evaluation and interpretation of tests and analysis of research data.

HLP 6535—Research Methods (3) Introduction to research methodology and design.

HLP 6911—Research Seminar (1; max: 6) Research presentations by graduate students and faculty in the College. S/U.

HLP 7979—Advanced Research (1-12) 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. S/U.

HLP 7980—Research for Doctoral Dissertation (1-15) S/U.

LEI 5188—Trends in Leisure Studies (3) Factors historically influencing recreation and leisure. Influence of social, demographic, and environmental changes on leisure behavior.

LEI 5255—Outdoor Recreation and Park Management (3) History and current issues. Review of government and private roles in provision of outdoor recreation opportunities. Synthesis of social science research on outdoor recreation behavior.

LEI 6108—Contemporary Theories of Recreation and Leisure (3) Philosophy of leisure and recreation as it relates to social, psychological, and economic constructs.

LEI 6495—Campus Recreation Administration and Programming (3) Innovation and development of campus recreation at community college and university levels.

LEI 6513—Administrative Procedures in Leisure Services (3) Problems and procedures involving the administration of leisure services.

LEI 6515—Legal Issues in Recreation, Parks, and Tourism (3) Focus on case studies and risk management implications.

LEI 6557—Recreation Management/Development in the Coastal Zone (3) Introduction to the coastal environment as a predominant setting for recreation activity and development. Examine 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 6578—Advanced Marketing for Recreation, Parks, and Tourism (3) *Prereq: LEI 6895.* Multidimensinal marketing functions common to complex recreation, park, and tourism organizations. Strategic planning in marketing and its use by recreation, parks, and tourism.

LEI 6704—Issues in Therapeutic Recreation (3) *Prereq: LEI 3703, 4713, 4711.* In-depth examination of therapeutic recreation including (a) societal structures and systems within which services are provided, (b) challenges to growth of field, and (c) administration, practice, and research issues.

LEI 6834—Ecotourism (3) *Prereq: 6 hour biological/physical sciences.* Components, history, practice, and current issues of nature based tourism. Principles and problems for natural resources and host populations. Rural tourism, economic impacts, tourism life cycle, and case studies.

LEI 6837—Tourism Planning and Development (3) Examination of development within hospitality and tourism industry. Emphasis on planning and impact to area.
LEI 6838—Sport Tourism (3) Analysis of interconnectedness of sport and tourism for behavioral, historical, economic, management, marketing, environmental, and policy perspectives.
LEI 6839—Heritage Tourism (3) Theory, practice, and current issues of heritage and cultural tourism planning and management. Travel as learning, historic sites and events as attractions and destinations.
LEI 6895—Tourism Theory and Concepts (3) Social science perspective with emphasis on sociology of tourism. Sociocultural impacts of tourism, tourist roles, definitions of tourism, tourist motivations, and issues of inequality.
LEI 6903—Readings in Recreation, Parks and Tourism (1-3; max: 6) *Prereq: Intended for master's students.* S/U.
LEI 6905—Directed Independent Study (1-5; max: 10) Individual projects under faculty guidance.
LEI 6910—Supervised Research (1-5; max: 5) S/U.
LEI 6931—Special Topics in Recreation, Parks, and Tourism (1-3; max: 6) *Intended for master's students.*
LEI 6935—Seminar in Recreation, Parks and Tourism (3; max: 6) *Prereq: Intended for master's students.* Discussion of research topics, including contemporary issues in recreation, parks, and tourism. S/U.
LEI 6940—Supervised Teaching (1-5; max: 5) S/U.
LEI 6944—Practicum in Leisure Studies (1-6; max: 6)
LEI 6971—Research for Master's Thesis (1-15) S/U.
LEI 7163—Foundations of Leisure Behavior (3) Sociological perspective on understanding leisure behavior, along with historical, philosophical, and social psychological contributions. Role of social structural forces in shaping leisure behavior.
LEI 7708—Conceptual Issues in Therapeutic Recreation (3) *Prereq: graduate standing.* Theoretical foundations and research efficacy of therapeutic recreation.
LEI 7901—Recreation, Parks and Tourism in Higher Education (3) *Required for all doctoral students.* Current trends and issues impacting recreation, parks, and tourism.
LEI 7904—Advanced Readings in Recreation, Parks and Tourism (1-3; max: 6) *Prereq: Intended for doctoral students.* S/U.
LEI 7905—Advanced Independent Study in Recreation, Parks and Tourism (1-3; max: 6) *Intended for doctoral students.* Individual projects under faculty guidance.
LEI 7910—Advanced Supervised Research (1-5; max: 5) *Intended for doctoral students. Not open to students who have taken 6910.* S/U.
LEI 7933—Advanced Special Topics in Recreation, Parks and Tourism (1-3; max: 6) *Intended for doctoral students.*
LEI 7936—Advanced Seminar in Recreation, Parks and Tourism (3; max: 6) *Intended for doctoral students.* Discussion of research topics, including contemporary issues. S/U.
PET 5465—Sport Finance (3) Financial theories and practical application of sport income and expenditures including both private and public economic influences.
PET 5466—Sport Marketing (3) Marketing information systems, pricing strategies, media relations, promotional methods, and endorsements as they relate to marketing theories and practical applications and principles.
PET 5495—Sport Ethics (3) *Prereq: 7 or 8 HH/ESS or permission of instructor.* Self-evaluating, examining, and developing philosophy on ethical issues related to sport. Major moral/ethical issues within sport researched and discussed. Ethical decision making processes through opportunities of critical analysis.
PET 5936—Current Topics in Exercise and Sport Sciences (1-3; max: 9) *Prereq: permission of department chairman.* Offered, upon request of students, to meet special interests inadequately covered in other courses.
PET 6456—Management and Planning of Sport and Physical Activity Facilities (3) Administrative tasks involved in managing, planning, renovating, and maintaining facilities and their effect on program selection and scheduling in sport and fitness.
PET 6471—Contemporary Sport Industry Trends (3) *Prereq: graduate status.* Advanced principles and applications.
PET 6472—Risk Management in Sport and Physical Activities (3) *Prereq: graduate sport law or equivalent* Theory and techniques for research and practical application.
PET 6476—Management and Leadership in Sport (3) *Prereq: 7 or 8 HH/ESS or permission of instructor.* Principles of leadership and management to sport settings.
PET 6478—Issues in Sport Law (3) *Prereq: 7 or 8 HH/ESS or permission 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.
PET 6498—Research Seminar in Sport Management (3) *Prereq or coreq: HLP 6535.* Theoretical and practical research information in sport and exercise program management.
PET 6499—Sport Consumer Behavior (3) Theory development, review of research, and marketing applications. Examination of various models and paradigms relevant to sport spectator consumption behavior. Original research project required.
PET 6905—Directed Independent Study (1-5; max: 12) Individual research projects under faculty guidance.
PET 6910—Supervised Research (1-5; max: 5) S/U.
PET 6947—Graduate Internship in Exercise and Sport Sciences (3-9; max: 9 [max: 5 to count toward degree credit requirement]) *Prereq: completion of 2 semesters of course work applicable to specialization; permission of adviser, written application, and site approval.* On-site full-time practical experience in field of study. S/U.
PET 6948—Advanced Practicum in Exercise and Sport Sciences (1-5; max: 10) On-site practical experience in field of study.
PET 6971—Research for Master's Thesis (1-15) S/U.

Urban and Regional Planning

College of Design, Construction, and Planning

Graduate Faculty 2004-2005

Chair: P. Zwick. *Graduate Coordinator:* R. H. Schneider. *Professors:* J. C. Nicholas; J. M. Stein. *Associate Professors:* R. G. Phillips; R. H. Schneider; R. L. Steiner; P. D. Zwick. *Assistant Professors:* I. Bejleri; K. E. Larsen.

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 Arts in Urban and Regional Planning—The Department of Urban and Regional Planning offers graduate work leading to the degree of Master of Arts in Urban and Regional Planning (M.A.U.R.P.). Students are encouraged to enter the program in the fall semester. The program is usually completed in two academic years. The student entering with an undergraduate degree and no graduate study must complete 52 hours of credit for the M.A.U.R.P. degree. Students who have a master's degree in a related field may transfer up to 18 graduate semester hours toward the 52 hour requirement. Such a transfer of credit requires the approval of the Department. The Department encourages students with any undergraduate degree who are interested in the field of planning to apply for admission.

Complete descriptions of the requirements for the M.A.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 which 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; growth management at local, regional, and state levels; 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. The program emphasizes planning, policies, and design for the physical environment. Current specializations include growth management and transportation, urban and environmental design, community and economic development, and planning information and analysis systems. Students are also encouraged to take advantage of the extensive faculty, course offerings, and other resources available in the College of Design, Construction, and Planning and throughout the University. The Department has two research centers: The Geofacilities Planning and Information Center (GeoPlan) and the Center for Building Better Communities.

The curriculum is supported by an extensive GIS laboratory, and a visual aid library. Variation from the core studies may be approved by the Department if the student can demonstrate education and experience to the faculty that would support such an alternative. The M.A.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.

The Department of Urban and Regional Planning and the College of Law offer a joint degree program (see *Requirements for Master's Degrees* in the *General Information* section of this catalog). Areas of concentration with other programs in the Graduate School may be developed to meet the individual needs of students. In addition to course work the student is required to complete an internship with a public or private planning office and the student must complete a thesis.

The Department reserves the right to retain student work for purposes of record, exhibition, or instruction.

DCP 6931—Special Topics in Design, Construction, and Planning (1-4; max: 6)

DCP 7790—Doctoral Core I (3) Philosophy, theory, and history of inquiry into the processes of design, urban development, and building systems.

DCP 7792—Doctoral Core II (3) *Prereq: DCP 7790.* Urban, environmental, and legal systems in the context of urban development.

DCP 7794—Doctoral Seminar (1; max: 4) *Coreq: DCP 7911. For entering Ph.D. students.* Successfully negotiating graduate school and writing dissertation.

DCP 7911—Advanced Design, Construction, and Planning Research I (3) *Prereq: STA 6167; coreq: DCP 7794; for entering Ph.D. students.* Survey and critical analysis of research in disciplines of design, construction, and planning with emphasis on theory and mehtods.

DCP 7912—Advanced Design, Construction, and Planning Research II (3) *Prereq: DCP 7911.* Conduct of advanced research in architecture, design, landscape, planning, and construction.

DCP 7940—Supervised Teaching (1-5; max: 5) *Prereq: not open to students who have taken 6940.* Independent student teaching under supervision of faculty member. S/U.

DCP 7949—Professional Internship (1-5; max: 5) Professional faculty-supervised practicum.

DCP 7979—Advanced Research (1-12) 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. S/U.

DCP 7980—Research for Doctoral Dissertation (1-15) S/U.

URP 6042—Urban Economy (3) Principles of urban systems, including analytical techniques such as economic base analysis.

URP 6061—Planning Administration and Ethics (3) Administration and management of public and private planning offices; ethics of planning profession.

URP 6100—Planning Theory and History (3) 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 (3) *Prereq: 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 (3) 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 Powers II (3) *Prereq: URP 6131.* Traditional and innovative approaches to the control of land use. Zoning, subdivision regulation, and other land use control codes. Growth management in modern context.

URP 6203—Planning Research Design (1-3; max: 3) Emphasis on research design, literature research; student presentations at appropriate stages in thesis work.

URP 6231—Quantitative Data Analysis for Planners (3) Planning problem formulation, quantitative research skills, and data gathering techniques. Statistical analysis and emphasis on computer applications.

URP 6270—Survey of Planning Information Systems (3) Introduction to concepts and theory associated with desktop GIS as related to urban (real estate) and regional (environmental) planning.

URP 6271—Planning Information Systems (3) Advanced work in planning and analysis customizing use of large data bases.

Emphasis on development monitoring systems and information systems in planning.

URP 6272—Advanced Planning Information Systems (3) *Prereq: URP 6271.* Theoretical and practical knowledge about the structure, use, and architecture of georeference data base systems. Discussion of spatial relationships which exist between network and area-related systems. Development and maintenance of geographic information systems as related to urban and regional planning.

URP 6274—GPS for Planners: Introduction to Global Positioning System (1) 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 (3) Advanced GIS data concepts and practices. Techniques for data creation, quality assurance and quality control, conversion, storage, manipulation, and presentation.

URP 6312—Land Development Planning and Evaluation (3) 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 (1-12; max: 12) Projects encompass city wide comprehensive planning examining the interaction of urban and social systems cast in scenarios of future growth and development. H.

URP 6421—Environmental Impact Statements (3) 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 6541—Economic Development Planning (3) 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 (3) Review of land economics within the context of urban and regional planning.

URP 6543—Seminar in Capital Improvement Finance (1) Methods and means of local government finance of capital improvements.

URP 6601—State Planning (3) History, development, and administration of state planning in 20th century with emphasis on recent growth management initiatives.

URP 6603—Development Review (3) *Prereq: URP 6101.* Seminar on practice of local government planning with emphasis on development review and land development regulation.

URP 6716—Transportation Policy and Planning (3) 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 (3) Planning and design of bicycle paths, greenways, and facilities that form network for nonmotorized transportation. Oriented toward systems approach.

URP 6745—Housing, Public Policy, and Planning (3) 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 (3) 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—Urban and Regional Systems (3) A quantitative computer-assisted exploration of comprehensive planning models.

URP 6871—Planning and Design I (3) 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 (3) *Prereq: 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 (3) Introduction to crime prevention through environmental design (CPTED) and defensible space in urban planning design.

URP 6884—Community Conservation and Revitalization (3) 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 6905—Exploration and Directed Study (1-4; max: 10)

URP 6910—Supervised Research (1-5; max: 5) S/U.

URP 6920—Colloquium (1) Introduction to field; historical, philosophical concepts, processes, issues related to profession of planning. For entering MAURP students. S/U.

URP 6931—Topical Seminar (1-4; max: 6) Current planning opportunity examined.

URP 6933—Planning Information Seminar (1-2; max: 2) 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 (1-5; max: 5) S/U.

URP 6941—Urban Planning Internship (1-3; max: 3) Off-campus internship experience. S/U.

URP 6971—Research for Master's Thesis (1-15) S/U.

URP 6979—Terminal Project (1-6; max: 6) 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. S/U.

Veterinary Medical Sciences

College of Veterinary Medicine

Graduate Faculty 2004-2005

Dean: J. A. DiPietro. *Associate Dean for Research and Graduate Studies:* C. H. Courtney. *Graduate Coordinators:* D. R. Allred; L. F. Archbald; K. Gelatt; R. Reep. *Eminent Scholar:* P. J. Reier. *Professors:* L. F. Archbald; A. F. Barbet;D. E. Brooks; M. B. Brown; M. P. Brown; C. D. Buergelt; M. J. Burridge; C. F. Burrows; G. D. Butcher; B. Byrne; W. L. Castleman; C. L. Chrisman; P. T. Colahan; C. H. Courtney; P. W. J. B. Dame; P. W. Davenport; J. A. DiPietro; G. A. Donovan; M. Drost; G. W. Ellison; D. J. Forrester; R. Francis-Floyd; K. N. Gelatt; E. P. J. Gibbs; E. C. Greiner; R. R. Gronwall; L. Guillette; P. J. Hansen; J. W. Harvey; J. A. Himes; E. R. Jacobson;

R. D. Johnson; M. S. Kilberg; P. A. Klein; G. A. Kunkle; P. J. Laipis; M. M. LeBlanc; D. Lewis; R. J. MacKay; A. M. Merritt; R. D. Miles; J. T. Neilson; P. L. Nicoletti; A. B. Peck; R. L. Reep; C. A. Risco; S. M. Roberts; D. A. Samuelson; D. Sharp; J. K. Shearer; V. M. Shille; F. A. Simmen; R. Simmen; P. A. Small; C. A. Sninsky; I. R. Tebbett; J. P. Thompson; M. Troedsson; T. W. Vickroy; E. K. Wakeland; A. I. Webb; C. E. Wood; T. W. Wronski; J. K. Yamamoto; M. D. Young. *Scientist:* C. H. Romero. *Associate Professors:* A. R. Alleman; D. R. Allred; K. J. Anderson; D. C. Bolser; R. M. Clemmons; W. S. Cripe; E. P. Gallagher; J. M. Gaskin; S. Giguere; P. Ginn; M. Grant; L. F. Hayward; D. J. Heard; J. Hernandez; R. C. Hill; C. Kollias-Baker; J. K. Levy; R. Marsella; P. McGuire; A. Mergia; T. Miyabayashi; D. O. Rae; R. E. Raskin; J. Verstegen. *Associate Scientists:* T. S. Gross; S. Mahan; M. Spalding. *Assistant Professors:* C. Adin; D. Barber; J. Farese; E. Ferrell; R. Isaza; M. Long; M. MacPherson; P. Melendez; R. Milner; G. Roberts; L. Sanchez. *Assistant Scientists:* D. R. Brown; P. Crawford; N. Szabo. *Clinical Assistant Professor:* K. Harr. *Research Assistant Professor:* M. Campbell-Thompson.

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. Complete descriptions of the minimum requirements for the Master of Science and Doctor of Philosophy degrees are provided in the *General Information* 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, laboratory animal comparative medicine, vision sciences, perinatology, reproductive biology, pharmacokinetics, veterinary sports medicine, and wildlife and zoological medicine (L. F. Archbald and K. Gelatt, Graduate Coordinators).

Physiological Sciences—Comparative anatomy, physiology, pharmacology, biochemistry, neurobiology, nutrition, reproductive biology, and toxicology (R. Reep, Graduate Coordinator).

Infectious Diseases and Experimental Pathology—Bacteriology, parasitology, virology, immunopathology, molecular mechanisms of disease and host defense, epidemiology, and veterinary public health (D. Allred, 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 332, GMS 6333, GMS 6381, GMS 6382, GMS 6421. **Large and Small Animal Clinical Sciences** All of the above.

GMS 6074—Comparative Neurobiology (2) *Prereq: GMS 6007 or consent of instructor.* Broad perspective on nervous system evolution, structure and function in different species, and detailed overview of mammalian nervous systems showing principles of cytoarchitecture.

VME 5162C—Avian Diseases (3) Causes, epizootiology, diagnosis, and methods of prevention and control of avian diseases. Not open to students have taken VME 4162.

VME 5244—Physiology: Organ Systems (4) *Prereq: knowledge of general biochemistry.* Emphasis on 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 (3) *Prereq: permission of instructor.* Care of Florida megavertebrates including dophins, other cetaceans, manatees, and sea turtles using lectures, tours, and hands-on experience.

VME 6186—Advanced Topics in Disease Pathogenesis (2-4; max: 10) *Prereq: 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 (2; max: 4) *Prereq: 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 6464—Molecular Pathogenesis (3; max: 6) *Prereq: biochemistry, immunology, or permission of instructor.* Papers on mechanisms of pathogenesis and molecular approaches toward diagnosis and control of either parasitic or viral and bacterial diseases. Focus alternatives by semester.

VME 6565—Histological Techniques for Light Microscopy (2) *Prereq: permission of instructor.*

VME 6602—General Toxicology (3) *Prereq: background in biochemistry, physiology, and pharmacology.* General principles of toxicology and mechanisms by which toxic effects occur in target organs and tissues.

VME 6603—Advanced Toxicology (3) *Prereq: VME 6602.* Survey of health effects of each major class of toxicants.

VME 6604—Literature Survey in Toxicology (1-2; max: 2) Critical presentation and evaluation of current literature in selected topics in toxicology.

VME 6605—Toxic Substances (3) *Prereq: general toxicology.* In-depth information on signs, symptoms, mechanisms underlying, diagnosis, and management of poisoning by drugs and chemicals.

VME 6606—Ecological Risk Assessment (3) *Prereq: VME 6602.* Indepth information on signs, symptoms, underlying mechanisms, diagnosis, and management of bpoisoning by drugs and chemicals.

VME 6607—Human Health Risk Assessment (4) Conceptual approaches and computational techniques for quantitative health risk assessment.

VME 6613—Forensic Toxicology I (3) *Prereq: organic chemistry recommended.* Analytical techniques used in examination of forensic drug and forensic toxicology specimens.

VME 6614—Forensic Toxicology II (3) *Prereq: VME 6613.* Toxicology of compounds commonly encountered in forensic specimens.
VME 6650—Principles of Mammalian Pharmacology (4) *Prereq: graduate-level physiology course.* Principles of drug action with emphasis on mechanisms of action and side effects for major drug classes used in humans and other mammals.
VME 6766—Laboratory Quality Assurance/Quality Control (3) Procedures for ensuring quality practices within analytical laboratory.
VME 6767—Issues in the Responsible Conduct of Research (1) Presentation and discussion of issues; guiding principles and potential pitfalls. S/U.
VME 6771—Research Methods in Epidemiology (3) Design, analysis, and interpretation of epidemiologic studies.
VME 6905—Problems in Veterinary Medical Sciences (1-4; max: 12) H.
VME 6910—Supervised Research (1-5; max: 5) S/U.
VME 6931—Seminar in Veterinary Medical Sciences (1; max: 8) S/U.
VME 6932—Seminar in Physiological Sciences (1; max: 8) Weekly seminar series on topics in comparative physiological sciences, including nervous, cardiovascular, gastrointestinal, urogenital, and musculoskeletal systems. S/U.
VME 6933—Seminar in Infectious Diseases and Experimental Pathology (1; max: 8) Weekly seminar series on topics in infectious diseases of animals presented by students, faculty, and visiting speakers. S/U.
VME 6934—Topics in Veterinary Medical Sciences (1-4; max: 10) *Prereq: permission of instructor.* Studies in topics involving new developments and/or research techniques in veterinary medical sciences.
VME 6935—Seminar in Veterinary Pathology (1; max: 8) *Prereq: histology.* Weekly seminars on pathology of animals, including bone and joint pathology. Presented by residents, graduate students, faculty, and guest speakers.
VME 6936—Seminar in Pathophysiology (1; max: 8) *Prereq: physiology, biochemistry.* Weekly seminar series in mammalian pathophysiology. S/U.
VME 6937—Seminars in Comparative Medicine (1; max: 8) *Prereq: VME 6235, 6236.* Weekly seminar series in laboratory animal medicine. S/U.
VME 6938—Topics in Aquatic Animal Health (1; max: 4) Presentation/discussion by students of selected articles relating to aquatic animal health, including both vertebrates and invertebrates.
VME 6940—Supervised Teaching (1-5; max: 5) S/U.
VME 6971—Research for Master's Thesis (1-15) S/U.
VME 7979—Advanced Research (1-12) 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. S/U.
VME 7980—Research for Doctoral Dissertation (1-15) S/U.
WIS 5323C—Impact of Diseases on Wildlife Population (3) *Prereq: WIS 3401 or equivalent.* Diseases of wildlife, with emphasis on their impact on avian and mammalian populations of North America.

Wildlife Ecology and Conservation

College of Agricultural and Life Sciences

Graduate Faculty 2004-2005

Chair: N. B. Frazer. *Graduate Coordinator:* W. M. Kitchens. *Eminent Scholar:* S. K. Robinson. *Professors:* L. C. Branch; D. J. Forrester *(Emeritus);* N. B. Frazer; L. D. Harris *(Emeritus);* S. R. Humphrey; S. K. Jacobson; W. M. Kitchens; T. H. Kunz; R. F. Labisky *(Emeritus);* J. J. Mullahey; M. A. Nickerson; J. M. Schaefer; M. E. Sunquist; G. W. Tanner; P. A. Werner *(Emerita). Associate Professors:* C. K. Dodd; F. J. Mazzotti; M. B. Main; K. D. Meyer; D. L. Miller; M. P. Moulton; J. F. Percival; K. E. Sieving. *Research Associate Professor:* P. Frederick. *Associate Scientists:* L. R. Franz; J. P. Ross. *Assistant Professors:* E. M. Bruna; R. R. Carthy; G. C. Cumming; W. M. Giuliano; M. E. Hostetler; S. A. Johnson; L. W. Lefebvre; M. K. Oli; L. L. Smith.

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. Complete descriptions of the requirements for these degrees are provided in the *General Information* 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.

WIS 5155C—Natural History of Amphibians and Reptiles (4) *Prereq: WIS 3401 or ZOO 2303C.* Systematics, morphology, biogeography, life history patterns, ecology, and conservation of caecilians, salamanders, frogs, crocodilians, turtles, lizards, and snakes. Weekend field trips required. Offered spring semester of odd-numbered years.
WIS 5323C—Impact of Diseases on Wildlife Population (3) *Prereq: WIS 3401 or equivalent.* Diseases of wildlife, with emphasis on their impact on avian and mammalian populations of North America.
WIS 5376—Behavioral and Ecological Mammalogy (3) *Prereq: ZOO 2303C; WIS 3401 or ZOO 5486C.* Ecology, macrophysiology, life phases, population dynamics, biological rhythms, social systems, conservation issues.
WIS 5481—Savanna Ecology and Management (3) Structure and function of tropical and subtropical savanna biomes. Savanna formation, wildlife habitat, grazing herbivory, fire and interaction of native, domestic, and exotic species. Offered spring semester of even-numbered years.
WIS 5496—Research Design in Wildlife Ecology (3) *Prereq: 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 semester.

WIS 5555C—Conservation Biology (3) *Prereq: basic courses in ecology, genetics.* Application of biological and resource management theory to the problem of the conservation of natural communities. Offered fall semester.

WIS 6426—Landscape Ecology and Management for Biodiversity Conservation (4) *Prereq: PCB 4044C or 3034C.* Concepts, principles, and applications of landscape ecology for biodiversity conservation. Landscape processes such as fire, hurricanes, and migrations, as well as ecological management required to sustain biodiversity as humans interact with natural landscape.

WIS 6444—Advanced Wetlands Ecology (4) *Prereq: 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 6452—Wildlife Ecology (3) *Prereq: WIS 3401 or equivalent.* Emphasis on population processes of wildlife resources in subtropical and temperate ecosystems, and on policy processes governing management structure; experimental testing of community interaction; emphasis on application of theory to management. Offered fall semester of odd-numbered years.

WIS 6455—Wildlife Population Ecology (3) Rigorous background in population analysis covering population growth and regulation, species interactions, life-history theory, and population viability analysis.

WIS 6464—Wildlife Habitat Analysis (3) Measurement of compositional and structural aspects of plant communities in relation to animal needs. Application of wildlife habitat models.

WIS 6466—Wildlife Population Modeling (3) *Prereq: one course in calculus or liner 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 (3) Exploration of applied and quantitative methods to explore links between landscape patterns and processes.

WIS 6525—Environmental Interpretation (3) 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 6544—Administration in Natural Resources (3) Natural resource agency administration primer in budgets, personnel management, program development, leadership, and strategic planning.

WIS 6575—Mammalian Carnivores: Conservation and Management Issues (2) *Prereq: PCB 3034C or 4044C; WIS 5376.* Strategies and paradigms for management and conservation of mammalian carnivore populations. Social systems, life history variables, conflicts with human, reintroduction and translocation. Offered spring semester of odd-numbered years.

WIS 6578—Human Dimensions of Biological Conservation (3) 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 (1-6; max: 10) *Prereq: permission of instructor.*

WIS 6910—Supervised Research (1-5; max: 5) *Prereq: permission of instructor.* S/U.

WIS 6933—Seminar (1) S/U.

WIS 6934—Topics in Wildlife and Range Sciences (1-4; max: 10) *Prereq: WIS 6452, 5555C, or permission of instructor.* Advanced concepts and practices in wildlife management and conservation. Topics vary.

WIS 6940—Supervised Teaching (1-5; max: 5) *Prereq: permission of instructor.* S/U.

WIS 6971—Research for Master's Thesis (1-15) S/U.

WIS 7979—Advanced Research (1-12) 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. S/U.

WIS 7980—Research for Doctoral Dissertation (1-15) S/U.

Women's Studies

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Director: M. Pena. *Graduate Coordinator:* K. L. Broad. *Professors:* F. Babb; A. Kwolek-Folland; C. Shehan. *Associate Professors:* K. L. Broad; T. Hedrick; M. Pena. *Assistant Professors:* S. Y. Evans; S. A. Langwick; P. Travis.

The women's studies program is administered by the Center for Women's Studies and Gender Research. It is an interdisciplinary forum for master's and doctoral students admitted to graduate programs throughout the University. It offers students the opportunity to take advantage of scholarship in this new and dynamic field. Students become acquainted with different research instruments and methods, and analyze and access theories about the role of gender in cultural systems and its intersections with other categories of difference such as race, ethnicity, religion, class, sexuality, 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 semiannual newsletter. The Center in 3324 Turlington Hall hosts regular art exhibits and houses archives, a small library, offices, and meeting space.

Master of Arts and Master of Women's Studies—The Center offers the Master of Arts (M.A.) thesis degree that requires the completion and defense of a thesis (30-33 credit hours) and the Master of Women's studies (M.W.S.), a nonthesis degree that requires passing a comprehensive examination administered by the program's graduate studies committee (33 credit hours). Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

All master' students take a core curriculum of 12 graduate credits (4 courses). For the M.A., the remaining 18 to 21 hours consist of 12 to 15 credits of approved electives and 6 thesis credits. For the M.W.S. degree, 21 credits of approved electives are required.

Interdisciplinary Concentration in Women's/Gender Studies—Graduate Faculty from many departments and colleges, campus-wide, participate in this doctoral-level interdisciplinary concentration. For more information, see *Interdisciplinary Graduate Studies* in this catalog or contact the Center for Women's Studies and Gender Research.

Graduate Certificate Program—Two graduate certificates in women's studies for master's and doctoral students are offered in conjunction with degree programs in other academic units. Postbaccalaureate students who have specifically applied for admission to the Women's Studies Graduate Certificate program may also enroll. 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 is a general introduction to the field, and the Graduate Certificate in Gender and Development is designed for students who wish to focus on issues related to gender, economic development, and globalization.

Graduate courses in women's studies not listed below are available in the following colleges, programs, or departments: 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. For more information, contact the director, Dr. Milagros Pena, 3324 Turlington Hall, (352)392-3365.

WST 5933—Proseminar in Women's Studies (3; max: 6) Introduction to feminist theory, methodology, and application. Emphasis on either humanities or sciences; may be taken once for each emphasis.

WST 6348—Ecofeminism (3) Holistic framework for understanding connections among environmental, feminist, and social justice issues. Critical analysis of positions within ecofeminist theory.

WST 6508—Advanced Feminist Theory (3) *Prereq: 6000 level course in feminist theory or equivalent.* Contemporary theory with focus on common themes among academic disciplines.

WST 6905—Independent Study (1-3; max: 6) *Prereq: permission 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 Interdisciplinary Topics in Women's Studies (3; max: 6) Selected topic or problem not normally offered in curriculum, including extensive analysis and discussion of contemporary topics. Evaluation of recent literature, research methods, and scholarship of women from multidisciplinary perspective.

WST 6936—Feminist Challenges to Traditional Paradigms (3; max: 9) Major feminist thinkers and theoretical movements. Topics include French feminist Luce Irigaray, feminism and postmodern theory, African-American feminist theorists, science studies, and feminist challenges to positivism.

WST 6946—Internship in Applied Women's Studies and Gender Research (1-3; max: 6) *Prereq: 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 (1-6; max: 12) *Prereq: admission to approved study abroad program and permission of department.* S/U.

WST 6971—Research for Master's Thesis (1-15) S/U.

Zoology

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chairman: D. H. Evans. *Graduate Coordinator:* C. W. Osenberg. *Eminent Scholar in Ecological Sciences:* R. D. Holt. *Ordway Eminent Scholar of Ecosystem Conservation:* S. K. Robinson. *Distinguished Professor:* L. J. Guillette. *Professors:* B. W. Ache; K. A. Bjorndal; H. J. Brockmann; D. H. Evans; S. R. Humphrey; D. J. Levey; H. B. Lillywhite; B. J. MacFadden; M. M. Miyamoto; C. W. Osenberg; D. W. Steadman. *Scientist:* L. M. Page. *Associate Professors:* M. J. Cohn; G. Paulay; C. M. St. Mary; R. G. Wolff. *Assistant Professors:* C. F. Baer; B. M. Bolker; E. L. Braun; D. Julian; R. T. Kimball; S. M. Phelps; D. Reed; M. L. Wayne.

The Department of Zoology offers the degrees of Master of Science, Doctor of Philosophy, and Master of Science in Teaching with specialization in animal behavior, conservation ecology, genetics, paleontology, physiology, systematic biology, evolutionary biology, marine biology, population biology, and tropical biology. Complete descriptions of the minimum requirements for the M.S., M.S.T, and Ph.D degrees are provided in the *General Information* section of this catalog.

New graduate students are expected to have completed at least one year of physical sciences and at least one course in three or more of the following five subject areas: cell or developmental biology, ecology or behavior, genetics, morphology or evolution, and physiology. Each student's supervisory committee will recommend additional courses according to the academic background and research plans of the student.

PCB 5307C—Limnology (4) *Prereq: PCB 4044C, CHM 2046.* Biological, chemical, and physical dynamics of inland waters.

PCB 5415C—Behavioral Ecology (4) *Prereq: ZOO 3513C, 4472C, PCB 4044C, 4674, or consent of instructor.* Theoretical and empirical bases for behavioral adaptations.

PCB 5459—Morphometrics (3) *Prereq: PCB 4044C, 4674, STA 3024, or equivalents.* Quantitative methods of morphological analysis, with applications in ecological, evolutionary, and physiological biology. Multivariate techniques emphasized.

PCB 5615—Molecular Evolution and Systematics (4) *Prereq: PCB 3063, graduate standing, or consent of instructor.* Patterns and processes of change at molecular level in populations, species, and higher taxonomic groups and their systematic implications.

PCB 6377C—Physiological Ecology of Vertebrates (4) *Prereq: course in physiology.* Physiological mechanisms that influence distribution and ecological relations, water conservation, and energy exchange in vertebrates.

PCB 6447C—Community Ecology (4) *Prereq: PCB 4044C or equivalent and permission of the instructor.* The evolutionary ecology of communities; conceptual and quantitative approaches to community structure; statistics independent projects.

PCB 6496C—Stream Ecology (4) *Prereq: ENY 3005C, PCB 4044C or 3043C, CHM 2046, PHY 2054.* Physical, chemical, and biological interrelationships in flowing fresh water.

PCB 6605C—Principles of Systematic Biology (4) Theory of biological classification and taxonomic practice. Laboratory experience in taxonomic procedures and techniques, including computer methods. Offered on demand.

PCB 6695—Seminar in Evolutionary Biology (1; max: 5) *Prereq: 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 6815—Hormone Regulation of Invertebrate Behavior (3) Survey and analysis of invertebrate behaviors regulated by hormones. Invertebrates considered include arthropods, coelenterates, helminths, and molluscs.

PGY 5246—Biophotography (3) Laboratory, field, and darkroom techniques in 35mm still photography for biological research publications, posters, and slide presentations.

ZOO 5115C—Vertebrate Paleontology (3) *Prereq: ZOO 3713C.* Evolutionary history of major vertebrate groups, with special emphasis on principles of prehistoric investigations.

ZOO 5939—Seminar in Morphology (2; max: 9) *Prereq: consent of instructor.* Advanced topics in the description, analysis and evolution of animal form.

ZOO 6308—Dynamic Optimization Modeling in Behavioral and Evolution Ecology (3) 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 (3) All aspects of biology of sea turtles and how their biology affects their conservation.

ZOO 6456C—Ichthyology (4) *Prereq: ZOO 2203C.*

ZOO 6515C—Ethology (4) *Prereq: graduate standing or consent of instructor.* The evolution, mechanisms, and classification of animal behavior, emphasizing how to design and conduct behavioral research.

ZOO 6542—Nutritional Ecology (3) Interactions of nutrition and ecology, emphasizing how digestive processes regulate animal productivity and plant/animal interactions.

ZOO 6905—Individual Studies (1-8; max: 12)

ZOO 6910—Supervised Research (1-5; max: 5) S/U.

ZOO 6927—Special Topics in Zoology (1-4; max: 15)

ZOO 6931—Seminar in Marine Turtle Biology (1-2; max: 5) *Prereq: permission of instructor.* Advanced topics in biology and conservation of marine turtles.

ZOO 6939—Seminar in Animal Behavior (1-3; max: 9) *Prereq: graduate standing or consent of instructor.* Advanced topics in animal behavior.

ZOO 6971—Research for Master's Thesis (1-15) S/U.

ZOO 7979—Advanced Research (1-12) 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. S/U.

ZOO 7980—Research for Doctoral Dissertation (1-15) S/U.

Graduate Faculty

A

ABBASCHIAN, REZA J., PH.D.
(University of California at Berkeley)
Professor, Materials Science and Engineering

ABBOUD, KHALIL A., PH.D.
(Louisiana State University)
Scientist, Chemistry

ABDEL-KHALIK, A. R., PH.D.
(University of Illinois)
Graduate Research Professor, Accounting

ABERNATHY, CAMMY R., PH.D.
(Stanford University)
Professor, Materials Science and Engineering

ABRAMS, LISE, PH.D.
(University of California at Los Angeles)
Assistant Professor, Psychology

ACHE, BARRY W., PH.D.
(University of California at Santa Barbara)
Distinguished Professor, Zoology

ACHEY, PHILLIP M., PH.D.
(Pennsylvania State University)
Professor, Microbiology and Cell Science

ACOMB, GLENN A., M.L.A.
(Harvard University)
Associate Professor, Landscape Architecture

ACOSTA, DARIN E., PH.D.
(University of California at San Diego)
Associate Professor, Physics

ADAIR, JAMES H., PH.D.
(University of Florida)
Associate Professor, Materials Science and Engineering

ADAMS, BYRON J., PH.D.
(University of Nebraska)
Assistant Professor, Entomology and Nematology

ADAMS, CHARLES M., PH.D.
(University of Florida)
Professor, Food and Resource Economics

ADAMS, EARNEST D., PH.D.
(Duke University)
Professor, Physics

ADAMS, JAMES D., PH.D.
(University of Chicago)
Professor, Economics

ADAMS, THOMASENIA L., PH.D.
(University of Florida)
Associate Professor, Teaching and Learning

ADESOGAN, ADEGBOLA T., PH.D.
(University of Reading)
Assistant Professor, Animal Sciences

ADIN, CHRISTOPHER A., PH.D.
(Cornell University)
Assistant Professor, Veterinary Medicine

ADJEI, MARTIN B., PH.D.
(University of Florida)
Associate Professor, Agronomy

ADLER, JEFFREY S., PH.D.
(Harvard University)
Professor, History

AGARWAL, ANUPAM, M.D.
(Kasturba Medical College)
Joint Associate Professor, Biochemistry and Molecular Biology

AGARWAL, ANURAG, PH.D.
(Ohio State University)
Assistant Professor, Decision and Information Sciences

AGBANDJE-MCKENNA, MAVIS, PH.D.
(University of London)
Assistant Professor, Biochemistry and Molecular Biology

AGRESTI, ALAN G., PH.D.
(University of Wisconsin)
Distinguished Professor, Statistics

AHUJA, RAVINDRA K., PH.D.
(Indian Institute of Technology)
Professor, Industrial and Systems Engineering

AI, CHUNRONG, PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Economics

AITSAHLIA, FARID, PH.D.
(Stanford University)
Assistant Professor, Industrial and Systems Engineering

AJINKYA, BIPIN B., PH.D.
(University of Minnesota)
Professor, Accounting

AKCALI, ELIF, PH.D.
(Purdue University)
Assistant Professor, Industrial and Systems Engineering

AKERS, RONALD L., PH.D.
(University of Kentucky)
Professor, Sociology

ALAS-BRUN, MONTSERRAT, PH.D.
(University of Virginia)
Assistant Professor, Romance Languages and Literatures

ALAVALAPATI, JANAKI R., PH.D.
(University of Alberta)
Associate Professor, Forest Resources and Conservation

ALBA, JOSEPH W., PH.D.
(Temple University)
Distinguished Professor, Marketing

ALBARRACIN, DOLORES, PH.D.
(University of Illinois at Urbana-Champaign)
Associate Professor, Psychology

ALBERRO, ALEXANDER, PH.D.
(Northwestern University)
Associate Professor, Art and Art History

ALBERT, JAMES S., PH.D.
(University of Michigan)
Assistant Professor, Zoology

ALBRIGO, LEO G., PH.D.
(Rutgers University)
Professor, Horticultural Science

ALDRICH, HENRY C., PH.D.
(University of Texas at Austin)
Professor, Microbiology and Cell Science

ALDRIDGE, FREDERICK J., PH.D.
(University of Florida)
Research Assistant Professor, Fisheries and Aquatic Sciences

ALEXANDER, LAURENCE B., J.D.
(Tulane University)
Professor, Journalism and Communications

ALEXANDER, RINDA J., PH.D.
(University of Texas)
Professor, Nursing

ALEXANDER, RUTH H., ED.D.
(Indiana University)
Distinguished Service Professor, Applied Physiology and Kinesiology

ALGINA, JAMES J., ED.D.
(University of Massachusetts)
Professor, Educational Psychology

ALI, ARSHAD, PH.D.
(University of Salford)
Professor, Entomology and Nematology

ALLADI, KRISHNASWA, PH.D.
(University of California at Los Angeles)
Professor, Mathematics

ALLAN, SANDRA A., PH.D.
(University of Massachusetts)
Assistant Scientist, Veterinary Medicine

ALLEMAN, ARTHUR R., PH.D.
(University of Florida)
Associate Professor, Veterinary Medicine

ALLEN, CHARLES M., PH.D.
(Brandeis University)
Professor, Biochemistry and Molecular Biology

ALLEN, LEON, PH.D.
(Cornell University)
Professor, Agronomy

ALLEN, MICHEAL S., PH.D.
(Mississippi State University)
Associate Professor, Fisheries and Aquatic Sciences

ALLINGTON, RICHARD L., PH.D.
(Michigan State University)
Professor, Teaching and Learning

ALLISON, ROBERT D., PH.D.
(University of California at Santa Barbara)
Associate Scientist, Biochemistry and Molecular Biology

ALLRED, DAVID R., PH.D.
(University of California at Riverside)
Associate Professor, Veterinary Medicine

ALTER, NORA M., PH.D.
(University of Pennsylvania)
Professor, Germanic and Slavic Studies

ALTMANN, LORI J., PH.D.
(University of Southern California)
Assistant Professor, Communication Sciences and Disorders

ALTPETER, FREDY, PH.D.
(University of Hohenheim)
Assistant Professor, Agronomy

ALVA, ASHOK K., PH.D.
(Pennsylvania State University)
Associate Professor, Soil and Water Science

ALVAREZ, JOSE, PH.D.
(University of Florida)
Professor, Food and Resource Economics

AMATEA, ELLEN S., PH.D.
(Florida State University)
Professor, Counselor Education

AMBROSE, JOHN R., PH.D.
(University of Maryland)
Associate Professor, Materials Science and Engineering

AMOKO, APOLLO O., PH.D.
(University of Michigan)
Assistant Professor, English

ANDERSEN, PETER C., PH.D.
(Oregon State University)
Professor, Horticultural Science

ANDERSON, CHRIS S., PH.D.
(North Carolina State University)
Assistant Engineer, Electrical and Computer Engineering

ANDERSON, DOUGLAS K., PH.D.
(Michigan State University)
Eminent Scholar, Neuroscience

ANDERSON, JOHN M., PH.D.
(University of Virginia)
Associate Professor, Electrical and Computer Engineering

ANDERSON, KEVIN J., PH.D.
(University of Kentucky)
Associate Professor, Veterinary Medicine

ANDERSON, LESLIE E., PH.D.
(University of Michigan)
Associate Professor, Political Science

ANDERSON, PETER A., PH.D.
(University of California at Santa Barbara)
Professor, Physiology and Functional Genomics

ANDERSON, STEPHEN C., PH.D.
(University of Maryland)
Professor, Tourism, Recreation and Sport Management

ANDERSON, TIMOTHY J., PH.D.
(University of California at Berkeley)
Professor, Chemical Engineering

ANDINO, JEAN M., PH.D.
California Institute of Technology)
Associate Professor, Environmental Engineering Sciences

ANDRAKA, BOHDAN, PH.D.
(Temple University)
Associate Scientist, Physics

ANDRESEN, ELENA M., PH.D.
(University of Washington)
Professor, Public Health

ANDREW, CHRIS O., PH.D.
(Michigan State University)
Professor, Food and Resource Economics

ANGERHOFER, ALEXANDER, PH.D.
(University of Stuttgart)
Associate Professor, Chemistry

ANGHAIE, SAMIN, PH.D.
(Pennsylvania State University)
Professor, Nuclear and Radiological Engineering

ANNABLE, MICHAEL D., PH.D.
(Michigan State University)
Professor, Environmental Engineering Sciences

ANTES, THERESA A., PH.D.
(Cornell University)
Assistant Professor, Romance Languages and Literatures

ANTON, SUSAN C., PH.D.
(University of California at Berkeley)
Assistant Professor, Anthropology

ANTONELLI, PATRICK J., M.D.
(University of Minnesota)
Professor, Communication Sciences and Disorders

ANTONY, VEENA, M.D.
(Christian Medical College)
Professor, Molecular Genetics and Microbiology

ANUSAVICE, KENNETH J., PH.D.
(University of Florida)
Distinguished Professor, Materials Science and Engineering

ARAKERE, NAGARAJ K., PH.D.
(Arizona State University)
Associate Professor, Mechanical and Aerospace Engineering

ARBUCKLE, LINDA J., M.F.A.
(Rhode Island School of Design)
Professor, Art and Art History

ARCHBALD, LOUIS F., PH.D.
(University of Minnesota)
Professor, Veterinary Medicine

ARCHER, DOUGLAS L., PH.D.
(University of Maryland)
Professor, Food Science and Human Nutrition

ARCHER, JAMES, PH.D.
(Michigan State University)
Professor, Counselor Education

ARCHER, WAYNE R., PH.D.
(Indiana University)
Professor, Finance, Insurance and Real Estate

ARDELT, MONIKA, PH.D.
(University of North Carolina at Chapel Hill)
Associate Professor, Sociology

ARIS, JOHN P., PH.D.
(Stanford University)
Associate Professor, Anatomy and Cell Biology

ARMON, SHIFRA, PH.D.
(Johns Hopkins University)
Associate Professor, Romance Languages and Literatures

ARMSTRONG, CORY, PH.D.
(University of Wisconsin)
Assistant Professor, Journalism and Communications

ARMSTRONG, HELENJANE, PH.D.
(Oregon State University)
Professor, Geography

ARREOLA, MANUEL M., PH.D.
(University of Florida)
Assistant Professor, Nuclear and Radiological Engineering

ARRINGTON, LARRY R., PH.D.
(Ohio State University)
Professor, Agricultural Education and Communication

ARROYO, AMAURI A., PH.D.
(University of Florida)
Associate Professor, Electrical and Computer Engineering

ARTHINGTON, JOHN D., PH.D.
(Kansas State University)
Associate Professor, Animal Sciences

ARVANITIS, LOUKAS G., PH.D.
(University of California at Berkeley)
Professor, Forest Resources and Conservation

ASAL, NABIH R., PH.D.
(University of Oklahoma)
Professor, Epidemiology and Health Policy

ASARE, STEPHEN K., PH.D.
(University of Arizona)
Associate Professor, Accounting

ASH, CAROL REED, ED.D.
(Teachers College, Columbia University)
Kirbo Eminent Scholar, Nursing

ASHKANAZI, GLENN S., PH.D.
(Florida State University)
Associate Professor, Clinical and Health Psychology

ASHTON, PATRICIA T., PH.D.
(University of Georgia)
Professor, Educational Psychology

ASHTON-SHAEFFER, CANDACE, PH.D.
(University of Illinois at Urbana-Champaign)
Assistant Professor, Tourism, Recreation and Sport Management

ASMUS, JENNIFER M., PH.D.
(University of Iowa)
Associate Professor, Educational Psychology

ATKINSON, MARK A., PH.D.
(University of Florida)
Eminent Scholar, Pathology, Immunology and Laboratory Medicine

AULT, DONALD D., PH.D.
(University of Chicago)
Professor, English

AUTRY, CARI E., PH.D.
(University of Florida)
Assistant Professor, Tourism, Recreation and Sport Management

AUXTER, THOMAS P., PH.D.
(Bryn Mawr College)
Associate Professor, Philosophy

AVELLANEDA, ANDRES O., PH.D.
(University of Illinois)
Professor, Romance Languages and Literatures

AVERY, PAUL R., PH.D.
(University of Illinois)
Professor, Physics

AYDEDE, MURAT M., PH.D.
(University of Maryland)
Associate Professor, Philosophy

AYTUG, HALDUN, PH.D.
(University of Florida)
Assistant Professor, Decision and Information Sciences

B

BABANIKOS, JAMES, PH.D.
(University of Texas at Austin)
Associate Professor, Journalism and Communications

BABB, FLORENCE E., PH.D.
(State University of New York at Buffalo)
Professor, Women's Studies

BABER, WILLIE, PH.D.
(Stanford University)
Professor, Anthropology

BACHMAN, KERMIT C., PH.D.
(University of Maryland)
Associate Professor, Animal Sciences

BADINGA, LOKENGA, PH.D.
(University of Florida)
Assistant Professor, Animal Sciences

BAER, CHARLES F., PH.D.
(Florida State University)
Assistant Professor, Zoology

BAI, SHERMAN X., PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Industrial and Systems Engineering

BAILEY, LYNN B., PH.D.
(Purdue University)
Professor, Food Science and Human Nutrition

BAIRD, CARL D., PH.D.
(University of Florida)
Professor, Agricultural and Biological Engineering

BAKAL, ROBERT S., D.V.M.
(North Carolina State University)
Assistant Professor, Fisheries and Aquatic Sciences

BAKER, EDWARD, PH.D.
(Harvard University)
Professor, Romance Languages and Literatures

BAKER, GAIL B., PH.D.
(University of Missouri)
Associate Professor, Journalism and Communications

BAKER, HENRY V., PH.D.
(University of Maryland)
Professor, Molecular Genetics and Microbiology

BAKER, JEFFREY T., PH.D.
(Kansas State University)
Associate Scientist, Agronomy

BAKER, PATRICK K., PH.D.
(College of William and Mary)
Research Assistant Professor, Fisheries and Aquatic Sciences

BAKER, SHIRLEY M., PH.D.
(College of William and Mary)
Assistant Professor, Fisheries and Aquatic Sciences

BAKER, STEPHEN P., PH.D.
(University of Aston, England)
Professor, Pharmacology and Therapeutics

BAKER, SUSAN R., PH.D.
(Harvard University)
Professor, Romance Languages and Literatures

BALABAN, MURAT O., PH.D.
(University of Washington)
Professor, Food Science and Human Nutrition

BALDWIN, FLETCHER, LL.M.
(Yale University)
Professor, Law

BANDYOPADHYAY, SUBHAJYOTI, PH.D.
(Purdue University)
Assistant Professor, Decision and Information Sciences

BANERJEE, ARUNAVA, PH.D.
(Rutgers University)
Assistant Professor, Computer and Information Science and Engineering

BANERJEE, SWAPNA, PH.D.
(Temple University)
Assistant Professor, History

BANEY, RONALD H., PH.D.
(University of Wisconsin)
Scientist, Materials Science and Engineering

BANKS, SCOTT A., PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Mechanical and Aerospace Engineering

BANNISTER, MICHAEL E., PH.D.
(University of Florida)
Research Assistant Professor, Forest Resources and Conservation

BARANOWSKI, RICHARD M., PH.D.
(University of Connecticut)
Professor, Entomology and Nematology

BARBER, DAVID S., PH.D.
(Universty of Arizona)
Assistant Professor, Veterinary Medicine

BARBET, ANTHONY F., PH.D.
(University of Cambridge)
Professor, Veterinary Medicine

BARFIELD, CARL S., PH.D.
(Texas A&M University)
Professor, Entomology and Nematology

BARKIN, JEFFREY S., PH.D.
(Columbia University)
Assistant Professor, Political Science

BARKSDALE, E. C., PH.D.
(Ohio State University)
Professor, Germanic and Slavic Studies

BARLETTA, BARBARA A., PH.D.
(Bryn Mawr College)
Professor, Art and Art History

BARNARD, DONALD R., PH.D.
(University of California at Riverside)
Associate Professor, Entomology and Nematology

BARNARD, EDWARD L., PH.D.
(Duke University)
Assistant Professor, Plant Pathology

BARNES, GRENVILLE, PH.D.
(University of Wisconsin)
Associate Professor, Civil and Coastal Engineering

BARNETT, RONALD D., PH.D.
(Purdue University)
Professor, Agronomy

BARNETT, ROSEMARY V., PH.D.
(University of Florida)
Assistant Professor, Family, Youth and Community Sciences

BARR, JULIANA, PH.D.
(University of Wisconsin)
Assistant Professor, History

BARRADAS, EFRAIN, PH.D.
(Princeton University)
Professor, Romance Languages and Literatures

BARRETT, DOUGLAS J., M.D.
(University of South Florida)
Professor, Molecular Genetics and Microbiology

BARRETT, JAMES E., PH.D.
(Michigan State University)
Professor, Horticultural Science

BARTLETT, RODNEY J., PH.D.
(University of Florida)
Graduate Research Professor, Chemistry

BARTZ, JERRY A., PH.D.
(University of Wisconsin)
Associate Professor, Plant Pathology

BASHIRULLAH, RIZWAN, PH.D.
(North Carolina State University)
Assistant Professor, Electrical and Computer Engineering

BASLER, PAUL D., D.M.A.
(State University of New York at Stony Brook)
Professor, Music

BASSETT, MARK J., PH.D.
(University of Maryland)
Professor, Horticultural Science

BATES, ROBERT P., PH.D.
(Massachusetts Institute of Technology)
Professor, Food Science and Human Nutrition

BATICH, CHRISTOPHER D., PH.D.
(Rutgers University)
Professor, Materials Science and Engineering

BATTELLE, BARBARA A., PH.D.
(Syracuse University)
Professor, Neuroscience

BATTISTE, MERLE A., PH.D.
(Columbia University)
Professor, Chemistry

BAUER, RUSSELL M., PH.D.
(Pennsylvania State University)
Professor, Clinical and Health Psychology

BAUM, ROBERT J., PH.D.
(Ohio State University)
Professor, Philosophy

BAYLIS, CHRISTINE, PH.D.
(Leeds University)
Professor, Physiology and Functional Genomics

BEATTY, CHARLES L., PH.D.
(University of Massachusetts)
Professor, Materials Science and Engineering

BEAULIEU, LIONEL J., PH.D.
(Purdue University)
Professor, Family, Youth and Community Sciences

BECHER, MAX R., M.F.A.
(Rutgers University)
Assistant Professor, Art and Art History

BECK, HOWARD W., PH.D.
(University of Florida)
Professor, Agricultural and Biological Engineering

BECNEL, JAMES J., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

BEDENBAUGH, PURVIS H., PH.D.
(University of Pennsylvania)
Assistant Professor, Neuroscience

BEEBE, LORA H., PH.D.
(University of Kentucky)
Assistant Professor, Nursing

BEEBE, ROGER W., PH.D.
(Duke University)
Assistant Professor, English

BEEGHLEY, LEONARD II, PH.D.
(University of California at Riverside)
Professor, Sociology

BEESON, RICHARD C., PH.D.
(Oregon State University)
Associate Professor, Horticultural Science

BEHAR-HORENSTEIN, LINDA S., PH.D.
(Loyola University of Chicago)
Professor, Educational Leadership, Policy and Foundations

BEHRMAN, ANDREA L., PH.D.
(University of Florida)
Associate Professor, Physical Therapy

BEILOCK, RICHARD P., PH.D.
(Pennsylvania State University)
Professor, Food and Resource Economics

BEJLERI, ILIR, PH.D.
(Polytechnic University of Tirana)
Assistant Professor, Urban and Regional Planning

BELAND, ROBERT M., PH.D.
(University of Maryland)
Associate Professor, Tourism, Recreation and Sport Management

BELAR, CYNTHIA D., PH.D.
(Ohio University)
Professor, Clinical and Health Psychology

BELK, DAVE M., PH.D.
(Mississippi State University)
Assistant Professor, Mechanical and Aerospace Engineering

BENDER, BRADLEY S., M.D.
(University of Maryland)
Professor, Molecular Genetics and Microbiology

BENGSTON, JOHN K., PH.D.
(University of Toledo)
Associate Professor, Educational Psychology

BENN, DOUGLAS K., PH.D.
(London Hospital Medical College)
Professor, Dentistry

BENNER, STEVEN A., PH.D.
(Harvard University)
Distinguished Professor, Chemistry

BENNETT, ANDREW C., PH.D.
(Mississippi State University)
Assistant Professor, Agronomy

BENNETT, GREGG R., ED.D.
(Auburn University)
Assistant Professor, Applied Physiology and Kinesiology

BENNETT, JERRY M., PH.D.
(University of Nebraska)
Professor, Agronomy

BENSON, HAROLD P., PH.D.
(Northwestern University)
Professor, Decision and Information Sciences

BERARDO, DONNA E., PH.D.
(University of Florida)
Associate Professor, Pharmacy Health Care Administration

BERARDO, FELIX M., PH.D.
(Florida State University)
Professor, Sociology

BERG, SANFORD V., PH.D.
(Yale University)
Distinguished Service Professor, Economics

BERG, WILLIAM K., PH.D.
(University of Wisconsin)
Professor, Psychology

BERGER, KENNETH R., PH.D.
(University of Illinois at Urbana-Champaign)
Assistant Professor, Agricultural and Biological Engineering

BERGERON, RAYMOND J., PH.D.
(Brandeis University)
Eminent Scholar, Medicinal Chemistry

BERGMANN, PETER E., PH.D.
(University of California at Berkeley)
Associate Professor, History

BERKOVICH, ALEXANDER, PH.D.
(New York University)
Associate Professor, Mathematics

BERMUDEZ, MANUEL E., PH.D.
(University of California at Santa Cruz)
Associate Professor, Computer and Information Science and Engineering

BERNARD, H. RUSSELL, PH.D.
(University of Illinois)
Professor, Anthropology

BERREY, BEDFORD H., M.D.
(University of Texas)
Professor, Anatomy and Cell Biology

BERTE, JOSEPH J., D.D.S.
(Georgetown University)
Assistant Professor, Dentistry

BERTHOLF, ROGER L., PH.D.
(University of Virginia)
Associate Professor, Pathology, Immunology and Laboratory Medicine

BEUSSE, DIEDRICH O., D.V.M.
(University of Georgia)
Clinical Professor, Veterinary Medicine

BIMSTEIN, ENRIQUE, D.D.S.
(Universidad Nacional Autonoma de Mexico)
Professor, Dentistry

BINFORD, MICHAEL W., PH.D.
(Indiana University)
Professor, Geography

BIRD, PATRICK J., PH.D.
(University of Minnesota)
Professor, Applied Physiology and Kinesiology

BIRGISSON, BJORN, PH.D.
(University of Minnesota)
Assistant Professor, Civil and Coastal Engineering

BIRO, JOHN I., PH.D.
(Syracuse University)
Professor, Philosophy

BISHOP, MICHELLE M., PH.D.
(University of Kansas)
Research Assistant Professor, Clinical and Health Psychology

BISWAS, AMLAN, PH.D.
(Indian Institute of Science, Bangalore)
Assistant Professor, Physics

BITTON, GABRIEL, PH.D.
(Hebrew University)
Professor, Environmental Engineering Sciences

BITZ, DIANA H., PH.D.
(Emory University)
Associate Professor, Architecture

BJORNDAL, KAREN, PH.D.
(University of Florida)
Professor, Zoology

BLACK, ROBERT J., PH.D.
(University of Tennessee)
Associate Professor, Horticultural Science

BLACKBAND, STEPHEN J., PH.D.
(Nottingham University)
Professor, Neuroscience

BLAIR, ROGER D., PH.D.
(Michigan State University)
Huber Hurst Professor, Economics

BLAKESLEE, GEORGE M., PH.D.
(Duke University)
Professor, Forest Resources and Conservation

BLAZQUEZ, CARLOS H., PH.D.
(University of Florida)
Associate Professor, Horticultural Science

BLEIWEIS, ARNOLD S., PH.D.
(Pennsylvania State University)
Graduate Research Professor, Oral Biology

BLIER, PIERRE, M.D., PH.D.
(Universite de Montreal)
Professor, Neuroscience

BLISCHAK, DOREEN M., PH.D.
(Purdue University)
Assistant Professor, Communication Sciences and Disorders

BLOCK, LOUIS S., PH.D.
(Northwestern University)
Professor, Mathematics

BLONDEAU, HELENE, PH.D.
(Universite de Montreal)
Assistant Professor, Romance Languages and Literatures

BLOOM, DAVID C., PH.D.
(Vanderbilt University)
Assistant Professor, Molecular Genetics and Microbiology

BLOOM, KATHALEEN C., PH.D.
(University of Florida)
Assistant Professor, Nursing

BLOOM, LINDA B., PH.D.
(University of Florida)
Assistant Professor, Biochemistry and Molecular Biology

BLOOM, RORI I., PH.D.
(New York University)
Assistant Professor, Romance Languages and Literatures

BLOOMBERG, MARK S., D.V.M.
(Purdue University)
Professor, Veterinary Medicine

BLOOMQUIST, DAVID G., PH.D.
(University of Florida)
Associate Professor, Civil and Coastal Engineering

BLOUNT, ANN R., PH.D.
(University of Florida)
Associate Professor, Agronomy

BLUCK, SUSAN B., PH.D.
(University of California at Irvine)
Assistant Professor, Psychology

BLUM, SYLVIE E., PH.D.
(University of Iowa)
Associate Professor, Romance Languages and Literatures

BOBIK, THOMAS A., PH.D.
(University of Illinois)
Research Associate Professor, Microbiology and Cell Science

BOBROFF, LINDA B., PH.D.
(Rutgers University)
Professor, Food Science and Human Nutrition

BODINE, WILLIS R., M.M.
(University of Texas at Austin)
Professor, Music

BODMER, RICHARD E., PH.D.
(University of Cambridge)
Assistant Professor, Wildlife Ecology and Conservation

BODOR, NICHOLAS S., PH.D.
(Babes-Bolyai University)
Graduate Research Professor, Pharmaceutics

BOGGS, STEPHEN R., PH.D.
(West Virginia University)
Associate Professor, Clinical and Health Psychology

BOHLEN, PATRICK J., PH.D.
(Ohio State University)
Assistant Professor, Soil and Water Science

BOINSKI, SUE, PH.D.
(University of Texas at Austin)
Associate Professor, Anthropology

BOLANOS, ALVARO F., PH.D.
(University of Kentucky)
Associate Professor, Romance Languages and Literatures

BOLCH, WESLEY E., PH.D.
(University of Florida)
Professor, Nuclear and Radiological Engineering

BOLKER, BENJAMIN M., PH.D.
(University of Cambridge)
Assistant Professor, Zoology

BOLSER, DONALD C., PH.D.
(University of South Florida)
Associate Professor, Veterinary Medicine

BOLTEN, ALAN B., PH.D.
(University of Florida)
Research Assistant Professor, Zoology

BOLTON, ELIZABETH B., PH.D.
(Florida State University)
Professor, Agricultural Education and Communication

BOMAN, BRIAN J., PH.D.
(Utah State University)
Associate Professor, Agricultural and Biological Engineering

BOMBERGER, WILLIAM A., PH.D.
(Brown University)
Associate Professor, Economics

BONA, MIKLOS, PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Mathematics

BONCELLA, JAMES M., PH.D.
(University of California at Berkeley)
Professor, Chemistry

BONDY, ELIZABETH, PH.D.
(University of Florida)
Professor, Teaching and Learning

BONZONGO, JEAN-CLAUD, PH.D.
(University of Rennes)
Assistant Professor, Environmental Engineering Sciences

BOOTE, KENNETH J., PH.D.
(Purdue University)
Professor, Agronomy

BOOTH, JAMES G., PH.D.
(University of Kentucky)
Professor, Statistics

BORG, MARIAN J., PH.D.
(University of Virginia)
Associate Professor, Sociology

BORING, LINDSAY R., PH.D.
(University of Georgia)
Professor, Forest Resources and Conservation

BOROVSKY, DOV, PH.D.
(University of Miami)
Professor, Entomology and Nematology

BORSA, PAUL A., PH.D.
(University of Pittsburgh)
Associate Professor, Applied Physiology and Kinesiology

BORST, STEPHEN E., PH.D.
(University of California at Los Angeles)
Assistant Professor, Applied Physiology and Kinesiology

BORUM, PEGGY R., PH.D.
(University of Tennessee)
Professor, Food Science and Human Nutrition

BOSE, HIMANGSHU S., PH.D.
(University of North Bengal)
Assistant Professor, Physiology and Functional Genomics

BOSE, INDRANIL, PH.D.
(Purdue University)
Assistant Professor, Decision and Information Sciences

BOSE, PRODIP, PH.D.
(University of Hong Kong)
Research Assistant Professor, Neuroscience

BOSMAN, GIJS, PH.D.
(State University of Utrecht)
Professor, Electrical and Computer Engineering

BOUCIAS, DRION G., PH.D.
(University of Kentucky)
Professor, Entomology and Nematology

BOVA, FRANK J., PH.D.
(University of Florida)
Professor, Nuclear and Radiological Engineering

BOWERS, CLIFFORD R., PH.D.
(California Institute of Technology)
Associate Professor, Chemistry

BOWERS, DAWN, PH.D.
(University of Florida)
Associate Professor, Clinical and Health Psychology

BOWES, GEORGE E., PH.D.
(University of London)
Professor, Botany

BOXER, DIANA, PH.D.
(University of Pennsylvania)
Professor, Linguistics

BOYD, ANDREW J., PH.D.
(University of British Columbia)
Assistant Professor, Civil and Coastal Engineering

BOYKIN, P. OSCAR, PH.D.
(University of California at Los Angeles)
Assistant Professor, Electrical and Computer Engineering

BOYLAND, PHILIP L., PH.D.
(University of Iowa)
Associate Professor, Mathematics

BOYLES, JESSE V., PH.D.
(University of Florida)
Associate Professor, Accounting

BRADDOCK, ROBERT J., PH.D.
(Michigan State University)
Professor, Food Science and Human Nutrition

BRADLEY, MARGARET M., PH.D.
(University of Wisconsin)
Research Professor, Psychology

BRADY, LINDA J., PH.D.
(University of Florida)
Assistant Professor, Oral Biology

BRAITH, RANDY W., PH.D.
(University of Florida)
Professor, Applied Physiology and Kinesiology

BRAJTER-TOTH, ANNA F., PH.D.
(Southern Illinois University at Carbondale)
Associate Professor, Chemistry

BRANCH, LYN C., PH.D.
(University of California at Berkeley)
Professor, Wildlife Ecology and Conservation

BRANCH, MARC N., PH.D.
(University of Maryland)
Professor, Psychology

BRANDMAN, RUSSELLA, PH.D.
(Florida State University)
Associate Professor, Theatre and Dance

BRANDT, ROBERT L., D.D.S.
(Ohio State University)
Associate Professor, Dentistry

BRANDT, STEVEN A., PH.D.
(University of California at Berkeley)
Associate Professor, Anthropology

BRANHAM, MARC A., PH.D.
(Ohio State University)
Assistant Professor, Entomology and Nematology

BRANK, EVE M., PH.D.
(University of Nebraska)
Assistant Professor, Criminology, Law and Society

BRANNAN, CAMILYNN I., PH.D.
(Princeton University)
Associate Professor, Molecular Genetics and Microbiology

BRANTLEY, RICHARD E., PH.D.
(Princeton University)
Professor, English

BRANTLY, MARK L., M.D.
(University of Florida)
Professor, Molecular Genetics and Microbiology

BRATEMAN, LIBBY F., PH.D.
(University of Florida)
Associate Professor, Nuclear and Radiological Engineering

BRAUN, EDWARD L., PH.D.
(University of New Mexico)
Assistant Professor, Zoology

BRAYLAN, RAUL C., M.D.
(Buenos Aires University)
Professor, Pathology, Immunology and Laboratory Medicine

BRECHNER, BEVERLY L., PH.D.
(Louisiana State University)
Professor, Mathematics

BRECHT, JEFFREY K., PH.D.
(University of California at Davis)
Professor, Horticultural Science

BRECKE, BARRY J., PH.D.
(Cornell University)
Professor, Agronomy

BREDAHL, A. CARL JR., PH.D.
(University of Pittsburgh)
Professor, English

BREEZE, MARSHALL H., PH.D.
(Florida State University)
Associate Professor, Agricultural Education and Communication

BRENDEMUHL, JOEL H., PH.D.
(University of Nebraska)
Professor, Animal Sciences

BRENNAN, ANTHONY B., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Materials Science and Engineering

BRENNAN, MARK A., PH.D.
(Pennsylvania State University)
Assistant Professor, Family, Youth and Community Sciences

BRENNER, LYLE A., PH.D.
(Stanford University)
Assistant Professor, Marketing

BRENNER, MARK, PH.D.
(University of Florida)
Associate Professor, Geological Sciences

BRENNER, RICHARD J., PH.D.
(Cornell University)
Assistant Professor, Entomology and Nematology

BREY, WALLACE S., PH.D.
(University of Pennsylvania)
Professor, Chemistry

BRIGGS, RICHARD W., PH.D.
(University of Arkansas)
Associate Professor, Biochemistry and Molecular Biology

BRINKLEY, LINDA L., PH.D.
(University of California at Irvine)
Professor, Dentistry

BRLANSKY, RONALD H., PH.D.
(Louisiana State University)
Professor, Plant Pathology

BROAD, KENDAL L., PH.D.
(Washington State University)
Assistant Professor, Sociology

BROADWAY, KENNETH L., D.M.A.
(University of Georgia)
Associate Professor, Music

BROCKMANN, H. JANE, PH.D.
(University of Wisconsin)
Professor, Zoology

BROOKS, DENNIS E., PH.D.
(University of Florida)
Professor, Veterinary Medicine

BROOKS, JAMES K., PH.D.
(Ohio State University)
Professor, Mathematics

BROOKS, KANDACE L., D.M.A.
(University of Georgia)
Associate Professor, Music

BROPHY, TIMOTHY S., PH.D.
(University of Kentucky)
Assistant Professor, Music

BROSCHAT, TIMOTHY K., PH.D.
(Ohio State University)
Professor, Environmental Horticulture

BROWN, BRISBANE H., PH.D.
(Oklahoma State University)
Professor, Building Construction

BROWN, DANIEL R., PH.D.
(University of Arizona)
Assistant Scientist, Veterinary Medicine

BROWN, DAVID T., PH.D.
(Washington University)
Associate Professor, Finance, Insurance and Real Estate

BROWN, FREDERIC H., PH.D.
(University of Puerto Rico)
Clinical Associate Professor, Dentistry

BROWN, JUSTIN, PH.D.
(Pennsylvania State University)
Assistant Professor, Journalism and Communications

BROWN, KEVIN D., PH.D.
(University of Alabama at Birmingham)
Associate Professor, Biochemistry and Molecular Biology

BROWN, LISA M., PH.D.
(University of Michigan)
Research Assistant Professor, Psychology

BROWN, M. LEANN, PH.D.
(University of South Carolina)
Associate Professor, Political Science

BROWN, MARK G., PH.D.
(University of Missouri)
Associate Professor, Food and Resource Economics

BROWN, MARK T., PH.D.
(University of Florida)
Associate Professor, Environmental Engineering Sciences

BROWN, MARY B., PH.D.
(University of Alabama at Birmingham)
Professor, Veterinary Medicine

BROWN, MURRAY P., D.V.M.
(University of Saskatchewan)
Professor, Veterinary Medicine

BROWN, RANDALL B., PH.D.
(Oregon State University)
Professor, Soil and Water Science

BROWN, ROSS D., PH.D.
(University of Wisconsin)
Associate Professor, Food Science and Human Nutrition

BROWN, THOMAS A., PH.D.
(University of Florida)
Professor, Oral Biology

BROWN, WILLIAM F., PH.D.
(University of Nebraska)
Professor, Animal Sciences

BROWN, WILLIAM S., PH.D.
(State University of New York at Buffalo)
Professor, Communication Sciences and Disorders

BROWNELL, MARY T., PH.D.
(University of Kansas)
Associate Professor, Special Education

BROWNING, HAROLD W., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

BRUCAT, PHILIP J., PH.D.
(Stanford University)
Associate Professor, Chemistry

BRUMBACK, BABETTE, PH.D.
(University of California)
Assistant Professor, Public Health

BRUNA, EMILIO M., PH.D.
(University of California at Davis)
Assistant Professor, Wildlife Ecology and Conservation

BRUSHWOOD, DAVID B., J.D.
(University of Kansas)
Professor, Pharmacy Health Care Administration

BRYAN, HERBERT H., PH.D.
(Cornell University)
Professor, Horticultural Science

BRYANT, MARSHA C., PH.D.
(University of Illinois)
Associate Professor, English

BUBB, MICHAEL R., M.D.
(Johns Hopkins University)
Associate Professor, Biochemistry and Molecular Biology

BUCHLER, JEAN R., PH.D.
(University of California at San Diego)
Professor, Physics

BUCKINGHAM, GARY R., PH.D.
(University of California at Berkeley)
Assistant Professor, Entomology and Nematology

BUCKLIN, RAY A., PH.D.
(University of Kentucky)
Professor, Agricultural and Biological Engineering

BUERGELT, CLAUS-DIET, PH.D.
(Hanover Veterinary College)
Professor, Veterinary Medicine

BUHI, WILLIAM C., PH.D.
(University of Florida)
Professor, Biochemistry and Molecular Biology

BUHR, KENNETH L., PH.D.
(Iowa State University)
Assistant Professor, Agronomy

BUKER, RICHARD S., PH.D.
(University of Florida)
Assistant Professor, Horticultural Science

BULLIVANT, KEITH, PH.D.
(Birmingham University)
Professor, Germanic and Slavic Studies

BULLOCK, PAUL J., PH.D.
(University of Florida)
Assistant Professor, Civil and Coastal Engineering

BULLOCK, THOMAS E., PH.D.
(Stanford University)
Professor, Electrical and Computer Engineering

BUNGERT, JORG, PH.D.
(Phillips University)
Assistant Professor, Biochemistry and Molecular Biology

BURCHFIELD, DAVID J., M.D.
(University of South Florida)
Professor, Physiology and Functional Genomics

BURG, MARY ANN, PH.D.
(University of Florida)
Associate Professor, Sociology

BURKE, BRIAN E., PH.D.
(University of London, Imperial College)
Professor, Anatomy and Cell Biology

BURKE, CHARLES, PH.D.
(University of Missouri)
Associate Professor, Journalism and Communications

BURKHARDT, ROBERT J., PH.D.
(Florida State University)
Professor, Food and Resource Economics

BURKS, THOMAS F., PH.D.
(University of Kentucky)
Assistant Professor, Agricultural and Biological Engineering

BURNE, ROBERT A., PH.D.
(University of Rochester)
Professor, Oral Biology

BURNS, ALLAN F., PH.D.
(University of Washington)
Professor, Anthropology

BURNS, JACQUELINE K., PH.D.
(Pennsylvania State University)
Professor, Horticultural Science

BURNS, ROBERT C., PH.D.
(Pennsylvania State University)
Assistant Professor, Tourism, Recreation and Sport Management

BURRICHTER, RONALD G., M.M.
(Peabody Conservatory of Music)
Professor, Music

BURRIDGE, MICHAEL J., PH.D.
(University of California at Davis)
Professor, Animal Sciences

BURROWS, COLIN F., PH.D.
(University of Pennsylvania)
Professor, Veterinary Medicine

BURT, RICHARD A., PH.D.
(University of California at Berkeley)
Professor, English

BUSEY, PHILIP, PH.D.
(University of Arizona)
Associate Professor, Horticultural Science

BUSS, EILEEN A., PH.D.
(University of Kentucky)
Assistant Professor, Entomology and Nematology

BUSSING, REGINA, M.D.
(Justus Libig University)
Associate Professor, Clinical and Health Psychology

BUTCHER, GARY D., PH.D.
(Texas A&M University)
Professor, Veterinary Medicine

BUTLER, GLENN A., ED.D.
(Oklahoma State University)
Professor Emeritus, Journalism and Communications

BUTLER, JASON E., PH.D.
(University of Texas at Austin)
Assistant Professor, Chemical Engineering

BUTLER, JERRY F., PH.D.
(Cornell University)
Professor, Entomology and Nematology

BUTT, DARRYL P., PH.D.
(Pennsylvania State University)
Associate Professor, Materials Science and Engineering

BUTTERWECK, VERONIKA, PH.D.
(Westfalische Wilhelms-Universitat)
Assistant Professor, Pharmaceutics

BUTTON, JAMES W., PH.D.
(University of Texas)
Professor, Political Science

BYRNE, BARRY J., M.D.
(University of Illinois)
Professor, Molecular Genetics and Microbiology

C

CABRERA, BRIAN J., PH.D.
(University of California at Riverside)
Assistant Professor, Entomology and Nematology

CADE, JAMES R., M.D.
(University of Texas at Austin)
Professor, Physiology and Functional Genomics

CAILLER, BERNADETTE A., PH.D.
(Cornell University)
Professor, Romance Languages and Literatures

CAIN, BRIAN D., PH.D.
(University of Illinois)
Professor, Biochemistry and Molecular Biology

CALFEE, DENNIS A., LL.M. TAX
(University of Florida)
Professor, Taxation

CALIN, WILLIAM C., PH.D.
(Yale University)
Graduate Research Professor, Romance Languages and Literatures

CALVERT, DAVID V., PH.D.
(Iowa State University)
Professor, Soil and Water Science

CAMPBELL, DALE F., PH.D.
(University of Texas)
Professor, Educational Leadership, Policy and Foundations

CAMPBELL, DORIS W., PH.D.
(University of Texas)
Associate Professor, Nursing

CAMPBELL, KENNETH L., PH.D.
(Iowa State University)
Professor, Agricultural and Biological Engineering

CAMPBELL-THOMPSON, MARTHA L., PH.D.
(University of Florida)
Research Associate Professor, Veterinary Medicine

CAMPS, JOAQUIM, PH.D.
(Georgetown University)
Assistant Professor, Romance Languages and Literatures

CANCE, WILLIAM G., PH.D.
(Duke University)
Professor, Biochemistry and Molecular Biology

CANFIELD, DANIEL E., PH.D.
(Iowa State University)
Professor, Fisheries and Aquatic Sciences

CANTLIFFE, DANIEL J., PH.D.
(Purdue University)
Professor, Horticultural Science

CAO, YUN WEI., PH.D.
(Jilin University, China)
Assistant Professor, Chemistry

CAPINERA, JOHN L., PH.D.
(University of Massachusetts)
Professor, Entomology and Nematology

CAPPELLARI, FRANCESCO G., M.ARCH.
(University of California at Berkeley)
Associate Professor, Architecture

CAPUTO, NINA, PH.D.
(University of California at Berkeley)
Assistant Professor, Religion

CARDEILHAC, PAUL T., PH.D.
(University of Pennsylvania)
Professor, Veterinary Medicine

CARLE, ROBERT B., PH.D.
(University of New Hampshire)
Assistant Professor, Horticultural Science

CARLSON, DAVID A., PH.D.
(University of Hawaii)
Associate Professor, Entomology and Nematology

CARNEY, PAUL R., M.D.
(Valparaiso University)
Assistant Professor, Neuroscience

CARPENTER, RONALD H., PH.D.
(University of Wisconsin)
Professor, English

CARPENTER, WILLIAM J., PH.D.
(Michigan State University)
Professor, Horticultural Science

CARR, GLENNA D., ED.D.
(University of Florida)
Professor, Teaching and Learning

CARR, MARGARET H., M.L.A.
(North Carolina State University)
Associate Professor, Landscape Architecture

CARRIKER, ROY R., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Food and Resource Economics

CARRILLO, JANICE E., PH.D.
(Georgia Institute of Technology)
Assistant Professor, Decision and Information Sciences

CARROLL, BRUCE F., PH.D.
(University of Illinois at Urbana-Champaign)
Associate Professor, Mechanical and Aerospace Engineering

CARTER, DOUGLAS R., PH.D.
(University of Georgia)
Associate Professor, Forest Resources and Conservation

CARTER, JEFFREY N., PH.D.
(Oklahoma State University)
Assistant Professor, Animal Sciences

CARTER, RANDOLPH L., PH.D.
(Iowa State University)
Professor, Statistics

CARTHY, RAYMOND R., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

CASAGRANDE, JEAN, PH.D.
(Indiana University)
Professor, Linguistics

CASELLA, GEORGE, PH.D.
(Purdue University)
Professor, Statistics

CASSISI, NICHOLAS J., M.D.
(University of Miami)
Professor, Communication Sciences and Disorders

CASTELLANO, RONALD K., PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Chemistry

CASTLE, WILLIAM S., PH.D.
(University of Florida)
Professor, Horticultural Science

CASTLEMAN, WILLIAM L., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

CATALANOTTO, FRANK A., D.M.D.
(University of Medicine and Dentistry of New Jersey)
Professor, Dentistry

CATO, BERTHA M., RE.D.
(Indiana University)
Associate Professor, Tourism, Recreation and Sport Management

CATO, JAMES C., PH.D.
(University of Florida)
Professor, Food and Resource Economics

CATON, DONALD, M.D.
(Columbia University)
Professor, Obstetrics and Gynecology

CATTAFESTA, LOUIS N. III, PH.D.
(Pennsylvania State University)
Associate Professor, Mechanical and Aerospace Engineering

CAUDLE, ROBERT M., PH.D.
(University of Illinois at Chicago)
Associate Professor, Dentistry

CAURAUGH, JAMES H., PH.D.
(Florida State University)
Professor, Applied Physiology and Kinesiology

CAVE, RONALD D., PH.D.
(Auburn University)
Assistant Professor, Entomology and Nematology

CAVIEDES, CESAR N., D.SC.
(University of Freiburg)
Professor, Geography

CAZACU, OANA, D.SC.
(University of Sciences and Technologies of Lille)
Assistant Professor, Mechanical and Aerospace Engineering

CECH, JOHN, PH.D.
(University of Connecticut)
Professor, English

CENZER, DOUGLAS A., PH.D.
(University of Michigan)
Professor, Mathematics

CHADIK, PAUL A., PH.D.
(University of Arizona)
Associate Professor, Environmental Engineering Sciences

CHAKRAVARTHY, UPEN S., PH.D.
(University of Maryland)
Associate Professor, Computer and Information Science and Engineering

CHALFIN, BRENDA H., PH.D.
(University of Pennsylvania)
Assistant Professor, Anthropology

CHAMBERLIN, WILLIAM F., PH.D.
(University of Washington)
Eminent Scholar, Journalism and Communications

CHAMBLISS, CARROL G., PH.D.
(University of Illinois)
Associate Professor, Agronomy

CHAN, EDWARD K., PH.D.
(University of Calgary)
Professor, Oral Biology

CHAN, HO BUN, PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Physics

CHANCE, JEAN, M.A.
(University of Florida)
Professor, Journalism and Communications

CHANCE, SANDRA F., J.D.
(University of Florida)
Associate Professor, Journalism and Communications

CHANDLER, CRAIG K., PH.D.
(University of Maryland)
Professor, Horticultural Science

CHANG, LUNG-JI, PH.D.
(University of Iowa)
Associate Professor, Molecular Genetics and Microbiology

CHANG, MYRON N., PH.D.
(University of Maryland)
Professor, Statistics

CHANNELL, JAMES E., PH.D.
(University of Newcastle upon Tyne)
Professor, Geological Sciences

CHAN-OLMSTED, SYLVIA M., PH.D.
(Michigan State University)
Associate Professor, Journalism and Communications

CHAPMAN, COLIN A., PH.D.
(University of Alberta)
Professor, Zoology

CHAPMAN, FRANK A., PH.D.
(University of California at Davis)
Associate Professor, Fisheries and Aquatic Sciences

CHAPMAN, LAUREN J., PH.D.
(McGill University)
Professor, Zoology

CHARUDATTAN, RAGHAVAN, PH.D.
(University of Madras)
Professor, Plant Pathology

CHASE, CARLENE A., PH.D.
(University of Florida)
Assistant Professor, Horticultural Science

CHASE, CHADWICK C., PH.D.
(Texas A&M University)
Assistant Professor, Animal Sciences

CHASE, CHRISTINE D., PH.D.
(University of Virginia)
Associate Professor, Horticultural Science

CHAU, KHE V., PH.D.
(University of California at Berkeley)
Professor, Agricultural and Biological Engineering

CHAUHAN, ANUJ, PH.D.
(City University of New York)
Assistant Professor, Chemical Engineering

CHEEK, JIMMY G., PH.D.
(Texas A&M University)
Professor, Agricultural Education and Communication

CHEGE, MICHAEL, PH.D.
(University of California at Berkeley)
Associate Professor, Political Science

CHEGINI, NASSER, PH.D.
(University of Southampton)
Professor, Anatomy and Cell Biology

CHEN, JIANJUN, PH.D.
(University of Wisconsin)
Associate Professor, Horticultural Science

CHEN, SHIGANG, PH.D.
(University of Illinois)
Assistant Professor, Computer and Information Science and Engineering

CHEN, SU-SHING, PH.D.
(University of Maryland)
Professor, Computer and Information Science and Engineering

CHEN, WEI W., PH.D.
(University of Maryland)
Professor, Health Education and Behavior

CHEN, YING QING, PH.D.
(Johns Hopkins University)
Associate Professor, Statistics

CHEN, YUNMEI, PH.D.
(Fudan University)
Professor, Mathematics

CHENG, HAI P., PH.D.
(Northwestern University)
Associate Professor, Physics

CHENG, HSING K., PH.D.
(University of Rochester)
Associate Professor, Decision and Information Sciences

CHERRY, RONALD H., PH.D.
(University of Illinois at Urbana-Champaign)
Professor, Entomology and Nematology

CHESROWN, SARAH E., M.D.
(Medical College of Virginia)
Professor, Biochemistry and Molecular Biology

CHILDERS, CARL C., PH.D.
(University of Missouri)
Professor, Entomology and Nematology

CHINI, ABDOL R., PH.D.
(University of Maryland at College Park)
Professor, Building Construction

CHMIELEWSKI, TERESE L., PH.D.
(University of Delaware)
Assistant Professor, Physical Therapy

CHO, CHANG-HOAN, PH.D.
(University of Texas at Austin)
Assistant Professor, Journalism and Communications

CHOBAZ, RAYMOND A., PH.D.
(University of Utah)
Associate Professor, Music

CHOI, YOUJIN, PH.D.
(University of Missouri at Columbia)
Assistant Professor, Journalism and Communications

CHOUREY, PREM S., PH.D.
(Indiana University)
Professor, Agronomy

CHOW, JOHN W., PH.D.
(University of Iowa)
Associate Professor, Applied Physiology and Kinesiology

CHOW, YUAN-CHIEH R., PH.D.
(University of Massachusetts)
Professor, Computer and Information Science and Engineering

CHRISMAN, CHERYL L., D.V.M.
(Michigan State University)
Professor, Veterinary Medicine

CHRISTOU, GEORGE, PH.D.
(University of Exeter)
Professor, Chemistry

CHU, CHAUNCEY C., PH.D.
(University of Texas at Austin)
Professor, Linguistics

CHUMBLER, NEALE R., PH.D.
(Case Western Reserve University)
Assistant Professor, Health Services Research, Management and Policy

CHUN, PAUL W., PH.D.
(University of Missouri)
Professor, Biochemistry and Molecular Biology

CHUNG, JACOB N., PH.D.
(University of Pennsylvania)
Eminent Scholar, Mechanical and Aerospace Engineering

CHYNOWETH, DAVID P., PH.D.
(University of North Carolina at Chapel Hill)
Professor, Agricultural and Biological Engineering

CICHRA, CHARLES E., PH.D.
(Texas A&M University)
Professor, Fisheries and Aquatic Sciences

CIESIELSKI, PAUL F., PH.D.
(Florida State University)
Associate Professor, Geological Sciences

CIMENT, JILL K., M.F.A.
(University of California at Irvine)
Professor, English

CISAR, JOHN L., PH.D.
(University of Rhode Island)
Professor, Horticultural Science

CIUPE, MIHAI, M.F.A.
(Carnegie Mellon University)
Assistant Professor, Theatre and Dance

CLAPP, WILLIAM L., M.D.
(University of Tennessee)
Clinical Associate Professor, Pathology, Immunology and Laboratory Medicine

CLARE-SALZLER, MICHAEL J., M.D.
(State University of New York at Buffalo)
Professor, Pathology, Immunology and Laboratory Medicine

CLARK, ARTHUR E., D.M.D.
(University of Florida)
Professor, Dentistry

CLARK, CLAYTON J., PH.D.
(University of Florida)
Assistant Professor, Civil and Coastal Engineering

CLARK, DAVID G., PH.D.
(Pennsylvania State University)
Associate Professor, Horticultural Science

CLARK, IRA G., PH.D.
(Northwestern University)
Professor, English

CLARK, MARK W., PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

CLARK, MARY ANN, PH.D.
(University of Florida)
Assistant Professor, Counselor Education

CLARK, NANCY M., M.ARCH.
(University of Florida)
Associate Professor, Architecture

CLARK, PHILLIP A., ED.D.
(Western Michigan University)
Professor, Educational Leadership, Policy and Foundations

CLARKE, LESLIE L., PH.D.
(University of Florida)
Associate Professor, Public Health

CLARKE, MARION L., PH.D.
(Texas A&M University)
Professor, Forest Resources and Conservation

CLASSEN, SHERRILENE, PH.D.
(Nova Southeastern University)
Assistant Professor, Occupational Therapy

CLEARY, JOHANNA, PH.D.
(University of North Carolina)
Assistant Professor, Journalism and Communications

CLEMMONS, ROGER M., PH.D.
(Washington State University)
Associate Professor, Veterinary Medicine

CLINE, KENNETH C., PH.D.
(University of Colorado)
Professor, Horticultural Science

CLINE, REBECCA J., PH.D.
(Pennsylvania State University)
Associate Professor, Health Education and Behavior

CLOUSER, RODNEY L., PH.D.
(Purdue University)
Professor, Food and Resource Economics

COADY, MARIA R., PH.D.
(University of Colorado)
Assistant Professor, Teaching and Learning

COGLE, CHRISTOPHER RAMIN, M.D.
(University of Florida)
Assistant Professor, Anatomy and Cell Biology

COHEN, DONALD, D.M.D.
(Washington University)
Professor, Dentistry

COHEN, DONNA L., M.ARCH.
(University of Florida)
Assistant Professor, Architecture

COHEN, HOWARD L., PH.D.
(Indiana University)
Associate Professor, Astronomy

COHEN, JOEL B., PH.D.
(University of California at Los Angeles)
Distinguished Service Professor, Marketing

COHEN, ROBERT J., PH.D.
(Yale University)
Associate Professor, Biochemistry and Molecular Biology

COHN, MARTIN J., PH.D.
(University College London)
Associate Professor, Zoology

COHN, STUART R., LL.B.
(Yale University)
Professor, Law

COLAHAN, PATRICK T., D.V.M.
(University of California at Davis)
Professor, Veterinary Medicine

COLBURN, DAVID R., PH.D.
(University of North Carolina at Chapel Hill)
Professor, History

COLDWELL, ROBERT L., PH.D.
(University of Washington)
Associate Scientist, Physics

COLEMAN, SAMUEL W., PH.D.
(University of Tennessee)
Professor, Animal Sciences

COLGATE, SAMUEL O., PH.D.
(Massachusetts Institute of Technology)
Professor, Chemistry

COLLIER, CHARLES W., J.D.
(Stanford University)
Professor, Law

COLLINGS, PETER F., PH.D.
(Pennsylvania State University)
Assistant Professor, Anthropology

COLLINS, MARY E., PH.D.
(Iowa State University)
Professor, Soil and Water Science

COLQUITT, JASON A., PH.D.
(Michigan State University)
Associate Professor, Management

COLVIN, DANIEL L., PH.D.
(University of Florida)
Professor, Agronomy

COMENETZ, JOSHUA, PH.D.
(University of Minnesota)
Assistant Professor, Geography

COMERFORD, NICHOLAS B., PH.D.
(State University of New York)
Professor, Soil and Water Science

CONDIT, RICHARD C., PH.D.
(Yale University)
Professor, Molecular Genetics and Microbiology

CONFER, JOHN J., PH.D.
(Pennsylvania State University)
Assistant Professor, Tourism, Recreation and Sport Management

CONLEY, RICHARD S., PH.D.
(University of Maryland)
Associate Professor, Political Science

CONLON, MICHAEL, PH.D.
(University of Florida)
Associate Professor, Statistics

CONNAUGHTON, DANIEL P., ED.D.
(Florida State University)
Associate Professor, Applied Physiology and Kinesiology

CONNELL RICHARD G. JR., PH.D.
(University of Florida)
Associate Professor, Materials Science and Engineering

CONROY, MAUREEN A., PH.D.
(Vanderbilt University)
Associate Professor, Special Education

CONSOLAZIO, GARY R., PH.D.
(University of Florida)
Associate Professor, Civil and Coastal Engineering

CONSTANTINIDIS, IOANNIS, PH.D.
(University of New Mexico)
Associate Professor, Medicine

COOK, MICHAEL J., J.D.
(Northwestern California University)
Assistant Professor, Building Construction

COOK, RONALD A., PH.D.
(University of Texas at Austin)
Professor, Civil and Coastal Engineering

COOKE, ALAN D., PH.D.
(University of California at Berkeley)
Associate Professor, Marketing

COOPER, BRIAN Y., PH.D.
(University of Iowa)
Associate Professor, Neuroscience

COPELAND, EDWARD M. III, M.D.
(Cornell University)
Distinguished Professor, Physiology and Functional Genomics

COPP, DAVID I., PH.D.
(Cornell University)
Professor, Philosophy

CORNELL, JOHN A., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Statistics

CORNEY, FREDERICK C., PH.D.
(Columbia University)
Assistant Professor, History

CORREA, VIVIAN I., PH.D.
(Vanderbilt University)
Professor, Special Education

CORRELL, LINDA C., M.A.
(Hunter College)
Assistant Professor, Journalism and Communications

CORRELL, MELANIE J., PH.D.
(Worcester Polytechnic Institute)
Assistant Professor, Agricultural and Biological Engineering

CORTES-CONDE, FLORENCIA, PH.D.
(University of Texas at Austin)
Assistant Professor, Romance Languages and Literatures

COTE, MURRAY J., PH.D.
(Texas A&M University)
Assistant Professor, Health Services Research, Management and Policy

COTTER, THOMAS F., J.D.
(University of Wisconsin)
Professor, Law

COUCH, LEON W. II, PH.D.
(University of Florida)
Professor Emeritus, Electrical and Computer Engineering

COURAGE, KEN G., M.S.C.E.
(Texas A&M University)
Professor, Civil and Coastal Engineering

COURAGE, MYRNA M., PH.D.
(Florida State University)
Associate Professor, Nursing

COURTNEY, CHARLES H. III, PH.D.
(Ohio State University)
Professor, Veterinary Medicine

COUSINS, ROBERT J., PH.D.
(University of Connecticut)
Eminent Scholar, Food Science and Human Nutrition

COX, ROBERT F., PH.D.
(Virginia Polytechnic Institute and State University)
Associate Professor, Building Construction

CRACIUN, VALENTIN, PH.D.
(Polytechnic University of Bucharest)
Assistant Scientist, Materials Science and Engineering

CRADDOCK, PATRICIA B., PH.D.
(Yale University)
Distinguished Professor, English

CRAIG, STEPHEN C., PH.D.
(Northwestern University)
Professor, Political Science

CRANDELL, CARL C., PH.D.
(Vanderbilt University)
Professor, Communication Sciences and Disorders

CRANE, CARL D., PH.D.
(University of Florida)
Professor, Mechanical and Aerospace Engineering

CRANE, JONATHAN H., PH.D.
(University of Florida)
Professor, Horticultural Science

CRARY, MICHAEL A., PH.D.
(Ohio University)
Professor, Communicative Disorders

CRAWFORD, JAMES M., M.D.
(Duke University)
Professor, Pathology, Immunology and Laboratory Medicine

CRAWFORD, PATTI C., PH.D.
(University of Florida)
Assistant Scientist, Veterinary Medicine

CREW, RICHARD M., PH.D.
(Princeton University)
Associate Professor, Mathematics

CRISALLE, OSCAR D., PH.D.
(University of California at Santa Barbara)
Professor, Chemical Engineering

CRISMAN, THOMAS L., PH.D.
(Indiana University)
Professor, Environmental Engineering Sciences

CRISTESCU, NICOLAE, PH.D.
(Romanian Academy)
Graduate Research Professor, Mechanical and Aerospace Engineering

CRISWELL, DAVID S., PH.D.
(University of Florida)
Assistant Professor, Applied Physiology and Kinesiology

CROKER, BYRON P., M.D.
(Duke University)
Professor, Pathology, Immunology and Laboratory Medicine

CROOK, LARRY N., PH.D.
(University of Texas at Austin)
Associate Professor, Music

CROPPER, WENDELL P., PH.D.
(Emory University)
Assistant Professor, Forest Resources and Conservation

CROSLAND, ROBERT E., M.A.ARCH.
(University of Florida)
Professor, Building Construction

CROSS, ALAN R., D.V.M.
(University of Tennessee)
Assistant Professor, Veterinary Medicine

CROSSON, BRUCE A., PH.D.
(Texas Tech University)
Professor, Clinical and Health Psychology

CROW, WILLIAM T., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

CRUCIAN, GREGORY P., PH.D.
(Finch University of Health Sciences)
Clinical Assistant Professor, Communication Sciences and Disorders

CRUM, ROY L., PH.D.
(University of Texas at Austin)
Professor, Finance, Insurance and Real Estate

CSIZINSZKY, ALEXANDER A., PH.D.
(Washington State University)
Associate Professor, Horticultural Science

CUDA, JAMES P., PH.D.
(Texas A&M University)
Associate Professor, Entomology and Nematology

CULEN, GERALD R., PH.D.
(Southern Illinois University)
Associate Professor, Family, Youth and Community Sciences

CUMMING, GRAEME S., PH.D.
(Oxford University)
Assistant Professor, Wildlife Ecology and Conservation

CUNNINGHAM, WALTER R., PH.D.
(University of Southern California)
Professor, Psychology

CURTA, FLORIN, PH.D.
(Western Michigan University)
Associate Professor, History

CURTIS, JENNIFER S., PH.D.
(Princeton University)
Professor, Chemical Engineering

CUTLER, JERRY L., M.F.A.
(Ohio State University)
Professor, Art and Art History

CZARNECKA, EVA, PH.D.
(Mickiewicz University)
Assistant Scientist, Microbiology and Cell Science

D

DAEGLING, DAVID, PH.D.
(State University of New York at Stony Brook)
Associate Professor, Anthropology

DALE, ELIZABETH, PH.D.
(University of Chicago)
Associate Professor, History

DALLERY, JESSE, PH.D.
(Emory University)
Assistant Professor, Psychology

DAME, JOHN B., PH.D.
(University of Washington)
Professor, Veterinary Medicine

DAMICO, ALFONSO J., PH.D.
(Ohio State University)
Associate Professor, Political Science

D'AMICO, ROBERT, PH.D.
(State University of New York at Buffalo)
Professor, Philosophy

DAMRON, BOBBY L., PH.D.
(University of Florida)
Professor, Veterinary Medicine

DANA, NANCY L., PH.D.
(Florida State University)
Professor, Teaching and Learning

DANA, THOMAS M., PH.D.
(Florida State University)
Professor, Teaching and Learning

DANIELS, M. HARRY, PH.D.
(University of Iowa)
Professor, Counselor Education

DANIELS, MICHAEL J., PH.D.
(Harvard University)
Associate Professor, Statistics

DANKEL, DOUGLAS D., PH.D.
(University of Illinois)
Assistant Professor, Computer and Information Science and Engineering

DARNELL, REBECCA L., PH.D.
(University of California at Davis)
Professor, Horticultural Science

DAROUB, SAMIRA H., PH.D.
(Michigan State University)
Assistant Professor, Soil and Water Science

DASTA, ANTHONY J., M.S.
(University of Illinois)
Professor, Architecture

DATNOFF, LAWRENCE E., PH.D.
(University of Illinois)
Professor, Plant Pathology

DAVENPORT, MELANIE G., PH.D.
(Indiana University)
Assistant Professor, Art and Art History

DAVENPORT, PAUL W., PH.D.
(University of Kentucky)
Professor, Veterinary Medicine

DAVENPORT, THOMAS L., PH.D.
(Texas A&M University)
Associate Professor, Horticultural Science

DAVIDSON, JAMES M., PH.D.
(University of Texas at Austin)
Assistant Professor, Anthropology

DAVIDSON, JOHN L., PH.D.
(Purdue University)
Professor, Civil and Coastal Engineering

DAVIDSON, MAUREEN K., PH.D.
(University of Alabama at Birmingham)
Associate Scientist, Veterinary Medicine

DAVIDSON, RICHARD A., M.D.
(Vanderbilt University)
Associate Professor, Public Health

DAVIES, FREDERICK S., PH.D.
(Cornell University)
Professor, Horticultural Science

DAVIS, CARLTON G., PH.D.
(Michigan State University)
Distinguished Service Professor, Food and Resource Economics

DAVIS, FRANCIS C., PH.D.
(University of Tennessee)
Associate Professor, Microbiology and Cell Science

DAVIS, HEATHER A., PH.D.
(University of Georgia)
Assistant Professor, Educational Psychology

DAVIS, JACK E., PH.D.
(Brandeis University)
Associate Professor, History

DAVIS, JEAN E., PH.D.
(University of Arizona)
Associate Professor, Nursing

DAVIS, JEFFREY, LL.M.
(University of Michigan)
Professor, Law

DAVIS, JERRY K., PH.D.
(University of Alabama)
Professor, Veterinary Medicine

DAVIS, JOHN M., PH.D.
(Michigan State University)
Associate Professor, Forest Resources and Conservation

DAVIS, JOSEPH S., PH.D.
(University of Iowa)
Professor, Botany

DAVIS, JOYCE F., D.M.A.
(Ohio State University)
Professor, Music

DAVIS, MICHAEL J., PH.D.
(University of California at Berkeley)
Professor, Plant Pathology

DAVIS, RICHARD H., PH.D.
(University of Wisconsin)
Professor, History

DAVIS, TIMOTHY A., PH.D.
(University of Illinois)
Associate Professor, Computer and Information Science and Engineering

DAWSON, GEORGE L., J.D.
(University of Chicago)
Professor, Comparative Law

DAWSON, KARA M., PH.D.
(University of Virginia)
Assistant Professor, Teaching and Learning

DAWSON, WILLIAM O., PH.D.
(University of Georgia)
Eminent Scholar, Plant Pathology

DAWSON, WILLIAM W., PH.D.
(Florida State University)
Professor, Neuroscience

DAY, JANE A., PH.D.
(University of Florida)
Clinical Associate Professor, Physical Therapy

DAY, JONATHAN F., PH.D.
(University of Massachusetts)
Professor, Entomology and Nematology

DE CRECY-LAGARD, VALERIE, PH.D.
(University of Paris VII)
Assistant Professor, Microbiology and Cell Science

DE JONG, ESTER J., ED.D.
(Boston University)
Assistant Professor, Teaching and Learning

DE VRIES, ALBERT, PH.D.
(University of Minnesota)
Assistant Professor, Animal Sciences

DEAGAN, KATHLEEN A., PH.D.
(University of Florida)
Distinguished Research Professor, Anthropology

DEAN, ROBERT G., SC.D.
(Massachusetts Institute of Technology)
Graduate Research Professor, Civil and Coastal Engineering

DEBUSK, WILLIAM F., PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

DEDE, DUANE E., PH.D.
(University of Louisville)
Clinical Associate Professor, Clinical and Health Psychology

DEFRANCE, SUSAN D., PH.D.
(University of Florida)
Assistant Professor, Anthropology

DEGNER, JANET D., M.S.
(Texas A&M University)
Engineer, Civil and Coastal Engineering

DEGNER, ROBERT L., PH.D.
(Texas A&M University)
Professor, Food and Resource Economics

DEHGAN, BIJAN, PH.D.
(University of California at Davis)
Professor, Horticultural Science

DEHOFF, ROBERT T., PH.D.
(Carnegie Mellon University)
Professor, Materials Science and Engineering

DEJONG, GERBEN, PH.D.
(Brandeis University)
Professor, Health Services Research, Management and Policy

DELANEY, PETER F., PH.D.
(Florida State University)
Assistant Professor, Psychology

DELFINO, JOSEPH J., PH.D.
(University of Wisconsin)
Professor, Environmental Engineering Sciences

DEMARSE, THOMAS, PH.D.
(Purdue University)
Assistant Professor, Biomedical Engineering

DEMPERE, LUISA A., PH.D.
(University of Florida)
Assistant Engineer, Materials Science and Engineering

DEMPSEY, JAMES F., PH.D.
(Washington University)
Assistant Professor, Nuclear and Radiological Engineering

DEMSKI, JOEL S., PH.D.
(University of Chicago)
Fredrick E. Fisher Eminent Scholar, Accounting

DENG, XINGMING, M.D.
(Hunan Medical University)
Assistant Professor, Anatomy and Cell Biology

DENG, ZHANAO, PH.D.
(Huazhung Agricultural University)
Assistant Professor, Environmental Horticulture

DENNIS, DONN M., M.D.
(University of Michigan)
Professor, Pharmacology and Therapeutics

DENSLOW, DAVID A., PH.D.
(Yale University)
Distinguished Service Professor, Economics

DENSLOW, NANCY D., PH.D.
(University of Florida)
Associate Professor, Biochemistry and Molecular Biology

DER HOUSSIKIAN, HAIG, PH.D.
(University of Texas at Austin)
Professor, Linguistics

DEREN, CHRISTOPHER W., PH.D.
(University of Florida)
Professor, Agronomy

DERENDORF, HARTMUT C., PH.D.
(University of Munster)
Professor, Pharmaceutics

DERMOTT, STANLEY F., D.SC.
(University of London)
Professor, Astronomy

DERRICK, KENNETH S., PH.D.
(Texas A&M University)
Professor, Plant Pathology

DETWEILER, STEVEN L., PH.D.
(University of Chicago)
Professor, Physics

DEUMENS, ERIK, D.SC.
(Free University of Brussels)
Scientist, Chemistry

DEVEREUX, RICHARD, PH.D.
(University of Houston)
Associate Professor, Soil and Water Science

DEVIDAS, MEENAKSHI, PH.D.
(University of Memphis)
Research Assistant Professor, Statistics

DEVINE, DARRAGH P., PH.D.
(Concordia University)
Assistant Professor, Psychology

DEWITT, BON A., PH.D.
(University of Wisconsin)
Associate Professor, Civil and Coastal Engineering

DEWSBURY, DONALD A., PH.D.
(University of Michigan)
Professor, Psychology

DEYRUP, JAMES A., PH.D.
(University of Illinois)
Professor, Chemistry

DICKINSON, RICHARD B., PH.D.
(University of Minnesota)
Associate Professor, Chemical Engineering

DICKISON, SHEILA K., PH.D.
(Bryn Mawr College)
Associate Professor, Classics

DICKSON, DONALD W., PH.D.
(North Carolina State University)
Professor, Entomology and Nematology

DICKSON, SANDARA J., PH.D.
(Florida State University)
Professor, Journalism and Communications

DIEHL, MANFRED K., PH.D.
(Pennsylvania State University)
Associate Professor, Psychology

DIFINO, SHARON M., PH.D.
(University of Massachusetts)
Associate Professor, Germanic and Slavic Studies

DILCHER, DAVID L., PH.D.
(Yale University)
Graduate Research Professor, Botany

DILLER, GEORGE T., PH.D.
(Stanford University)
Professor, Romance Languages and Literatures

DILLEY, PATRICIA E., LL.M.
(Boston University)
Professor, Taxation

DIMATTEO, LARRY A., J.D.
(Cornell Law School)
Associate Professor, Management

DINCULEANU, NICOLAE, PH.D.
(University of Bucharest)
Professor, Mathematics

DING, MINGZHOU, PH.D.
(University of Maryland)
Professor, Biomedical Engineering

DINOPOULOS, ELIAS, PH.D.
(Columbia University)
Professor, Economics

DIPIETRO, JOSEPH A., D.V.M.
(University of Illinois)
Professor, Veterinary Medicine

DITTO, WILLIAM L., PH.D.
(Clemson University)
Professor, Biomedical Engineering

DIXON, WARREN E., PH.D.
(Clemson University)
Assistant Professor, Mechanical and Aerospace Engineering

DOBALIAN, ARAM, PH.D.
(University of California at Los Angeles)
Assistant Professor, Public Health

DOBRA, ALIN, PH.D.
(Cornell University)
Assistant Professor, Computer and Information Science and Engineering

DOBRIN, SIDNEY I., PH.D.
(University of South Florida)
Associate Professor, English

DODD, C. KENNETH, PH.D.
(Clemson University)
Associate Professor, Wildlife Ecology and Conservation

DODD, JULIE E., ED.D.
(University of Kentucky)
Professor, Journalism and Communications

DODD, LAWRENCE C., PH.D.
(University of Minnesota)
Manning J. Dauer Eminent Scholar, Political Science

DODD, STEPHEN L., PH.D.
(Louisiana State University)
Professor, Applied Physiology and Kinesiology

DODD, VIRGINIA J., PH.D.
(University of South Florida)
Assistant Professor, Health Education and Behavior

DOERING, PAUL L., M.S.P.
(University of Florida)
Distinguished Service Professor, Pharmacy

DOLAN, TERESA A., D.D.S.
(University of Texas)
Professor, Public Health

DOLBIER, WILLIAM R., PH.D.
(Cornell University)
Professor, Chemistry

DOLCE, CALOGERO, D.D.S.
(State University of New York at Buffalo)
Associate Professor, Dentistry

DOMIJAN, ALEXANDER, PH.D.
(University of Texas)
Associate Professor, Electrical and Computer Engineering

DOMINIAK, KENNETH E., PH.D.
(Polytechnic Institute of Brooklyn)
Associate Engineer, Industrial and Systems Engineering

DONNELLY, WILLIAM H., M.D.
(University of Ottawa)
Professor, Pathology, Immunology and Laboratory Medicine

DONOVAN, GERALD A., D.V.M.
(Ontario Veterinary College)
Professor, Veterinary Medicine

DORSEY, ALAN T., PH.D.
(University of Illinois at Urbana-Champaign)
Professor, Physics

DOUD, JAMES L., PH.D.
(University of Iowa)
Professor, Educational Leadership, Policy and Foundations

DOUGHERTY, MOLLY C., PH.D.
(University of Florida)
Professor, Nursing

DOUGLAS, ELLIOT P., PH.D.
(University of Massachusetts)
Associate Professor, Materials Science and Engineering

DOUGLAS, JANE Y., PH.D.
(New York University)
Associate Professor, English

DOW, JOSE K., PH.D.
(University of Missouri)
Professor, Food and Resource Economics

DOWD, NANCY E., J.D.
(Loyola University of Chicago)
Professor, Comparative Law

DRAKE, DAVID A., PH.D.
(Syracuse University)
Professor, Mathematics

DRANISHNIKOV, ALEXANDER N., PH.D.
(Moscow State University)
Professor, Mathematics

DRISCOLL, DANIEL J., PH.D.
(Indiana University)
Professor, Molecular Genetics and Microbiology

DROST, MAARTEN, D.V.M.
(Iowa State University)
Professor, Veterinary Medicine

DRUMMOND, H. EVAN, PH.D.
(Purdue University)
Professor, Food and Resource Economics

DRUMMOND, WILLA H., M.D.
(University of Pennsylvania)
Professor, Physiology and Pharmacology (IDP)

DRUMMOND-CAWTHON, KELLY J., M.F.A.
(Florida State University)
Assistant Professor, Theatre and Dance

DRURY, KENNETH C., PH.D.
(University of Geneva)
Professor, Physiology and Functional Genomics

DUCKWORTH, ALISTAIR M., PH.D.
(Johns Hopkins University)
Professor, English

DUCKWORTH, DONNA H., PH.D.
(Johns Hopkins University)
Professor, Molecular Genetics and Microbiology

DUDECK, ALBERT E., PH.D.
(Pennsylvania State University)
Professor, Horticultural Science

DUFF, WILLIAM P., M.D.
(Georgetown University)
Professor, Oral Biology

DUFTY, JAMES W., PH.D.
(Lehigh University)
Professor, Physics

DUGAN, EDWARD T., PH.D.
(University of Florida)
Associate Professor, Nuclear and Radiological Engineering

DUKE, LISA L., PH.D.
(University of Georgia)
Assistant Professor, Journalism and Communications

DUKES, MICHAEL D., PH.D.
(North Carolina State University)
Assistant Professor, Agricultural and Biological Engineering

DUKES, WALTER E., PH.D.
(Purdue University)
Professor, Building Construction

DUNAVIN, LEONARD S., PH.D.
(University of Florida)
Associate Professor, Agronomy

DUNCAN, LARRY W., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

Duncan, Pamela W., Ph.D.
(University of North Carolina)
Professor, Health Services Research, Management and Policy

DUNCAN, R. P., PH.D.
(Purdue University)
Professor, Health Services Research, Management and Policy

DUNN, BEN M., PH.D.
(University of California at Santa Barbara)
Distinguished Professor, Biochemistry and Molecular Biology

DUNN, WILLIAM A., PH.D.
(Pennsylvania State University)
Professor, Anatomy and Cell Biology

DUNNAM, FRANCIS E., PH.D.
(Louisiana State University)
Professor, Physics

DURAN, RANDOLPH, PH.D.
(University Louis Pasteur)
Associate Professor, Chemistry

DURYEA, MARY L., PH.D.
(Oregon State University)
Professor, Forest Resources and Conservation

DUSKY, JOAN A., PH.D.
(North Dakota State University)
Professor, Horticultural Science

DUTOIT, BRIAN M., PH.D.
(University of Oregon)
Professor, Anthropology

DUVAL, JOHN R., PH.D.
(University of Georgia)
Assistant Professor, Horticultural Science

DWYER, JEFFREY W., PH.D.
(University of Florida)
Professor, Sociology

DYER, JAMES E., PH.D.
(University of Illinois at Urbana-Champaign)
Associate Professor, Agricultural Education and Communication

DYKES, MARY K., PH.D.
(University of Texas)
Professor, Special Education

DYSON, ALICE T., PH.D.
(University of Illinois)
Associate Professor, Communication Sciences and Disorders

E

EALY, ALAN, PH.D.
(University of Florida)
Assistant Professor, Animal Sciences

EARLE, JONATHAN F., PH.D.
(University of Florida)
Associate Professor, Agricultural and Biological Engineering

EAVERLY, MARY ANN, PH.D.
(University of Michigan)
Associate Professor, Classics

EBRAHIMI, FERESHTEH, PH.D.
(Colorado School of Mines)
Professor, Materials Science and Engineering

ECHEVARRIA-DOAN, SILVIA C., PH.D.
(Purdue University)
Associate Professor, Counselor Education

ECHEVERRIA, EDGARDO J., PH.D.
(University of Florida)
Professor, Horticultural Science

EDISON, ARTHUR S., PH.D.
(University of Wisconsin)
Associate Professor, Biochemistry and Molecular Biology

EDMONSON, WILLIAM W., PH.D.
(North Carolina State University)
Assistant Professor, Electrical and Computer Engineering

EDWARDS, BRUCE H., PH.D.
(Dartmouth College)
Professor, Mathematics

EDWARDS, GLAVIS B., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

EHRLICH, PAUL E., PH.D.
(State University of New York at Stony Brook)
Professor, Mathematics

EIKENBERRY, STEPHEN S., PH.D.
(Harvard University)
Professor, Astronomy
Eisenberg, Martin A., D.Eng.
(Yale University)
Professor, Mechanical and Aerospace Engineering

EISENSTADT, WILLIAM R., PH.D.
(Stanford University)
Associate Professor, Electrical and Computer Engineering

ELDER, JENNIFER H., PH.D.
(University of Florida)
Associate Professor, Nursing

ELDER, MELISSA, M.D.
(University of Florida)
Associate Professor, Pediatrics

ELEFTERIADOU, AGELIKI L., PH.D.
(Polytechnic Institute of Brooklyn)
Associate Professor, Civil and Coastal Engineering

ELLIFRITT, DUANE S., PH.D.
(West Virginia University)
Professor, Civil and Coastal Engineering

ELLIOTT, MONICA L., PH.D.
(Montana State University)
Professor, Plant Pathology

ELLIS, DORETTE, PH.D.
(University of South Florida)
Assistant Professor, Pharmacodynamics

ELLIS, LAURA R., D.M.A.
(University of Kansas)
Associate Professor, Music

ELLIS, RALPH D., PH.D.
(University of Florida)
Associate Professor, Civil and Coastal Engineering

ELLIS, SHARI A., PH.D.
(University of Utah)
Assistant Professor, Psychology

ELLISON, GARY W., D.V.M.
(University of Illinois)
Professor, Veterinary Medicine

ELNICKI, RICHARD A., D.B.A.
(Harvard University)
Professor, Decision and Information Sciences

EL-SHALL, HASSAN E., D.ENG.SC.
(Columbia University)
Associate Professor, Materials Science and Engineering

ELSTON, RICHARD J., PH.D.
(University of Arizona)
Professor, Astronomy

ELZINGA, DONALD J., PH.D.
(Northwestern University)
Professor, Industrial and Systems Engineering

ELZO, MAURICIO A., PH.D.
(University of California at Davis)
Professor, Animal Sciences

EMCH, GERARD G., PH.D.
(University of Geneva)
Professor, Mathematics

EMERSON, ROBERT D., PH.D.
(Purdue University)
Professor, Food and Resource Economics

EMERSON, ROBERT W., J.D.
(Harvard University)
Professor, Management

EMERY, KIMBERLY L., PH.D.
(University of Texas at Austin)
Associate Professor, English

EMERY, KITTY F., PH.D.
(Cornell University)
Assistant Professor, Anthropology

EMIHOVICH, CATHERINE A., PH.D.
(State University of New York at Buffalo)
Professor, Anthropology

EMINO, EVERETT R., PH.D.
(Michigan State University)
Professor, Environmental Horticulture

EMMEL, THOMAS C., PH.D.
(Stanford University)
Professor Emeritus, Zoology

EMOND, JEAN-PIERRE, PH.D.
(University of Florida)
Visiting Professor, Agricultural and Biological Engineering

ENHOLM, ERIC J., PH.D.
(University of Utah)
Professor, Chemistry

EPTING, FRANZ R., PH.D.
(Ohio State University)
Professor, Psychology

ERDOS, GREGORY, PH.D.
(University of North Carolina)
Scientist, Botany

ERENGUC, SAHIN S., PH.D.
(Indiana University)
Professor, Decision and Information Sciences

EREZ, AMIR, PH.D.
(Cornell University)
Associate Professor, Management

ESENWEIN, GEORGE R., PH.D.
(London School of Economics and Political Science)
Associate Professor, History

ESPINEL, RAMON, PH.D.
(University of California at Berkeley)
Professor, Food and Resource Economics

ESTRIN, MITCHELL S., M.M.
(Julliard School)
Associate Professor, Music

EVANS, DAVID H., PH.D.
(Stanford University)
Professor, Zoology

EVANS, GARRET D., PH.D.
(Indiana State University)
Associate Professor, Clinical and Health Psychology

EVANS, STEPHANIE Y., PH.D.
(University of Massachusetts at Amherst)
Assistant Professor, Women's Studies

EYBERG, SHEILA M., PH.D.
(University of Oregon)
Professor, Clinical and Health Psychology

EYLER, FONDA D., PH.D.
(University of Florida)
Professor, Psychology

EYLER, JOHN R., PH.D.
(Stanford University)
Professor, Chemistry

F

FAGERBERG, SEIGFRED W., ED.D.
(University of Southern Mississippi)
Professor, Health Education and Behavior

FAIRCHILD, GARY F., PH.D.
(Texas A&M University)
Professor, Food and Resource Economics

FAIRCLOTH, CHRISTOPHER A., PH.D.
(University of Florida)
Assistant Professor, Sociology

FALSETTI, ANTHONY B., PH.D.
(University of Tennessee)
Associate Professor, Anthropology

FAN, ZHONGHUI H., PH.D.
(University of Alberta)
Associate Professor, Mechanical and Aerospace Engineering

FANG, YUGUANG, PH.D.
(Boston University)
Associate Professor, Electrical and Computer Engineering

FANG, ZHIHUI, PH.D.
(Purdue University)
Associate Professor, Teaching and Learning

FANUCCI, GAIL E., PH.D.
(University of Florida)
Assistant Professor, Chemistry

FARESE, JAMES P., D.V.M.
(University of Florida)
Assistant Professor, Veterinary Medicine

FARRAH, SAMUEL R., PH.D.
(Pennsylvania State University)
Professor, Microbiology and Cell Science

FARRAR, MICHAEL J., PH.D.
(Emory University)
Associate Professor, Psychology

FAVINI, PAUL, M.F.A.
(Indiana University)
Assistant Professor, Theatre and Dance

FAY, SCOTT A., PH.D.
(University of Michigan)
Assistant Professor, Marketing

FEAGIN, JOE R., PH.D.
(Harvard University)
Graduate Research Professor, Sociology

FELDHERR, CARL M., PH.D.
(University of Pennsylvania)
Professor, Anatomy and Cell Biology

FENG, JUAN, PH.D.
(Pennsylvania State University)
Assistant Professor, Decision and Information Sciences

FENNELL, EILEEN B., PH.D.
(University of Florida)
Professor, Clinical and Health Psychology

FERDIG, RICHARD E., PH.D.
(Michigan State University)
Assistant Professor, Teaching and Learning

FERGUSON, JAMES J., PH.D.
(University of California at Riverside)
Professor, Horticultural Science

FERGUSON, MARY ANN, PH.D.
(University of Wisconsin)
Professor, Journalism and Communications

FERL, ROBERT J., PH.D.
(Indiana University)
Professor, Horticultural Science

FERRELL, ERIC A., PH.D.
(University of Florida)
Assistant Professor, Veterinary Medicine

FERRELL, JASON A., PH.D.
(University of Georgia)
Assistant Professor, Agronomy

FERRER, MILLIE, PH.D.
(Florida State University)
Professor, Family, Youth and Community Sciences

FIELD, RICHARD D., PH.D.
(University of California at Berkeley)
Professor, Physics

FIELDS, MICHAEL J., PH.D.
(Texas A&M University)
Professor, Animal Sciences

FIGLIO, DAVID N., PH.D.
(University of Wisconsin)
Associate Professor, Economics

FIGUEIREDO, RENATO J., PH.D.
(Purdue University)
Assistant Professor, Electrical and Computer Engineering

FIK, TIMOTHY J., PH.D.
(University of Arizona)
Associate Professor, Geography

FILLINGIM, ROGER B., PH.D.
(University of Alabama at Birmingham)
Associate Professor, Dentistry

FISCHLER, IRA S., PH.D.
(Stanford University)
Professor, Psychology

FISHWICK, PAUL A., PH.D.
(University of Pennsylvania)
Professor, Computer and Information Science and Engineering

FITZ-COY, NORMAN G., PH.D.
(Auburn University)
Associate Professor, Mechanical and Aerospace Engineering

FITZPATRICK, GEORGE E., PH.D.
(Rutgers University)
Professor, Horticultural Science

FITZSIMMONS, JEFFREY R., PH.D.
(University of Florida)
Professor, Nuclear and Radiological Engineering

FLANEGAN, JAMES B., PH.D.
(University of Michigan)
Professor, Biochemistry and Molecular Biology

FLANNERY, MARK J., PH.D.
(Yale University)
Barnett Banks Eminent Scholar, Finance, Insurance and Real Estate

FLEMING, DAVID S., PH.D.
(University of South Carolina)
Assistant Professor, Applied Physiology and Kinesiology

FLETCHER, BRADLEY S., PH.D.
(University of California at Los Angeles)
Assistant Professor, Pharmacology and Therapeutics

FLETCHER, LUCIA N, PH.D.
(University of California at Los Angeles)
Assistant Professor, Neuroscience

FLINCHUM, DAVID M., PH.D.
(North Carolina State University)
Professor, Forest Resources and Conservation

FLOCKS, JOAN D., J.D.
(University of Florida)
Assistant in, Public Health

FLOOD, IAN, PH.D.
(University of Manchester)
Associate Professor, Building Construction

FLOTTE, TERENCE R., M.D.
(Louisiana State University)
Eminent Scholar, Molecular Genetics and Microbiology

FLOURNOY, ALYSON, J.D.
(Harvard University)
Professor, Comparative Law

FLOWERS, LAMONT A., PH.D.
(University of Iowa)
Assistant Professor, Educational Leadership, Policy and Foundations

FLOWERS, RALPH W., PH.D.
(University of Wisconsin)
Professor, Entomology and Nematology

FLOYD, MYRON F., PH.D.
(Texas A&M University)
Associate Professor, Tourism, Recreation and Sport Management

FOCKS, DANA A., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

FOLTA, KEVIN M., PH.D.
(University of Illinois)
Assistant Professor, Horticultural Science

FOLTZ, JOHN L., PH.D.
(University of Michigan)
Associate Professor, Entomology and Nematology

FOLTZ, RICHARD C., PH.D.
(Harvard University)
Associate Professor, Religion

FONDACARO, MARK R., PH.D.
(Indiana University at Bloomington)
Associate Professor, Psychology

FORRESTER, DONALD J., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

FORTES, JOSE A., PH.D.
(University of Southern California)
BellSouth Eminent Scholar, Electrical and Computer Engineering

FOSSUM, JERRY G., PH.D.
(University of Arizona)
Professor, Electrical and Computer Engineering

FOSTER, DAVID A., PH.D.
(State University of New York at Albany)
Associate Professor, Geological Sciences

FOSTER, TOM, PH.D.
(Bowman Gray School of Medicine)
Associate Professor, Neuroscience

FOX, ALISON M., PH.D.
(University of Glasgow)
Associate Professor, Agronomy

FOX, ROBERT M., PH.D.
(Auburn University)
Associate Professor, Electrical and Computer Engineering

FRAISSE, CLYDE W., PH.D.
(Colorado State University)
Assistant Extension Scientist, Agricultural and Biological Engineering

FRANCIS, ELAINE E., PH.D.
(University of Florida)
Assistant Professor, Nursing

FRANCIS, RICHARD L., PH.D.
(Northwestern University)
Professor, Industrial and Systems Engineering

FRANCIS, WAYNE L., PH.D.
(Indiana University)
Professor, Political Science

FRANCIS-FLOYD, RUTH, D.V.M.
(University of Florida)
Professor, Veterinary Medicine

FRANK, JOHN H., D.PHIL.
(University of Oxford)
Professor, Entomology and Nematology

FRANK, MICHAEL P., PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Computer and Information Science and Engineering

FRANK, ROBERT G., PH.D.
(University of New Mexico)
Professor, Clinical and Health Psychology

FRANKS, BRIDGET A., PH.D.
(University of Nebraska)
Associate Professor, Educational Psychology

FRANZ, L. RICHARD, M.S.T.
(University of Montana)
Associate Scientist, Wildlife Ecology and Conservation

FRAZER, NAT B., PH.D.
(University of Georgia)
Professor, Wildlife Ecology and Conservation

FRAZER, TOM K., PH.D.
(University of California)
Assistant Professor, Fisheries and Aquatic Sciences

FRAZIER, CHARLES E., PH.D.
(Southern Illinois University)
Professor, Sociology

FRAZIER, CHARLES J., PH.D.
(University of Colorado)
Assistant Professor, Pharmacodynamics

FREDERICK, PETER C., PH.D.
(University of North Carolina)
Research Associate Professor, Wildlife Ecology and Conservation

FREEL, ROBERT W., PH.D.
(University of California at Los Angeles)
Research Associate Professor, Pathology, Immunology and Laboratory Medicine

FREEMAN, NATALIE C G., PH.D.
(Rutgers University)
Associate Professor, Public Health

FREGLY, BENJAMIN J., PH.D.
(Stanford University)
Assistant Professor, Mechanical and Aerospace Engineering

FREIFELD, ALICE, PH.D.
(University of California at Berkeley)
Associate Professor, History

FRENCH, BYRON T., PH.D.
(Kansas State University)
Associate Professor, Agricultural and Biological Engineering

FRIEDMAN, WILLIAM A., M.D.
(Ohio State University)
Professor, Neuroscience

FRIEL, MICHAEL K., LL.M.
(New York University)
Professor, Taxation

FROSCH, JOAN D., M.A.
(Columbia University)
Associate Professor, Theatre and Dance

FROST, SUSAN C., PH.D.
(University of Arizona)
Professor, Biochemistry and Molecular Biology

FRY, JAMES N., PH.D.
(Princeton University)
Professor, Physics

FRYE, REGINALD F., PH.D.
(University of Pittsburgh)
Associate Professor, Pharmacy

FU, DANLING, PH.D.
(University of New Hampshire)
Associate Professor, Teaching and Learning

FU, LI-MIN, PH.D.
(Stanford University)
Professor, Computer and Information Science and Engineering

FUCHS, GERHARD E., PH.D.
(Rensselaer Polytechnic Institute)
Assistant Professor, Materials Science and Engineering

FUKAI, DENNIS, PH.D.
(University of California at Berkeley)
Assistant Professor, Building Construction

FUKUYAMA, MARY A., PH.D.
(Washington State University)
Clinical Professor, Psychology

FULLER, DAVID D., PH.D.
(University of Arizona)
Assistant Professor, Physical Therapy

FUNDERBURK, JOSEPH E., PH.D.
(Iowa State University)
Professor, Entomology and Nematology

FUTTERKNECHT, FRANZ O., PH.D.
(University of Mannheim)
Professor, Germanic and Slavic Studies

G

GABRIEL, DEAN W., PH.D.
(Michigan State University)
Professor, Plant Pathology

GADER, PAUL D., PH.D.
(University of Florida)
Professor, Electrical and Computer Engineering

GALLAGHER, EVAN P., PH.D.
(Duke University)
Associate Professor, Veterinary Medicine

GALLAHER, RAYMOND N., PH.D.
(University of Georgia)
Professor, Agronomy

GALLANT, THOMAS W., PH.D.
(University of Cambridge)
Professor, History

GALLMAN, JAMES M., PH.D.
(Brandeis University)
Professor, History

GALLO-MEAGHER, MARIA, PH.D.
(North Carolina State University)
Associate Professor, Agronomy

GAMBLE, DOVIE J., PH.D.
(New York University)
Assistant Professor, Tourism, Recreation and Sport Management

GANNON, MICHAEL V., PH.D.
(University of Florida)
Professor, History

GAO, JIANBO, PH.D.
(University of California at Los Angeles)
Assistant Professor, Electrical and Computer Engineering

GAPENSKI, LOUIS C., PH.D.
(University of Florida)
Professor, Health Services Research, Management and Policy

GARBER, LAUREN M., PH.D.
(University of Wisconsin)
Assistant Professor, Art and Art History

GARG, LAL C., PH.D.
(University of Florida)
Professor, Pharmacology and Therapeutics

GARLAND, CHRISTINA, M.F.A.
(Virginia Commonwealth University)
Assistant Professor, Theatre and Dance

GARNSEY, STEPHEN M., PH.D.
(University of California at Davis)
Professor, Plant Pathology

GARRIGUES, ROBERT G., PH.D.
(Florida State University)
Lecturer, Health Services Research, Management and Policy

GARVAN, CYNTHIA W., PH.D.
(University of Florida)
Research Assistant Professor, Statistics

GARVAN, FRANCIS G., PH.D.
(Pennsylvania State University)
Professor, Mathematics

GARY, FAYE G., ED.D.
(University of Florida)
Distinguished Service Professor, Nursing

GASKIN, JACK M., PH.D.
(Cornell University)
Associate Professor, Veterinary Medicine

GATER, ROGER A., PH.D.
(Purdue University)
Associate Professor, Mechanical and Aerospace Engineering

GATTONE, CHARLES F., PH.D.
(New School for Social Research)
Assistant Professor, Sociology

GAY CROSIER, RAYMOND, PH.D.
(University of Berne)
Professor, Romance Languages and Literatures

GE, JIAN, PH.D.
(University of Arizona)
Professor, Astronomy

GEDEN, CHRIS J., PH.D.
(University of Massachusetts at Amherst)
Professor, Entomology and Nematology

GEFFKEN, GARY R., PH.D.
(University of Florida)
Associate Professor, Clinical and Health Psychology

GEGGUS, DAVID P., D.PHIL.
(York University)
Professor, History

GELATT, KIRK N., V.M.D.
(University of Pennsylvania)
Distinguished Professor, Veterinary Medicine

GEORGE, ALAN D., PH.D.
(Florida State University)
Professor, Electrical and Computer Engineering

GEORGE, PAUL S., ED.D.
(George Peabody College)
Professor, Teaching and Learning

GEORGE, STEVEN E., PH.D.
(University of Pittsburgh)
Assistant Professor, Physical Therapy

GERBERG, EUGENE J., PH.D.
(University of Maryland)
Professor, Entomology and Nematology

GERENCSER, GEORGE A., PH.D.
(Indiana University)
Professor, Physiology and Pharmacology (IDP)

GERHARDT, KENNETH J., PH.D.
(Ohio State University)
Professor, Communication Sciences and Disorders

GEUNES, JOSEPH P., PH.D.
(Pennsylvania State University)
Assistant Professor, Industrial and Systems Engineering

GHIVIRIGA, ION, PH.D.
(Polytechnic University of Bucharest)
Associate Scientist, Chemistry

GHOSH, MALAY, PH.D.
(University of North Carolina)
Distinguished Professor, Statistics

GIACOBBI, PETER B., PH.D.
(University of Tennessee)
Assistant Professor, Applied Physiology and Kinesiology

GIBBS, CHARLES H., PH.D.
(Case Western Reserve University)
Professor, Oral Biology

GIBBS, EDWARD P., PH.D.
(University of Bristol)
Professor, Veterinary Medicine

GIBLIN-DAVIS, ROBIN M., PH.D.
(University of California at Davis)
Professor, Entomology and Nematology

GIBSON, DAVID W., M.S.C.E.
(University of Miami)
Associate Professor, Civil and Coastal Engineering

GIBSON, HEATHER J., PH.D.
(University of Connecticut)
Associate Professor, Tourism, Recreation and Sport Management

GIGUERE, STEEVE, PH.D.
(University of Guelph)
Associate Professor, Veterinary Medicine

GILA, BRENT P., PH.D.
(University of Florida)
Assistant Professor, Materials Science and Engineering

GILBERT, PAMELA K., PH.D.
(University of Southern California)
Associate Professor, English

GILBERT, ROBERT A., PH.D.
(Texas A&M University)
Assistant Professor, Agronomy

GILES, GEOFFREY J., PH.D.
(University of Cambridge)
Associate Professor, History

GILL, JEFFERSON M., PH.D.
(American University)
Associate Professor, Political Science

GILLAND, DAVID R., PH.D.
(University of North Carolina)
Associate Professor, Nuclear and Radiological Engineering

GILLESPIE, SUSAN D., PH.D.
(University of Illinois)
Associate Professor, Anthropology

GILMAN, EDWARD F., PH.D.
(Rutgers University)
Professor, Horticultural Science

GILMORE, ROBIN L., M.D.
(Ohio State University)
Professor, Neuroscience

GILREATH, JAMES P., PH.D.
(University of Florida)
Professor, Horticultural Science

GINN, PAMELA E., D.V.M.
(Colorado State University)
Associate Professor, Veterinary Medicine

GINWAY, MARY E., PH.D.
(Vanderbilt University)
Associate Professor, Romance Languages and Literatures

GITZENDANNER, MATTHEW, PH.D.
(Washington State University)
Assistant Scientist, Botany

GIUFFRIDA, CLARE G., PH.D.
(Pennsylvania State University)
Assistant Professor, Occupational Therapy

GIULIANO, WILLIAM M., PH.D.
(Texas Tech University)
Assistant Professor, Wildlife Ecology and Conservation

GLADWIN, CHRISTINA H., PH.D.
(Stanford University)
Professor, Food and Resource Economics

GLAGOLA, CHARLES R., PH.D.
(Clemson University)
Associate Professor, Civil and Coastal Engineering

GLOVER, JOSEPH, PH.D.
(University of California at San Diego)
Professor, Mathematics

GLUCK, STEPHEN L., M.D.
(University of California at Los Angeles)
Professor, Anatomy and Cell Biology

GLUECKAUF, ROBERT L., PH.D.
(Florida State University)
Professor, Clinical and Health Psychology

GMITTER, FREDERICK G., PH.D.
(University of Florida)
Professor, Horticultural Science

GODBEY, KAROLYN L., PH.D.
(Florida State University)
Associate Professor, Nursing

GOLANT, STEPHEN M., PH.D.
(University of Washington)
Professor, Geography

GOLD, MARK S., M.D.
(University of Florida)
Distinguished Professor, Neuroscience

GOLD, MARTIN A., M.ARCH.
(University of Florida)
Associate Professor, Architecture

GOLDBERG, EUGENE P., PH.D.
(Brown University)
Professor, Materials Science and Engineering

GOLDBERGER, BRUCE A., PH.D.
(University of Maryland)
Clinical Associate Professor, Pathology, Immunology and Laboratory Medicine

GOLDMAN, ABRAHAM C., PH.D.
(Clark University)
Associate Professor, Geography

GONZALES-ROTHI, LESLIE J., PH.D.
(University of Florida)
Professor, Communication Sciences and Disorders

GONZALEZ-ROTHI, RICARDO J., M.D.
(New York University)
Professor, Pharmacy

GOODENOW, MAUREEN M., PH.D.
(Albert Einstein College of Medicine)
Professor, Pathology, Immunology and Laboratory Medicine

GOODMAN, JENNIFER R., PH.D.
(University of Texas at Austin)
Assistant Professor, Journalism and Communications

GOODRICH, RENEE M., PH.D.
(University of Florida)
Assistant Professor, Food Science and Human Nutrition

GOPALAKRISHNAN, JAYADEEP, PH.D.
(Texas A&M University)
Assistant Professor, Mathematics

GORBET, DANIEL W., PH.D.
(Oklahoma State University)
Professor, Agronomy

GORDON, ANDREW M., PH.D.
(University of California at Berkeley)
Associate Professor, English

GORDON, DORIA R., PH.D.
(University of California at Davis)
Professor, Botany

GORDON, MICHAEL W., J.D.
(University of Connecticut)
Chesterfield Smith Professor, Comparative Law

GORHAM, MICHAEL S., PH.D.
(Stanford University)
Associate Professor, Germanic and Slavic Studies

GOSWAMI, DHARENDRA Y., PH.D.
(Auburn University)
Professor, Mechanical and Aerospace Engineering

GOTTESMAN, STEPHEN T., PH.D.
(University of Manchester)
Professor, Astronomy

GOTTWALD, TIM R., PH.D.
(Oregon State University)
Associate Professor, Plant Pathology

GOVER, ANGELA R., PH.D.
(University of Maryland)
Assistant Professor, Criminology, Law and Society

GOWER, LAURIE B., PH.D.
(University of Massachusetts at Amherst)
Associate Professor, Materials Science and Engineering

GRABER, JULIA A., PH.D.
(Pennsylvania State University)
Associate Professor, Psychology

GRAETZ, DONALD A., PH.D.
(University of Wisconsin)
Professor, Soil and Water Science

GRAHAM, ELIZABETH P., D.M.
(Florida State University)
Professor, Music

GRAHAM, JAMES H., PH.D.
(Oregon State University)
Professor, Soil and Water Science

GRAHAM, ROY E., M.ARCH.
(University of Virginia)
Distinguished Professor, Architecture

GRAHAM, WENDY D., PH.D.
(Massachusetts Institute of Technology)
Professor, Agricultural and Biological Engineering

GRAHAM-POLE, JOHN, M.D.
(University of London)
Professor, Clinical and Health Psychology

GRAMS, R. R., M.D.
(University of Minnesota)
Professor, Pathology, Immunology and Laboratory Medicine

GRANT, MARIA A., M.D.
(University of Florida)
Professor, Pharmacology and Therapeutics

GRATTO, KATHERINE K., ED.D.
(University of Florida)
Associate Scholar, Educational Leadership, Policy and Foundations

GRAY, DENNIS J., PH.D.
(North Carolina State University)
Professor, Horticultural Science

GRAY, JONATHAN L., D.D.S.
(University of Illinois)
Associate Professor, Dentistry

GREANY, PATRICK D., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

GREEN, ALEX E., PH.D.
(University of Cincinnati)
Graduate Research Professor, Mechanical and Aerospace Engineering

GREEN, PERRY S., PH.D.
(Lehigh University)
Assistant Professor, Civil and Coastal Engineering

GREENBERG, ROBERT M., PH.D.
(University of Virginia)
Associate Professor, Neuroscience

GREGER, DEBORA, M.F.A.
(University of Iowa)
Professor, English

GREGG, ANDREA C., D.S.N.
(University of Alabama at Birmingham)
Associate Professor, Nursing

GREGORY, FREDERICK G., PH.D.
(Harvard University)
Professor, History

GREGORY, JESSE F., PH.D.
(Michigan State University)
Professor, Food Science and Human Nutrition

GREGORY, JOHN W., PH.D.
(Ohio State University)
Professor, Teaching and Learning

GREINER, ELLIS C., PH.D.
(University of Nebraska)
Professor, Veterinary Medicine

GRIFFIN, CYNTHIA C., PH.D.
(Purdue University)
Associate Professor, Special Education

GRIFFIN, WAYNE D., PH.D.
(University of Florida)
Clinical Associate Professor, Counselor Education

GRIFFITH, JOHN L., ED.D.
(Oklahoma State University)
Professor, Journalism and Communications

GRIFFITHS, SCOTT K., PH.D.
(University of Illinois)
Associate Professor, Communication Sciences and Disorders

GRIGGS, RICHARD A., PH.D.
(Indiana University)
Professor, Psychology

GRIMAUDO, NICHOLAS J., D.M.D.
(University of Florida)
Associate Professor, Dentistry

GRIMES, CHURCHILL B., PH.D.
(University of North Carolina)
Associate Professor, Forest Resources and Conservation

GRIST, ROBERT R., M.L.A.
(University of Georgia)
Associate Professor, Landscape Architecture

GROHER, MICHAEL E., PH.D.
(University of Washington)
Clinical Professor, Communicative Disorders

GROISSER, DAVID J., PH.D.
(Harvard University)
Associate Professor, Mathematics

GRONWALL, RONALD R., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

GROSS, TIMOTHY S., PH.D.
(University of Maryland)
Associate Scientist, Wildlife Ecology and Conservation

GROSSER, JUDE W., PH.D.
(University of Kentucky)
Professor, Horticultural Science

GROSSKOPF, KEVIN R., PH.D.
(University of Florida)
Assistant Professor, Building Construction

GROVE, DAVID S., PH.D.
(University of California at Los Angeles)
Professor, Anthropology

GRUNWALD, SABINE, PH.D.
(Giessen University)
Assistant Professor, Soil and Water Science

GU, DAVID X., PH.D.
(Harvard University)
Assistant Professor, Computer and Information Science and Engineering

GU, JIANGUO, PH.D.
(University of Manitoba)
Associate Professor, Dentistry

GUBRIUM, JABER F., PH.D.
(Wayne State University)
Professor, Sociology

GUILLETTE, ELIZABETH A., PH.D.
(University of Florida)
Assistant Scientist, Anthropology

GUILLETTE, LOUIS J., PH.D.
(University of Colorado)
Distinguished Professor, Zoology

GUION, LISA A., ED.D.
(North Carolina State University)
Assistant Professor, Family, Youth and Community Sciences

GULIG, PAUL A., PH.D.
(University of Texas at Houston)
Professor, Molecular Genetics and Microbiology

GUNDERSEN, MARTIN G., M.A.ARCH.
(University of Florida)
Associate Professor, Architecture

GUO, JING, PH.D.
(Purdue University)
Assistant Professor, Electrical and Computer Engineering

GUPTA, VIRENDRA K., SC.D.
(University of Michigan)
Professor, Entomology and Nematology

GURLEY, KURTIS R., PH.D.
(University of Notre Dame)
Associate Professor, Civil and Coastal Engineering

GURLEY, WILLIAM B., PH.D.
(University of Georgia)
Professor, Microbiology and Cell Science

GURUCHARRI, MARIA C., M.L.A.
(Harvard University)
Associate Professor, Landscape Architecture

GUSTAFSON, BO A., PH.D.
(University of Lund)
Professor, Astronomy

GUY, CHARLES L., PH.D.
(University of Minnesota)
Professor, Horticultural Science

GUZMAN, NICOLAS J., M.D.
(Cayetano Heredia University)
Assistant Professor, Pharmacology and Therapeutics

GUZMAN, RAFAEL L., PH.D.
(University of Durham)
Associate Professor, Astronomy

H

HABECK, DALE H., PH.D.
(North Carolina State University)
Professor, Entomology and Nematology

HACKENBERG, TIMOTHY D., PH.D.
(Temple University)
Professor, Psychology

HACKENBRACK, KARL E., PH.D.
(Ohio State University)
Associate Professor, Accounting

HACKETT, DAVID G., PH.D.
(Emory University)
Associate Professor, Religion

HAFTKA, RAPHAEL T., PH.D.
(University of California at San Diego)
Distinguished Professor, Mechanical and Aerospace Engineering

HAGEN, STEPHEN J., PH.D.
(Princeton University)
Associate Professor, Physics

HAGER, WILLIAM W., PH.D.
(Massachusetts Institute of Technology)
Professor, Mathematics

HAGHIGHAT, ALIREZA, PH.D.
(University of Washington)
Professor, Nuclear and Radiological Engineering

HAHN, DANIEL A., PH.D.
(University of Arizona)
Assistant Professor, Entomology and Nematology

HAHN, DAVID W., PH.D.
(Louisiana State University)
Associate Professor, Mechanical and Aerospace Engineering

HAILEY, CHARLES L., PH.D.
(University of Florida)
Assistant Professor, Architecture

HALL, ALLYSON GAIL., PH.D.
(Johns Hopkins University)
Associate Professor, Health Services Research, Management and Policy

HALL, DONALD W., PH.D.
(University of Florida)
Professor, Entomology and Nematology

HALL, HARLAN G., PH.D.
(University of California at Berkeley)
Associate Professor, Entomology and Nematology

HALL, HOWARD J., PH.D.
(University of Georgia)
Lecturer, Management

HALL, JAY, PH.D.
(Baylor College of Medicine)
Clinical Professor, Rehabilitation Science

HALL, MARGARETE E., PH.D.
(University of Maryland)
Associate Professor, Journalism and Communications

HALL, MARY BETH, PH.D.
(Cornell University)
Associate Professor, Animal Sciences

HALLER, WILLIAM T., PH.D.
(University of Florida)
Professor, Agronomy

HALMARI, SIRKKA H., PH.D.
(University of Southern California)
Assistant Professor, Linguistics

HAMAN, DOROTA Z., PH.D.
(Michigan State University)
Professor, Agricultural and Biological Engineering

HAMANN, FREDRICK, PH.D.
(State University of New York at Stony Brook)
Professor, Astronomy

HAMILTON, HOMER R., PH.D.
(University of Texas at Austin)
Associate Professor, Civil and Coastal Engineering

HAMILTON, JONATHAN H., PH.D.
(Massachusetts Institute of Technology)
Professor, Economics

HAMMER, JACOB, D.SC.
(Israel Institute of Technology)
Professor, Electrical and Computer Engineering

HAMMER, JOACHIM, PH.D.
(University of Southern California)
Associate Professor, Computer and Information Science and Engineering

HANDFIELD, MARTIN, PH.D.
(Laval University)
Assistant Professor, Dentistry

HANDLER, ALFRED M., PH.D.
(University of Oregon)
Assistant Professor, Entomology and Nematology

HANES, DANIEL M., PH.D.
(University of California at San Diego)
Professor, Civil and Coastal Engineering

HANLON, EDWARD A., PH.D.
(Oklahoma State University)
Professor, Soil and Water Science

HANNAH, LARKIN C., PH.D.
(University of Wisconsin)
Professor, Horticultural Science

HANRAHAN, ROBERT J., PH.D.
(University of Wisconsin)
Professor, Chemistry

HANSEN, CARL A., D.D.S.
(Northwestern University)
Associate Professor, Dentistry

HANSEN, PETER J., PH.D.
(University of Wisconsin)
Professor, Animal Sciences

HANSON, ANDREW D., PH.D.
(Queen Elizabeth College of London)
Eminent Scholar, Plant Molecular and Cellular Biology

HANSON, CAROLYN S., PH.D.
(University of Florida)
Lecturer, Occupational Therapy

HANSON, STEPHANIE L., PH.D.
(Vanderbilt University)
Clinical Associate Professor, Public Health

HARBAUGH, BRENT K., PH.D.
(Kansas State University)
Professor, Horticultural Science

HARDMAN, MARTHA J., PH.D.
(Stanford University)
Professor, Anthropology

HARFE, BRIAN D., PH.D.
(Johns Hopkins University)
Assistant Professor, Molecular Genetics and Microbiology

HARGRAVE, PAUL A., PH.D.
(University of Minnesota)
Eminent Scholar, Biochemistry and Molecular Biology

HARLAND-JACOBS, JESSICA L., PH.D.
(Duke University)
Assistant Professor, History

HARMAN, JEFFREY S., PH.D.
(University of Minnesota)
Assistant Professor, Health Services Research, Management and Policy

HARMON, ALICE C., PH.D.
(University of Georgia)
Professor, Botany

HARMON, PHILLIP, PH.D.
(Purdue University)
Assistant Professor, Plant Pathology

HARMS, ROBERT H., PH.D.
(Texas A&M University)
Graduate Research Professor, Veterinary Medicine

HARPER, CANDACE, PH.D.
(Florida State University)
Assistant Professor, Teaching and Learning

HARPOLD, TERRY A., PH.D.
(University of Pennsylvania)
Assistant Professor, English

HARR, KENDAL ELIZABETH., M.S.
(University of Florida)
Clinical Assistant Professor, Veterinary Medicine

HARRIS, DEBRA D., PH.D.
(Texas A&M University)
Assistant Professor, Interior Design

HARRIS, JOHN G., PH.D.
(California Institute of Technology)
Associate Professor, Electrical and Computer Engineering

HARRIS, WILLIE G., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Soil and Water Science

HARRISON, JEFFREY L., J.D.
(University of North Carolina)
Professor, Comparative Law

HARRISON, JEFFREY K., PH.D.
(University of Michigan)
Associate Professor, Pharmacology and Therapeutics

HARRISON, NIGEL A., PH.D.
(University of Rhode Island)
Associate Professor, Plant Pathology

HARRISON, WILLARD W., PH.D.
(University of Illinois)
Professor, Chemistry

HART, MITCHELL B., PH.D.
(University of California)
Associate Professor, History

HARTIGAN, KARELISA V., PH.D.
(University of Chicago)
Professor, Classics

HARTMAN, KATHLEEN, PH.D.
(Virginia-Maryland Regional College of Veterinary Medicine)
Assistant Professor, Fisheries and Aquatic Sciences

HARTZEMA, ABRAHAM G., PH.D.
(University of Minnesota)
Eminent Scholar, Pharmacy Health Care Administration

HARVEY, JOHN W., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

HASELL, MARY J., D.ARCH.
(University of Michigan)
Professor, Interior Design

HASKELL-LUEVANO, CARRIE, PH.D.
(University of Arizona)
Associate Professor, Medicinal Chemistry

HASTY, WILLARD R., PH.D.
(University of California at Berkeley)
Professor, Germanic and Slavic Studies

HATAV, GALIA, PH.D.
(Tel Aviv University)
Associate Professor, Linguistics

HATCH, MARGUERITE, PH.D.
(Trinity College)
Associate Professor, Pathology, Immunology and Laboratory Medicine

HATCH, ROBERT A., PH.D.
(University of Wisconsin)
Associate Professor, History

HATFIELD, KIRK, PH.D.
(University of Massachusetts)
Associate Professor, Civil and Coastal Engineering

HAUSENBLAS, HEATHER A., PH.D.
(University of Western Ontario)
Assistant Professor, Applied Physiology and Kinesiology

HAUSER, BERNARD A., PH.D.
(University of Georgia)
Assistant Professor, Botany

HAUSWIRTH, WILLIAM W., PH.D.
(Oregon State University)
Eminent Scholar, Molecular Genetics and Microbiology

HAWKINS, IRVIN F., M.D.
(University of Maryland)
Professor, Radiology

HAYDU, JOHN J., PH.D.
(Michigan State University)
Professor, Food and Resource Economics

HAYES, RONALD L., PH.D.
(Virginia Commonwealth University)
Professor, Neuroscience

HAYNES, RICHARD P., PH.D.
(University of Illinois)
Associate Professor, Philosophy

HAYS, CLIFFORD O., PH.D.
(University of Texas at Austin)
Professor, Civil and Coastal Engineering

HAYWARD, LINDA F., PH.D.
(Northwestern University)
Associate Professor, Veterinary Medicine

HE, ZHENLI, PH.D.
(Zhejiang University)
Assistant Professor, Soil and Water Science

HEAD, H. HERBERT, PH.D.
(University of Maryland)
Professor, Animal Sciences

HEANEY, JAMES, PH.D.
(Northwestern University)
Professor, Environmental Engineering Sciences

HEARD, DARRYL J., PH.D.
(University of Florida)
Associate Professor, Veterinary Medicine

HEARN, DONALD W., PH.D.
(Johns Hopkins University)
Professor, Industrial and Systems Engineering

HEATON, MARIETA B., PH.D.
(North Carolina State University)
Professor, Neuroscience

HEATON, SHELLEY C., PH.D.
(University of California at San Diego)
Assistant Professor, Clinical and Health Psychology

HEBARD, ARTHUR F., PH.D.
(Stanford University)
Professor, Physics

HECKENBERGER, MICHAEL J., PH.D.
(University of Pittsburgh)
Assistant Professor, Anthropology

HEDGE, DAVID M., PH.D.
(University of Wisconsin at Milwaukee)
Professor, Political Science

HEDRICK, TACE M., PH.D.
(University of Iowa)
Associate Professor, English

HEESACKER, MARTIN, PH.D.
(University of Missouri)
Professor, Psychology

HEFT, MARC W., PH.D.
(American University)
Professor, Clinical and Health Psychology

HEGEMAN, SUSAN E., PH.D.
(Duke University)
Associate Professor, English

HEGGESTAD, ARNOLD A., PH.D.
(Michigan State University)
Professor, Finance, Insurance and Real Estate

HEILMAN, KENNETH M., M.D.
(University of Virginia)
Distinguished Professor, Clinical and Health Psychology

HEIPP, RICHARD C., M.F.A.
(University of Washington)
Professor, Art and Art History

HELAL, ABDELSALAM A., PH.D.
(Purdue University)
Professor, Computer and Information Science and Engineering

HELLING, JOHN F., PH.D.
(Ohio State University)
Professor, Chemistry

HELTON, JONATHAN A., D.M.A.
(Northwestern University)
Associate Professor, Music

HEMBRY, FOSTER G., PH.D.
(University of Missouri)
Professor, Animal Sciences

HEMP, GENE W., PH.D.
(University of Minnesota)
Professor, Mechanical and Aerospace Engineering

HENDELES, LESLIE, PHARM.D.
(University of Southern California)
Professor, Pharmacy

HENDERSON, LALITHA P., PH.D.
(University of Victoria)
Associate, Communication Sciences and Disorders

HENLEY, RICHARD W., PH.D.
(Ohio State University)
Professor, Horticultural Science

HENNY, RICHARD J., PH.D.
(University of Minnesota)
Professor, Horticultural Science

HENRETTA, JOHN C., PH.D.
(Harvard University)
Professor, Sociology

HEPLER, CHARLES D., PH.D.
(University of Iowa)
Distinguished Professor, Pharmacy Health Care Administration

HEPPNER, JOHN B., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

HERBSMAN, ZOHAR, D.SC.
(Israel Institute of Technology)
Professor, Civil and Coastal Engineering

HERKOV, MICHAEL J., PH.D.
(Auburn University)
Associate Professor, Counselor Education

HERNANDEZ, JORGE A., PH.D.
(Colorado State University)
Associate Professor, Veterinary Medicine

HERNANDEZ-TRUYOL, BERTA E., LL.M.
(New York University)
Professor, Comparative Law

HERRING, WILLIAM O., PH.D.
(University of Georgia)
Associate Professor, Veterinary Medicine

HERSHFIELD, SELMAN P., PH.D.
(Cornell University)
Professor, Physics

HERSOM, MATTHEW J., PH.D.
(Oklahoma State University)
Assistant Professor, Animal Sciences

HEWITT, TIMOTHY D., M.S.
(University of Tennessee)
Professor, Food and Resource Economics

HIEBERT, ERNEST, PH.D.
(Purdue University)
Professor, Plant Pathology

HIEBSCH, CLIFTON K., PH.D.
(North Carolina State University)
Associate Professor, Agronomy

HIERS, RICHARD H., PH.D.
(Yale University)
Professor, Religion

HILDEBRAND, PETER E., PH.D.
(Michigan State University)
Professor, Food and Resource Economics

HILL, JAMES A., M.D.
(University of Maryland)
Professor, Pharmacology and Therapeutics

HILL, ORRY W., M.A.ARCH.
(University of Florida)
Associate Professor, Architecture

HILL, RICHARD C., PH.D.
(University of Florida)
Associate Professor, Veterinary Medicine

HILL, STEPHEN O., PH.D.
(Oxford University)
Assistant Professor, Physics

HILL-LUBIN, MILDRED A., PH.D.
(University of Illinois)
Associate Professor, English

HILLMAN, JEFFREY D., PH.D.
(Harvard University)
Professor, Oral Biology

HILTUNEN, DENNIS R., PH.D.
(University of Michigan)
Associate Professor, Civil and Coastal Engineering

HINES, MAUDE E., PH.D.
(Duke University)
Assistant Professor, English

HINTENLANG, DAVID E., PH.D.
(Brown University)
Associate Professor, Nuclear and Radiological Engineering

HINZE, JIMMIE W., PH.D.
(Stanford University)
Professor, Building Construction

HIRATA, SO, PH.D.
(The Graduate University for Advanced Studies, Okazaki, Japan)
Assistant Professor, Chemistry

HIRSCHFELD, PETER J., PH.D.
(Princeton University)
Professor, Physics

HO, CHAT-YIN, PH.D.
(University of Chicago)
Professor, Mathematics

HO, JEFFREY, PH.D.
(University of Illinois)
Assistant Professor, Computer and Information Science and Engineering

HO, TING-JUI, PH.D.
(Indiana University)
Associate Professor, Anthropology

HOBERT, JAMES P., PH.D.
(Cornell University)
Associate Professor, Statistics

HOCHHAUS, GUENTHER, PH.D.
(University of Munster)
Professor, Pharmaceutics

HOCHMAN, LEAH, PH.D.
(Boston University)
Assistant Professor, Religion

HOCHMUTH, GEORGE J., PH.D.
(University of Wisconsin)
Professor, Horticultural Science

HOCHWALD, STEVEN N., M.D.
(New York University)
Assistant Professor, Molecular Genetics and Microbiology

HODELL, DAVID A., PH.D.
(University of Rhode Island)
Professor, Geological Sciences

HODGES, GREG S., PH.D.
(University of Georgia)
Assistant Professor, Entomology and Nematology

HOFER, ADELINE, M.ARCH.
(University of Florida)
Associate Professor, Architecture

HOFFER, CHARLES R., PH.D.
(Michigan State University)
Professor, Music

HOFFMANN, EDWARD M., PH.D.
(University of Miami)
Professor, Microbiology and Cell Science

HOFLUND, GAR B., PH.D.
(University of California at Berkeley)
Professor, Chemical Engineering

HOFMANN, MICHAEL, B.A.
(Magdalene College)
Lecturer, English

HOGSETTE, JEROME A., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

HOIT, MARC I., PH.D.
(University of California at Berkeley)
Professor, Civil and Coastal Engineering

HOLLAND, NORMAN N., PH.D.
(Harvard University)
Eminent Scholar, English

HOLLAND, STEPHEN, PH.D.
(Texas A&M University)
Associate Professor, Tourism, Recreation and Sport Management

HOLLIDAY, LEXIE S., PH.D.
(Florida State University)
Assistant Professor, Anatomy and Cell Biology

HOLLINGER, RICHARD C., PH.D.
(University of Minnesota)
Professor, Sociology

HOLLINGER, THOMAS G., PH.D.
(Purdue University)
Associate Professor, Anatomy and Cell Biology

HOLLOWAY, PAUL H., PH.D.
(Rensselaer Polytechnic Institute)
Distinguished Professor, Materials Science and Engineering

HOLMES, ALICE E., PH.D.
(Pennsylvania State University)
Professor, Communicative Disorders

HOLT, ROBERT D., PH.D.
(Harvard University)
Eminent Scholar, Zoology

HOMAN, SIDNEY R. JR., PH.D.
(Harvard University)
Professor, English

HOMER, BRUCE L., PH.D.
(Texas A&M University)
Professor, Veterinary Medicine

HON, LINDA L., PH.D.
(University of Maryland)
Associate Professor, Journalism and Communications

HONEYMAN, DAVID S., PH.D.
(University of Virginia)
Professor, Educational Leadership, Policy and Foundations

HONEYMAN, JANICE C., PH.D.
(Kansas State University)
Associate Professor, Computer and Information Science and Engineering

HOPKINS, DONALD L., PH.D.
(University of Kentucky)
Professor, Plant Pathology

HORENSTEIN, NICOLE A., PH.D.
(Columbia University)
Associate Professor, Chemistry

HORGAS, ANN L., PH.D.
(Pennsylvania State University)
Associate Professor, Nursing

HORNE, CLAYDELL H., PH.D.
(University of Florida)
Associate Professor, Nursing

HORODYSKI, MARYBETH, PH.D.
(Columbia University)
Associate Professor, Physical Therapy

HORTON-STALLINGS, LAMONDA, PH.D.
(Michigan State University)
Assistant Professor, English

HOSTETLER, MARK E., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

HOUSE, LISA O., PH.D.
(Kansas State University)
Associate Professor, Food and Resource Economics

HOUSER, TERRY, PH.D.
(Iowa State University)
Assistant Professor, Animal Sciences

HOUSTON, JOEL F., PH.D.
(University of Pennsylvania)
Professor, Finance, Insurance and Real Estate

HOWARD, FORREST W., PH.D.
(Louisiana State University)
Associate Professor, Entomology and Nematology

HOWARD-HAMILTON, MARY E., ED.D.
(North Carolina State University)
Associate Professor, Educational Leadership, Policy and Foundations

HOWIESON, MARK D., M.F.A.
(Carnegie Mellon University)
Assistant Professor, Theatre and Dance

HOWLAND, DENA R., PH.D.
(Medical College of Pennsylvania)
Assistant Professor, Neuroscience

HOY, MARJORIE A., PH.D.
(University of California at Berkeley)
Eminent Scholar, Entomology and Nematology

HOZIC, AIDA A., PH.D.
(University of Virginia)
Assistant Professor, Political Science

HSU, CHEN-CHI, PH.D.
(University of Michigan)
Professor, Mechanical and Aerospace Engineering

HUBBARD, MICHAEL D., PH.D.
(Florida State University)
Associate Professor, Entomology and Nematology

HUBER, DONALD J., PH.D.
(Iowa State University)
Professor, Horticultural Science

HUBER, DUDLEY A., PH.D.
(University of Florida)
Associate, Forest Resources and Conservation

HUDLICKY, TOMAS, PH.D.
(Rice University)
Professor, Chemistry

HUDSON, DAVID M., LL.M.
(University of Florida)
Professor, Taxation

HUGHES, JEFFREY, PH.D.
(University of Kentucky)
Associate Professor, Pharmaceutics

HUMMEL, R. E., PH.D.
(Max Planck Institute)
Professor, Materials Science and Engineering

HUMPHREY, STEPHEN R., PH.D.
(Oklahoma State University)
Professor, Interdisciplinary Ecology

HUNGER, STEPHEN P., M.D.
(University of Connecticut)
Associate Professor, Molecular Genetics and Microbiology

HUNTER, JAMES H., PH.D.
(University of California at Los Angeles)
Professor, Astronomy

HURST, THOMAS R., J.D.
(Harvard University)
Professor, Comparative Law

HURT, JEFF A., PH.D.
(University of Kansas)
Associate Professor, Teaching and Learning

HUTCHINSON, CHAD M., PH.D.
(Purdue University)
Assistant Professor, Horticultural Science

HUTCHINSON, SALLY A., PH.D.
(University of Florida)
Professor, Nursing

HWANG, CONNIE M., PH.D.
(University of Washington)
Assistant Professor, Art and Art History

HYDE, MELISSA L., PH.D.
(University of California at Berkeley)
Assistant Professor, Art and Art History

HYDEN, GORAN S., PH.D.
(University of Lund)
Distinguished Professor, Political Science

HYNES, TERRY, PH.D.
(University of Wisconsin)
Professor, Journalism and Communications

I

IFJU, PETER, PH.D.
(Virginia Polytechnic Institute)
Associate Professor, Mechanical and Aerospace Engineering

IHAS, GARY G., PH.D.
(University of Michigan)
Professor, Physics

INDELICATO, PETER A., M.D.
(New York Medical College)
Professor, Applied Physiology and Kinesiology

INGERSENT, J. KEVIN, PH.D.
(University of Pennsylvania)
Professor, Physics

INGLEY, HERBERT A., PH.D.
(University of Florida)
Associate Professor, Mechanical and Aerospace Engineering

INGRAM, KEITH T., PH.D.
(University of Florida)
Assistant Research Scientist, Agricultural and Biological Engineering

INGRAM, LONNIE O., PH.D.
(University of Texas at Austin)
Distinguished Professor, Microbiology and Cell Science

IPSER, JAMES R., PH.D.
(California Institute of Technology)
Professor, Physics

IRANI, TRACY A., PH.D.
(University of Florida)
Assistant Professor, Agricultural Education and Communication

IRCHAI, ARNOLD, D.M.A.
(State Leningrad Conservatory)
Assistant Professor, Music

ISAACSON, MARCIA J., M.F.A.
(University of Georgia)
Professor, Art and Art History

ISAZA, RAMIRO, D.V.M.
(University of Florida)
Assistant Professor, Veterinary Medicine

ISENBERG, SHELDON R., PH.D.
(Harvard University)
Associate Professor, Religion

ISHOV, ALEXANDER M., PH.D.
(Russian Academy of Sciences)
Assistant Professor, Anatomy and Cell Biology

ISRAEL, GLENN D., PH.D.
(Pennsylvania State University)
Professor, Agricultural Education and Communication

ISRAEL, JEROLD H., LL.B.
(Yale University)
Rood Eminent Scholar, Comparative Law

ISSA, R. RAYMOND, PH.D.
(Mississippi State University)
Professor, Building Construction

IWATA, BRIAN, PH.D.
(Florida State University)
Professor, Psychology

IZUNO, FORREST T., PH.D.
(Colorado State University)
Professor, Agricultural and Biological Engineering

J

JACOBS, ALAN M., PH.D.
(Pennsylvania State University)
Professor, Nuclear and Radiological Engineering

JACOBS, JENNIFER M., PH.D.
(Cornell University)
Associate Professor, Civil and Coastal Engineering

JACOBS, MATTHEW, PH.D.
(University of North Carolina at Chapel Hill)
Assistant Professor, History

JACOBSON, ELLIOTT R., PH.D.
(University of Missouri)
Professor, Veterinary Medicine

JACOBSON, MICHAEL G., PH.D.
(North Carolina State University)
Assistant Professor, Forest Resources and Conservation

JACOBSON, SUSAN K., PH.D.
(Duke University)
Professor, Wildlife Ecology and Conservation

JACOBY, CHARLES A., PH.D.
(Stanford University)
Assistant Professor, Fisheries and Aquatic Sciences

JAEGER, JOHN M., PH.D.
(State University of New York at Stony Brook)
Assistant Professor, Geological Sciences

JAMES, CHRISTOPHER M., PH.D.
(University of Michigan)
William H. Dial/SunBank Eminent Scholar, Finance, Insurance and Real Estate

JAMES, DELORES C., PH.D.
(University of Florida)
Associate Professor, Health Education and Behavior

JAMES, MARGARET O., PH.D.
(University of London)
Professor, Medicinal Chemistry

JANELLE, CHRISTOPHER M., PH.D.
(University of Florida)
Associate Professor, Applied Physiology and Kinesiology

JANICKE, DAVID M., PH.D.
(Virginia Polytechnic Institute and State University)
Assistant Professor, Clinical and Health Psychology

JANISZEWSKI, CHRIS A., PH.D.
(Northwestern University)
Professor, Marketing

JANOWICH, RONALD J., M.F.A.
(Maryland Institute College of Art)
Assistant Professor, Art and Art History

JAVID, NIKZAD S., D.M.D.
(Ohio State University)
Professor, Dentistry

JAWITZ, JAMES W., PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

JENKINS, DAVID A., PH.D.
(University of Florida)
Associate Engineer, Mechanical and Aerospace Engineering

JENNINGS, ARTHUR C., D.M.A.
(University of Arizona)
Associate Professor, Music

JERMAINE, CHRISTOPHER, PH.D.
(Georgia Institute of Technology)
Assistant Professor, Computer and Information Science and Engineering

JESSUP, JAMES V., PH.D.
(University of Florida)
Associate Professor, Nursing

JIANG, JIN, D.D.S.
(West China University of Medical Science)
Assistant Professor, Dentistry

JIMENEZ, REYNALDO L., PH.D.
(University of Illinois)
Associate Professor, Romance Languages and Literatures

JIN, SHOUGUANG, PH.D.
(University of Washington)
Associate Professor, Molecular Genetics and Microbiology

JOHANSON, KERRY, PH.D.
(Brigham Young University)
Associate Engineer, Chemical Engineering

JOHNATTY, SHARON, PH.D.
(University of Texas)
Assistant Professor, Epidemiology and Health Policy

JOHNS, LEWIS E. JR., PH.D.
(Carnegie Mellon University)
Professor, Chemical Engineering

JOHNSON, BONNIE W., PH.D.
(University of Kansas)
Assistant Professor, Communication Sciences and Disorders

JOHNSON, CALVIN M., PH.D.
(North Carolina State University)
Associate Professor, Veterinary Medicine

JOHNSON, CHRISTOPHER E., PH.D.
(University of Minnesota)
Assistant Professor, Health Services Research, Management and Policy

JOHNSON, DALTON D., PH.D.
(Texas A&M University)
Professor, Animal Sciences

JOHNSON, EDWARD L., PH.D.
(University of Missouri)
Associate Professor, Animal Sciences

JOHNSON, FREDDIE A., PH.D.
(University of Florida)
Professor, Entomology and Nematology

JOHNSON, HOWARD M., PH.D.
(Ohio State University)
Graduate Research Professor, Microbiology and Cell Science

JOHNSON, JAMES H., PH.D.
(Northern Illinois University)
Professor, Clinical and Health Psychology

JOHNSON, JULIE A., PH.D.
(University of Texas at Austin)
Professor, Pharmacy

JOHNSON, RENEE J., PH.D.
(State University of New York at Stony Brook)
Assistant Professor, Political Science

JOHNSON, RICHARD D., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

JOHNSON, RICHARD J., M.D.
(University of Minnesota)
Professor, Physiology and Functional Genomics

JOHNSON, SALLY, PH.D.
(University of Arizona)
Assistant Professor, Animal Sciences

JOHNSON, STEVE A., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

JOHNSON, SUZANNE B., PH.D.
(State University of New York at Stony Brook)
Professor, Clinical and Health Psychology

JOHNSON, TIMOTHY S., PH.D.
(University of Illinois)
Associate Professor, Classics

JOHNSTON, OTTO W., PH.D.
(Princeton University)
Professor, Germanic and Slavic Studies

JOKELA, ERIC J., PH.D.
(State University of New York)
Professor, Forest Resources and Conservation

JONES, ANNE G., PH.D.
(University of North Carolina at Chapel Hill)
Associate Professor, English

JONES, DAVID A., D.PHIL.
(University of Oxford)
Professor, Botany

JONES, DOUGLAS S., PH.D.
(Princeton University)
Professor, Geological Sciences

JONES, HAZEL C., PH.D.
(University of Hull)
Research Professor, Pharmacology and Therapeutics

JONES, HAZEL A., PH.D.
(Peabody College of Vanderbilt University)
Associate Professor, Special Education

JONES, JAMES W., PH.D.
(North Carolina State University)
Distinguished Professor, Agricultural and Biological Engineering

JONES, JEFFREY B., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Plant Pathology

JONES, KEVIN S., PH.D.
(University of California at Berkeley)
Professor, Materials Science and Engineering

JONES, LINDA C., PH.D.
(University of Georgia)
Associate Professor, Teaching and Learning

JONES, PIERCE H., PH.D.
(University of Florida)
Professor, Agricultural and Biological Engineering

JORDAN, JONATHAN D., PH.D.
(University of Florida)
Assistant Scientist, Agricultural and Biological Engineering

JORDAN, JOY C., ED.D.
(Mississippi State University)
Associate Professor, Family, Youth and Community Sciences

JOSE, SHIBU, PH.D.
(Purdue University)
Associate Professor, Forest Resources and Conservation

JOYCE, JOSEPH C., PH.D.
(University of Florida)
Professor, Agronomy

JUBIEN, MICHAEL, PH.D.
(Rockefeller University)
Professor, Philosophy

JUDD, WALTER S., PH.D.
(Harvard University)
Professor, Botany

JUDGE, JASMEET, PH.D.
(University of Michigan)
Assistant Professor, Agricultural and Biological Engineering

JUDGE, TIMOTHY A., PH.D.
(University of Illinois at Urbana-Champaign)
Eminent Scholar, Management

JULIAN, DAVID, PH.D.
(University of California at San Francisco)
Assistant Professor, Zoology

K

KAAN, EDITH, PH.D.
(University of Groningen)
Assistant Professor, Linguistics

KAHVECI, TAMER, PH.D.
(University of California at Santa Barbara)
Assistant Professor, Computer and Information Science and Engineering

KAID, LYNDA L., PH.D.
(Southern Illinois University)
Professor, Journalism and Communications

KAINER, KAREN A., PH.D.
(University of Florida)
Assistant Professor, Forest Resources and Conservation

KAIRO, MOSES T., PH.D.
(University of London, Imperial College)
Professor, Entomology and Nematology

KALMBACHER, ROBERT S., PH.D.
(Pennsylvania State University)
Professor, Agronomy

KALRA, PUSHPA S., PH.D.
(University of Delhi)
Professor, Physiology and Functional Genomics

KALRA, SATYA P., PH.D.
(University of Delhi)
Professor, Neuroscience

KAMMEYER-MUELLER, JOHN D., PH.D.
(University of Minnesota)
Assistant Professor, Management

KANDRUP, HENRY E., PH.D.
(University of Chicago)
Professor, Astronomy

KANE, ABDOULAYE, PH.D.
(University of Amsterdam)
Assistant Professor, Anthropology

KANE, MICHAEL E., PH.D.
(University of Rhode Island)
Professor, Horticultural Science

KANTOWSKI, ELENORE L., ED.D.
(University of Georgia)
Professor, Teaching and Learning

KAO, KUO-JANG, PH.D.
(Duke University)
Professor, Pathology, Immunology and Laboratory Medicine

KAPLAN, BRUCE, M.D.
(Columbia University)
Eminent Scholar, Pharmacology and Therapeutics

KAPLAN, JOHN, M.S.
(Ohio University)
Associate Professor, Journalism and Communications

KAPPARIS, KONSTANTIN, PH.D.
(University of Glasgow)
Associate Professor, Classics

KARCESKI, JASON J., PH.D.
(University of Illinois)
Assistant Professor, Finance, Insurance and Real Estate

KARLIN, JASON G., PH.D.
(University of Illinois at Urbana-Champaign)
Assistant Professor, History

KARNEY, BENJAMIN R., PH.D.
(University of California at Los Angeles)
Associate Professor, Psychology

KARPINIA, KATHERINE A., D.M.D.
(University of Florida)
Associate Professor, Dentistry

KASAHARA, HIDEKO, PH.D.
(Nagoya University)
Assistant Professor, Physiology and Functional Genomics

KATOVICH, MICHAEL J., PH.D.
(University of California at Davis)
Professor, Pharmacodynamics

KATRITZKY, ALAN R., PH.D.
(University of Cambridge)
Kenan Professor, Chemistry

KATZ, JOSEPH, D.M.D.
(Hebrew University)
Professor, Dentistry

KAUFMAN, DANIEL, PH.D.
(University of Massachusetts)
Assistant Professor, Philosophy

KAUFMAN, MICHAEL J., PH.D.
(University of Illinois at Urbana-Champaign)
Professor, Materials Science and Engineering

KAUSHAL, SHALESH, PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Molecular Genetics and Microbiology

KAUTZ, STEVEN A., PH.D.
(University of California)
Associate Professor, Physical Therapy

KAUWELL, GAIL P., PH.D.
(University of Florida)
Professor, Food Science and Human Nutrition

KAYE, STANLEY, M.F.A.
(University of Hawaii at Manoa)
Associate Professor, Theatre and Dance

KEATING, KEVIN, PH.D.
(Harvard University)
Associate Professor, Mathematics

KEEGAN, WILLIAM F., PH.D.
(University of California at Los Angeles)
Professor, Anthropology

KEENER, BARBARA, ED.D.
(University of Florida)
Lecturer, Educational Leadership, Policy and Foundations

KEESLING, JAMES E., PH.D.
(University of Miami)
Professor, Mathematics

KEHOE, THOMAS J., PH.D.
(Queen Mary University of London)
Assistant Scientist, Astronomy

KELLER-WOOD, MAUREEN, PH.D.
(University of California at San Francisco)
Professor, Pharmacodynamics

KELLY, KATHLEEN S., PH.D.
(University of Maryland)
Professor, Journalism and Communications

KELSO, WILLIAM A., PH.D.
(University of Wisconsin)
Associate Professor, Political Science

KEM, WILLIAM R., PH.D.
(University of Illinois)
Professor, Pharmacology and Therapeutics

KEMKER, FRANCIS J., PH.D.
(University of Denver)
Professor, Communicative Disorders

KEMP, HAROLD W., M.S.
(University of Illinois)
Professor, Architecture

KEMPLE, KRISTEN M., PH.D.
(University of Texas)
Associate Professor, Teaching and Learning

KENDALL, DIANE L., PH.D.
(University of Pittsburgh)
Assistant Professor, Communication Sciences and Disorders

KENNEDY, ANDREW B., PH.D.
(Monash University)
Assistant Professor, Civil and Coastal Engineering

KENNY, LAWRENCE W., PH.D.
(University of Chicago)
Professor, Economics

KENT, KURT E., PH.D.
(University of Minnesota)
Professor, Journalism and Communications

KENWORTHY, KEVIN E., PH.D.
(Oklahoma State University)
Assistant Professor, Agronomy

KEPNER, JAMES L., PH.D.
(University of Iowa)
Associate Professor, Statistics

KEPNER, KARL W., PH.D.
(Ohio State University)
Distinguished Service Professor, Food and Resource Economics

KERKHOFF, THOMAS R., PH.D.
(Virginia Commonwealth University)
Clinical Associate Professor, Clinical and Health Psychology

KERN, WILLIAM H., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

KERSHNER, R. B., PH.D.
(Stanford University)
Professor, English

KESLING, WILL, D.M.A.
(University of Oklahoma)
Professor, Music

KESSLER, GWYNN L., PH.D.
(Jewish Theological Seminary of America)
Assistant Professor, Religion

KEYHANI, NEMATOLAH, PH.D.
(Johns Hopkins University)
Assistant Professor, Microbiology and Cell Science

KHAN, SAEED R., PH.D.
(University of Florida)
Professor, Pathology, Immunology and Laboratory Medicine

KHOURY, AMAL J., PH.D.
(Johns Hopkins University)
Assistant Professor, Health Services Research, Management and Policy

KHURI, ANDRE I., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Statistics

KIBERT, CHARLES J., PH.D.
(University of South Florida)
Professor, Building Construction

KIDD, KENNETH B., PH.D.
(University of Texas at Austin)
Associate Professor, English

KIKER, CLYDE F., PH.D.
(University of Florida)
Professor, Food and Resource Economics

KILBERG, MICHAEL S., PH.D.
(University of South Dakota)
Professor, Biochemistry and Molecular Biology

KILMER, RICHARD L., PH.D.
(Ohio State University)
Professor, Food and Resource Economics

KILTIE, RICHARD A., PH.D.
(Princeton University)
Associate Professor, Zoology

KIM, NAM HO, PH.D.
(University of Iowa)
Assistant Professor, Mechanical and Aerospace Engineering

KIM, SIYONG, PH.D.
(University of Florida)
Assistant Professor, Radiology

KIMA, PETER E., PH.D.
(Hahnemann University)
Assistant Professor, Microbiology and Cell Science

KIMBALL, REBECCA T., PH.D.
(University of New Mexico)
Assistant Professor, Zoology

KIMBERLIN, CAROLE L., PH.D.
(University of Nebraska)
Professor, Pharmacy Health Care Administration

KIMBROUGH, JAMES W., PH.D.
(Cornell University)
Professor, Plant Pathology

KING, DEBRA W., PH.D.
(Emory University)
Associate Professor, English

KING, F. W., PH.D.
(University of Miami)
Professor, Zoology

KING, JANINE, M.I.ARCH.
(University of Oregon)
Associate Professor, Interior Design

KING, JONATHAN L., PH.D.
(Stanford University)
Associate Professor, Mathematics

KING, MICHAEL A., PH.D.
(University of Florida)
Associate Scientist, Neuroscience

KIOUSIS, SPIRO K., PH.D.
(University of Texas at Austin)
Assistant Professor, Journalism and Communications

KIRMSE, DALE W., PH.D.
(Iowa State University)
Associate Professor, Chemical Engineering

KISTLER, MARK J., PH.D.
(Texas A&M University)
Assistant Professor, Agricultural Education and Communication

KITAJIMA, KAORU, PH.D.
(University of Illinois)
Associate Professor, Botany

KITCHENS, WILEY M., PH.D.
(North Carolina State University)
Professor, Wildlife Ecology and Conservation

KLASSEN, WALDEMAR, PH.D.
(University of Western Ontario)
Professor, Entomology and Nematology

KLAUDER, JOHN R., PH.D.
(Princeton University)
Professor, Physics

KLAUSNER, JAMES F., PH.D.
(University of Illinois)
Professor, Mechanical and Aerospace Engineering

KLEE, HARRY J., PH.D.
(University of Massachusetts)
Eminent Scholar, Horticultural Science

KLEIMAN, VALERIA D., PH.D.
(University of Illinois at Chicago)
Assistant Professor, Chemistry

KLEIN, PAUL A., PH.D.
(University of Florida)
Professor, Pathology, Immunology and Laboratory Medicine

KLIGERMAN, ERIC M., PH.D.
(University of Michigan)
Assistant Professor, Germanic and Slavic Studies

KLINE, DANIEL L., PH.D.
(North Carolina State University)
Assistant Professor, Entomology and Nematology

KLOCK, KIMBERLY A., PH.D.
(Iowa State University)
Associate Professor, Horticultural Science

KNECHEL, W. ROBERT, PH.D.
(University of North Carolina)
Ernst Young Professor, Accounting

KNEIPP, SHAWN M., PH.D.
(University of Washington)
Assistant Professor, Nursing

KNOT, HARM J., PH.D.
(University of Basel)
Assistant Professor, Pharmacology and Therapeutics

KNOX, GARY W., PH.D.
(Purdue University)
Professor, Horticultural Science

KNUTSON, MITCHELL D., PH.D.
(University of California at Berkeley)
Assistant Professor, Food Science and Human Nutrition

KOCH, KAREN E., PH.D.
(University of Iowa)
Professor, Horticultural Science

KOEHLER, GARY J., PH.D.
(Purdue University)
John B. Higdon Eminent Scholar, Decision and Information Sciences

KOEHLER, PHILIP G., PH.D.
(Cornell University)
Sapp Endowed Professor, Entomology and Nematology

KOHEN, MARTHA E., DIP.ARCH.
(University of Cambridge)
Professor, Architecture

KOHN, MARGARET L., PH.D.
(Cornell University)
Assistant Professor, Political Science

KOLLIAS-BAKER, CYNTHIA, PH.D.
(University of Florida)
Associate Professor, Veterinary Medicine

KONIGSBERG, JACOBO, PH.D.
(University of California)
Associate Scientist, Physics

KOONCE, PAUL C., PH.D.
(University of California at San Diego)
Associate Professor, Music

KOOPMAN, BEN L., PH.D.
(University of California)
Professor, Environmental Engineering Sciences

KOPELEVICH, DMITRY I., PH.D.
(University of Notre Dame)
Assistant Professor, Chemical Engineering

KORAN, MARY L., PH.D.
(Stanford University)
Professor, Educational Psychology

KORNBERG, LORI J., PH.D.
(Medical College of Virginia)
Assistant Professor, Microbiology and Cell Science

KORNER, BARBARA O., PH.D.
(Ohio University)
Professor, Theatre and Dance

KORO-LJUNGBERG, MIRKA E., PH.D.
(University of Helsinki)
Assistant Professor, Educational Psychology

KOROLY, MARY J., PH.D.
(Bryn Mawr College)
Associate Scientist, Biochemistry and Molecular Biology

KOROPECKYJ-COX, TANYA, PH.D.
(University of Pennsylvania)
Assistant Professor, Sociology

KORYTOV, ANDREY, PH.D.
(Joint Institute for Nuclear Research, Russia)
Associate Professor, Physics

KOSTEWICZ, STEPHEN R., PH.D.
(Ohio State University)
Associate Professor, Horticultural Science

KOZAROV, EMIL V., PH.D.
(Russian Academy of Sciences)
Associate Professor, Dentistry

KRAFT, JOHN, PH.D.
(University of Pittsburgh)
Professor, Finance, Insurance and Real Estate

KRAMER, JOHN L., PH.D.
(University of Michigan)
Arthur Andersen Professor, Accounting

KRAMER, SANDRA S., PH.D.
(University of Texas at Austin)
Associate Professor, Accounting

KRANZLER, JOHN H., PH.D.
(University of California at Berkeley)
Professor, Educational Psychology

KRAUSE, JEFFREY L., PH.D.
(University of Chicago)
Associate Professor, Chemistry

KREPPEL, AMIE D., PH.D.
(University of California at Los Angeles)
Associate Professor, Political Science

KRICOS, PATRICIA B., PH.D.
(Ohio State University)
Professor, Communication Sciences and Disorders

KRIGBAUM, JOHN S., PH.D.
(New York University)
Assistant Professor, Anthropology

KRISTINSSON, HORDUR G., PH.D.
(University of Massachusetts)
Assistant Professor, Food Science and Human Nutrition

KROEN, SHERYL T., PH.D.
(University of California at Berkeley)
Associate Professor, History

KROKHMAL, PAVLO A., PH.D.
(University of Florida)
Assistant Professor, Industrial and Systems Engineering

KROUSE, HELENE J., PH.D.
(Boston College)
Associate Professor, Nursing

KRUEGER, CHARLENE, PH.D.
(University of North Carolina at Chapel Hill)
Assistant Professor, Nursing

KRYLIOUK, OLGA, PH.D.
(Moscow State University)
Research Associate Professor, Chemical Engineering

KUCHAREK, THOMAS A., PH.D.
(University of Minnesota)
Professor, Plant Pathology

KUENSTLE, MICHAEL W., M.ARCH.
(Columbia University)
Associate Professor, Architecture

KUMAR, AMITAVA, PH.D.
(Syracuse University)
Associate Professor, English

KUMAR, ASHOK V., PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Mechanical and Aerospace Engineering

KUMAR, PRADEEP P., PH.D.
(University of California at San Diego)
Professor, Physics

KUNKLE, GAIL A., D.V.M.
(Ohio State University)
Professor, Veterinary Medicine

KUNZ, THOMAS H., PH.D.
(University of Kansas)
Professor, Wildlife Ecology and Conservation

KURDILA, ANDREW, PH.D.
(Georgia Institute of Technology)
Professor, Mechanical and Aerospace Engineering

KURTZ, JAMES L., M.S.
(University of California at Los Angeles)
Engineer, Electrical and Computer Engineering

KURZWEG, ULRICH H., PH.D.
(Princeton University)
Professor, Mechanical and Aerospace Engineering

KUSHNER, DAVID Z., PH.D.
(University of Michigan)
Professor, Music

KUTUZOVA, MARIA, PH.D.
(Moscow State University)
Assistant Professor, Mathematics

KWOLEK-FOLLAND, ANGEL, PH.D.
(University of Minnesota)
Professor, History

L

LA GRECA, ANTHONY J., PH.D.
(Ohio State University)
Professor, Sociology

LABISKY, RONALD F., PH.D.
(University of Wisconsin)
Professor, Wildlife Ecology and Conservation

LACEY, RODNEY O., PH.D.
(Northwestern University)
Assistant Professor, Management

LADA, ELIZABETH A., PH.D.
(University of Texas at Austin)
Professor, Astronomy

LADD, ANTHONY J., PH.D.
(University of Cambridge)
Professor, Chemical Engineering

LADEWIG, HOWARD W., PH.D.
(North Carolina State University)
Professor, Agricultural Education and Communication

LAI, GUOLONG, PH.D.
(University of California at Los Angeles)
Assistant Professor, Art and Art History

LAIPIS, PHILIP J., PH.D.
(Stanford University)
Professor, Biochemistry and Molecular Biology

LAM, HERMAN, PH.D.
(University of Florida)
Associate Professor, Electrical and Computer Engineering

LAMB, ELIZABETH E., PH.D.
(University of Minnesota)
Lecturer, Horticultural Science

LAMME, ARY J., PH.D.
(Syracuse University)
Associate Professor, Geography

LAMME, LINDA L., PH.D.
(Syracuse University)
Professor, Teaching and Learning

LAMME, MARGOT O., PH.D.
(University of Alabama)
Assistant Professor, Journalism and Communications

LAMONT, RICHARD J., PH.D.
(University of Aberdeen)
Professor, Oral Biology

LAMPOTANG, SAMSUN, PH.D.
(University of Florida)
Associate Professor, Electrical and Computer Engineering

LANCIANI, CARMINE A., PH.D.
(Cornell University)
Professor, Zoology

LANE, HOLLY B., PH.D.
(University of Florida)
Assistant Professor, Special Education

LANE, JODI S., PH.D.
(University of California at Irvine)
Assistant Professor, Sociology

LANG, PETER J., PH.D.
(State University of New York at Buffalo)
Graduate Research Professor, Clinical and Health Psychology

LANGELAND, KENNETH A., PH.D.
(University of Florida)
Professor, Agronomy

LANGEVIN, PAUL B., M.D.
(University of Missouri)
Professor, Pharmacodynamics

LANGKAMP-HENKEN, BOBBI, PH.D.
(University of Tennessee at Memphis)
Associate Professor, Food Science and Human Nutrition

LANGLAND, ELIZABETH, PH.D.
(University of Chicago)
Professor, English

LANGWICK, STACEY A., PH.D.
(University of North Carolina at Chapel Hill)
Assistant Professor, Anthropology

LANZA-KADUCE, LONN M., PH.D.
(University of Iowa)
Professor, Sociology

LARKIN, SHERRY L., PH.D.
(Oregon State University)
Assistant Professor, Food and Resource Economics

LARSEN, KRISTIN E., PH.D.
(Cornell University)
Assistant Professor, Urban and Regional Planning

LARSON, JEAN A., PH.D.
(Dartmouth College)
Professor, Mathematics

LATCHMAN, HANIPH A., PH.D.
(University of Oxford)
Professor, Electrical and Computer Engineering

LATHROPE, DANIEL J., LL.M.
(New York University)
Professor, Taxation

LAW, BRIAN K., PH.D.
(Purdue University)
Assistant Professor, Pharmacology and Therapeutics

LAW, MARK E., PH.D.
(Stanford University)
Professor, Electrical and Computer Engineering

LAW, MARY, PH.D.
(Purdue University)
Research Assistant Professor, Pharmacology and Therapeutics

LAWPHONGPANICH, SIRIPHONG, PH.D.
(University of Florida)
Associate Professor, Industrial and Systems Engineering

LAWRENCE, PAULINE O., PH.D.
(University of Florida)
Professor, Entomology and Nematology

LEACOCK, ROBERT J., PH.D.
(University of Florida)
Associate Professor, Astronomy

LEAR, WILLIAM E., PH.D.
(Stanford University)
Associate Professor, Mechanical and Aerospace Engineering

LEARY, JAMES D., PH.D.
(Iowa State University)
Lecturer, Agricultural and Biological Engineering

LEAVEY, JOHN P., PH.D.
(Emory University)
Professor, English

LEAVITT, DAVID A., PH.D.
(Yale University)
Professor, English

LEBO, GEORGE R., PH.D.
(University of Florida)
Associate Professor, Astronomy

LEBOEUF, ROBYN A., PH.D.
(Princeton University)
Assistant Professor, Marketing

LEE, DONNA J., PH.D.
(University of California at Davis)
Associate Professor, Food and Resource Economics

LEE, JONG-YING, PH.D.
(University of Florida)
Professor, Food and Resource Economics

LEE, RICHARD F., PH.D.
(Kansas State University)
Professor, Plant Pathology

LEE, WON SUK, PH.D.
(University of California at Davis)
Assistant Professor, Agricultural and Biological Engineering

LEE, YANN-HANG, PH.D.
(University of Michigan)
Professor, Computer and Information Science and Engineering

LEE, YOONSEOK, PH.D.
(Northwestern University)
Assistant Professor, Physics

LEEUWENBURGH, CHRISTIAAN, PH.D.
(University of Illinois)
Associate Professor, Applied Physiology and Kinesiology

LEFEBVRE, LYNN W., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

LEGARD, DANIEL E., PH.D.
(Cornell University)
Associate Professor, Plant Pathology

LEHTOLA, CAROL J., PH.D.
(Iowa State University)
Associate Professor, Agricultural and Biological Engineering

LEIBEE, GARY L., PH.D.
(University of Kentucky)
Associate Professor, Entomology and Nematology

LEMAK, CHRISTY H., PH.D.
(University of Michigan)
Assistant Professor, Health Services Research, Management and Policy

LEONARD, CHRISTIANA M., PH.D.
(Massachusetts Institute of Technology)
Professor, Neuroscience

LEPINE, JEFFREY A., PH.D.
(Michigan State University)
Associate Professor, Management

LEPPLA, NORMAN C., PH.D.
(University of Arizona)
Professor, Entomology and Nematology

LESLIE, MICHAEL, PH.D.
(University of Washington)
Associate Professor, Journalism and Communications

LESTER, GUY D., PH.D.
(Murdoch University)
Associate Professor, Veterinary Medicine

LEVERENZ, DAVID, PH.D.
(University of California at Berkeley)
Professor, English

LEVERTY, LYNN H., PH.D.
(American University)
Lecturer, Political Science

LEVEY, DOUGLAS J., PH.D.
(University of Wisconsin)
Professor, Zoology

LEVIN, NORMAN, PH.D.
(University of Chicago)
Assistant Professor, Mathematics

LEVY, CHARLES E., PH.D.
(Ohio University)
Associate Professor, Physical Therapy

LEVY, CHARLES M., PH.D.
(University of Wisconsin)
Professor, Psychology

LEVY, JULIE K., PH.D.
(North Carolina State University)
Associate Professor, Veterinary Medicine

LEWIN, ALFRED S., PH.D.
(University of Chicago)
Professor, Molecular Genetics and Microbiology

LEWIS, DANIEL D., D.V.M.
(University of California at Davis)
Eminent Scholar, Veterinary Medicine

LEWIS, MARK H., PH.D.
(Vanderbilt University)
Professor, Neuroscience

LEWIS, MICHAEL VAUGHAN., PH.D.
(Northwestern University)
Assistant Professor, Marketing

LI, JIAN, PH.D.
(Ohio State University)
Associate Professor, Electrical and Computer Engineering

LI, SHENG S., PH.D.
(Rice University)
Professor, Electrical and Computer Engineering

LI, TAO, PH.D.
(University of Texas at Austin)
Assistant Professor, Electrical and Computer Engineering

LI, YUNCONG, PH.D.
(University of Maryland)
Associate Professor, Soil and Water Science

LIAO, DAIQING, PH.D.
(University of British Columbia)
Assistant Professor, Anatomy and Cell Biology

LIBURD, OSCAR E., PH.D.
(University of Rhode Island)
Assistant Professor, Entomology and Nematology

LIDSKY, LYRISSA, J.D.
(University of Texas)
Professor, Law

LIEB, SANDI, PH.D.
(University of Kentucky)
Associate Professor, Animal Sciences

LIGHT, KATHY E., PH.D.
(University of Texas)
Associate Professor, Physical Therapy

LILLYWHITE, HARVEY B., PH.D.
(University of California at Los Angeles)
Professor, Zoology

LIMACHER, MARIAN C., M.D.
(Saint Louis University)
Professor, Physiology and Functional Genomics

LIN, HAIJIN, PH.D.
(Carnegie Mellon University)
Assistant Professor, Accounting

LIN, JENSHAN, PH.D.
(University of California at Los Angeles)
Associate Professor, Electrical and Computer Engineering

LIND, RICHARD C., PH.D.
(University of Minnesota)
Assistant Professor, Mechanical and Aerospace Engineering

LINDBERG, WILLIAM J., PH.D.
(Florida State University)
Associate Professor, Fisheries and Aquatic Sciences

LINDERHOLM, TRACY A., PH.D.
(University of Minnesota)
Assistant Professor, Educational Psychology

LINDNER, ANGELA S., PH.D.
(University of Michigan)
Assistant Professor, Environmental Engineering Sciences

LING, DAVID C., PH.D.
(Ohio State University)
Professor, Finance, Insurance and Real Estate

LINK, WILLIAM A., PH.D.
(University of Virginia)
Professor, History

LINSCOTT, LESTER L., M.L.A.
(Kansas State University)
Associate Professor, Landscape Architecture

LINSER, PAUL J., PH.D.
(University of Cincinnati)
Professor, Anatomy and Cell Biology

LIPOWSKI, EARLENE E., PH.D.
(University of Wisconsin)
Associate Professor, Pharmacy Health Care Administration

LITHERLAND, SALLY A., PH.D.
(University of Florida)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

LITTELL, RAMON C., PH.D.
(Oklahoma State University)
Professor, Statistics

LITTLE, JOSEPH W., J.D.
(University of Michigan)
Professor, Comparative Law

LITZ, RICHARD E., PH.D.
(University of Nottingham)
Professor, Horticultural Science

LIU, BIN, PH.D.
(Wayne State University)
Assistant Professor, Pharmacodynamics

LIU, CHEN, PH.D.
(University of Pennsylvania)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

LIU, CHIEN-LIAN, PH.D.
(University of Minnesota)
Associate Professor, Computer and Information Science and Engineering

LIU, CHIHRAY, PH.D.
(University of Nebraska)
Associate Professor, Nuclear and Radiological Engineering

LIU, CHUANG, PH.D.
(University of Pittsburgh)
Associate Professor, Philosophy

LIU, YIJUN, PH.D.
(University of Texas)
Assistant Professor, Neuroscience

LIVADAS, PANOS E., PH.D.
(University of Florida)
Assistant Professor, Computer and Information Science and Engineering

LIVINGSTON, MILES B., PH.D.
(New York University)
Professor, Finance, Insurance and Real Estate

LLOYD, JAMES E., PH.D.
(Cornell University)
Visiting Lecturer, Entomology and Nematology

LOBINSKE, RICHARD J., PH.D.
(University of Florida)
Senior Biological Scientist, Entomology and Nematology

LOCASCIO, SALVADORE J., PH.D.
(Purdue University)
Professor, Horticultural Science

LOCASTRO, VIRGINIA, PH.D.
(University of Lancaster)
Associate Professor, Linguistics

LOESCH, LARRY C., PH.D.
(Kent State University)
Professor, Counselor Education

LOGAN, HENRIETTA N., PH.D.
(University of Iowa)
Professor, Public Health

LOGAN, KENNETH J., PH.D.
(Syracuse University)
Associate Professor, Communication Sciences and Disorders

LOGAN, WILLIAM, M.F.A.
(University of Iowa)
Professor, English

LOK, BENJAMIN C., PH.D.
(University of North Carolina at Chapel Hill)
Assistant Professor, Computer and Information Science and Engineering

LOKKEN, LAWRENCE A., J.D.
(University of Minnesota)
Culverhouse Eminent Scholar, Taxation

LOMBARDINO, LINDA J., PH.D.
(Ohio State University)
Professor, Communication Sciences and Disorders

LONDON, WENDY B., PH.D.
(Medical College of Virginia)
Research Assistant Professor, Statistics

LONG, ALAN J., PH.D.
(North Carolina State University)
Associate Professor, Forest Resources and Conservation

LONG, BURL F., PH.D.
(Pennsylvania State University)
Professor, Food and Resource Economics

LONG, GARY, PH.D.
(Texas A&M University)
Associate Professor, Civil and Coastal Engineering

LONG, JOANNA R., PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Biochemistry and Molecular Biology

LONG, KATHLEEN A., PH.D.
(Johns Hopkins University)
Professor, Nursing

LONG, MAUREEN T., PH.D.
(Washington State University)
Assistant Professor, Veterinary Medicine

LOPEZ, LARRY M., PHARM.D.
(University of Florida)
Professor, Pharmacy

LORD, CYNTHIA C., PH.D.
(Princeton University)
Associate Professor, Entomology and Nematology

LORD, GILLIAN, PH.D.
(Pennsylvania State University)
Assistant Professor, Romance Languages and Literatures

LOSANO, WAYNE A., PH.D.
(Rensselaer Polytechnic Institute)
Associate Professor, English

LOTTENBERG, RICHARD, M.D.
(University of Florida)
Professor, Biochemistry and Molecular Biology

LOUNIBOS, LEON P., PH.D.
(Harvard University)
Professor, Entomology and Nematology

LOUTHAN, HOWARD P., PH.D.
(Princeton University)
Associate Professor, History

LOW, SAMUEL B., D.D.S.
(University of Texas)
Professor, Dentistry

LOWE, ELIZABETH, PH.D.
(City University of New York)
Associate Scholar, Latin American Studies

LOWENTHALL, DAVID T., PH.D.
(Temple University)
Professor, Applied Physiology and Kinesiology

LOWER, JANNA, D.M.A.
(University of Michigan)
Associate Professor, Music

LOWERY, RUTH M., PH.D.
(Pennsylvania State University)
Associate Professor, Teaching and Learning

LUCANSKY, TERRY W., PH.D.
(Duke University)
Associate Professor, Botany

LUDWIG, KIRK A., PH.D.
(University of California at Berkeley)
Associate Professor, Philosophy

LUONI, STEPHEN D., M.ARCH.
(Yale University)
Associate Professor, Architecture

LUTTGE, WILLIAM G., PH.D.
(University of California at Irvine)
Professor, Neuroscience

LUTZ, BARBARA J., PH.D.
(University of Wisconsin)
Assistant Professor, Nursing

LUTZ, RICHARD J., PH.D.
(University of Illinois)
Professor, Marketing

LUVALLE, PHYLLIS A., PH.D.
(University of Utah)
Associate Professor, Anatomy and Cell Biology

LUZAR, E. JANE, PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Food and Resource Economics

LYBAS, JOHN M., PH.D.
(University of Illinois)
Associate Professor, Civil and Coastal Engineering

LYNCH, ANDREW E., PH.D.
(University of Minnesota)
Assistant Professor, Romance Languages and Literatures

LYONS, THOMAS J., PH.D.
(University of California at Los Angeles)
Assistant Professor, Chemistry

LYRENE, PAUL M., PH.D.
(University of Wisconsin)
Professor, Horticultural Science

M

MA, CHANGXING, PH.D.
(Nankai University)
Assistant Professor, Statistics

MA, LENA Q., PH.D.
(Colorado State University)
Professor, Soil and Water Science

MACDONALD, GREGORY E., PH.D.
(University of Florida)
Assistant Professor, Agronomy

MACDONALD, JOHN M., PH.D.
(University of Maryland)
Assistant Professor, Criminology, Law and Society

MACEDO, JOSELI, PH.D.
(University of Florida)
Assistant Professor, Urban and Regional Planning

MACFADDEN, BRUCE J., PH.D.
(Columbia University)
Professor, Zoology

MACK, MICHELLE C., PH.D.
(University of California at Berkeley)
Assistant Professor, Botany

MACKAY, ROBERT J., PH.D.
(University of Florida)
Professor, Veterinary Medicine

MACKOWIAK, CHERYL L., PH.D.
(Utah State University)
Assistant Professor, Soil and Water Science

MACLEOD, MURDO K., PH.D.
(University of Florida)
Graduate Research Professor, History

MACLEOD, ROBERT M., M.ARCH.
(Harvard University)
Associate Professor, Architecture

MACPHERSON, MARGO L., D.V.M.
(Michigan State University)
Assistant Professor, Veterinary Medicine

MADSEN, KIRSTEN M., M.D.
(University of Aarhus)
Associate Professor, Anatomy and Cell Biology

MAGNARELLA, PAUL J., PH.D.
(Harvard University)
Professor, Anthropology

MAGNUSSON, N. I., D.D.S.
(University of Lund)
Professor, Oral Biology

MAHAJAN, JAYASHREE, PH.D.
(University of Wisconsin)
Lecturer, Marketing

MAHAN, SUMAN M., PH.D.
(University of Birmingham)
Associate Scientist, Veterinary Medicine

MAIN, MARTIN B., PH.D.
(Oregon State University)
Associate Professor, Wildlife Ecology and Conservation

MAIR, BERNARD A., PH.D.
(McGill University)
Professor, Mathematics

MALAGODI, EDWARD F. JR., PH.D.
(University of Miami)
Professor, Psychology

MALASANOS, LOIS J., PH.D.
(University of Illinois)
Distinguished Service Professor, Nursing

MANCHESTER, STEVEN R., PH.D.
(Indiana University)
Professor, Botany

MANDEL, RONALD J., PH.D.
(University of Southern California)
Associate Professor, Neuroscience

MANN, BRIAN P., D.SC.
(Washington University)
Assistant Professor, Mechanical and Aerospace Engineering

MANN, GISELLE D., PH.D.
(Curtin University of Technology)
Assistant Scientist, Public Health

MANN, WILLIAM C., PH.D.
(State University of New York at Buffalo)
Professor, Occupational Therapy

MANNION, CATHARINE M., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

MANSELL, ROBERT S., PH.D.
(Iowa State University)
Professor, Soil and Water Science

MARECI, THOMAS H., PH.D.
(University of Oxford)
Associate Professor, Biochemistry and Molecular Biology

MARGHERITIS, ANA, PH.D.
(University of Toronto)
Assistant Professor, Political Science

MARGOLIS, MAXINE L., PH.D.
(Columbia University)
Professor, Anthropology

MARIOTTI, ANGELO J., PH.D.
(West Virginia University)
Associate Professor, Pharmacology and Therapeutics

MARKEL, NORMAN N., PH.D.
(University of Chicago)
Professor, Communication Sciences and Disorders

MARKS, RONALD G., PH.D.
(University of Florida)
Professor, Statistics

MAROIS, JAMES J., PH.D.
(University of Florida)
Professor, Plant Pathology

MARQUARDT, WILLIAM H., PH.D.
(Washington University)
Professor, Anthropology

MARSDEN, JOHN P., PH.D.
(University of Michigan)
Assistant Professor, Interior Design

MARSELLA, ROSANNA, D.V.M.
(Universita' Degli Studi di Milano)
Associate Professor, Veterinary Medicine

MARSHALL, KEVIN A., M.F.A.
(Ohio University)
Professor, Theatre and Dance

MARSHALL, MAURICE R., PH.D.
(Ohio State University)
Professor, Food Science and Human Nutrition

MARSHALL, MELODY J., PH.D.
(University of Oklahoma)
Associate Professor, Nursing

MARSHALL, TIMOTHY T., PH.D.
(University of Florida)
Professor, Animal Sciences

MARSIGLIO, WILLIAM, PH.D.
(Ohio State University)
Professor, Sociology

MARSISKE, MICHAEL, PH.D.
(Pennsylvania State University)
Associate Professor, Psychology

MARTCHEVA-DRASHANSKA, MAIA, PH.D.
(Purdue University)
Assistant Professor, Mathematics

MARTIN, ANATOLE D., PH.D.
(University of Tennessee)
Associate Professor, Physical Therapy

MARTIN, CHARLES R., PH.D.
(University of Arizona)
Professor, Chemistry

MARTIN, ELLEN E., PH.D.
(University of California at San Diego)
Associate Professor, Geological Sciences

MARTIN, FRANK N., PH.D.
(University of California at Berkeley)
Associate Professor, Plant Pathology

MARTIN, FRANK G., PH.D.
(North Carolina State University)
Professor, Statistics

MARTIN, JONATHAN B., PH.D.
(University of California at San Diego)
Associate Professor, Geological Sciences

MARTIN, TIMOTHY A., PH.D.
(University of Washington)
Assistant Professor, Forest Resources and Conservation

MARTINEZ, JORGE, PH.D.
(Tulane University)
Professor, Mathematics

MARTINEZ, MICHAEL D., PH.D.
(University of Michigan)
Associate Professor, Political Science

MARTING, DIANE E., PH.D.
(Rutgers University)
Assistant Professor, Romance Languages and Literatures

MARTSOLF, J. DAVID, PH.D.
(University of Missouri)
Professor, Horticultural Science

MARTYNYUK, ANATOLY E., D.SC.
(Bogomletz Institute of Physiology)
Assistant Professor, Neuroscience

MARUNIAK, JAMES E., PH.D.
(University of Texas at Austin)
Associate Professor, Entomology and Nematology

MASLOV, DMITRY, PH.D.
(Landau Institute for Theoretical Physics)
Associate Professor, Physics

MATA, TONY, M.F.A.
(San Diego State University)
Associate Professor, Theatre and Dance

MATCHEV, KONSTANTIN T., PH.D.
(Johns Hopkins University)
Assistant Professor, Physics

MATHENY, ALBERT R., PH.D.
(University of Minnesota)
Professor, Political Science

MATHER, FLOYD B., PH.D.
(University of California at Davis)
Associate Professor, Animal Sciences

MATTHEW, GARY K., PH.D.
(University of Florida)
Associate Professor, Mechanical and Aerospace Engineering

MATURO, FRANK J., PH.D.
(Duke University)
Professor, Zoology

MATZ, MIKHAIL V., PH.D.
(Institute of Bioorganic Chemistry, Moscow)
Assistant Scientist, Biochemistry and Molecular Biology

MAUDERLI, ANDRE P., D.M.D.
(University of Berne)
Associate Professor, Neuroscience

MAUPIN, JULIE A., PH.D.
(University of Florida)
Associate Professor, Microbiology and Cell Science

MAURER, VIRGINIA G., J.D.
(Stanford University)
Huber Hurst Professor, Management

MAY, WILLIAM S., PH.D.
(Georgetown University)
Professor, Anatomy and Cell Biology

MAY, WILLIAM S., M.D.
(Georgetown University)
Professor, Anatomy and Cell Biology

MAYNARD, DONALD N., PH.D.
(University of Massachusetts)
Professor, Horticultural Science

MAZE, JOHN M., M.ARCH.
(Arizona State University)
Assistant Professor, Architecture

MAZYCK, DAVID W., PH.D.
(Pennsylvania State University)
Assistant Professor, Environmental Engineering Sciences

MAZZOTTI, FRANK J., PH.D.
(Pennsylvania State University)
Associate Professor, Wildlife Ecology and Conservation

MCADAMS, MELINDA J., M.A.
(New School for Social Research)
Professor, Journalism and Communications

MCARTHUR, WILLIAM P., PH.D.
(Purdue University)
Professor, Oral Biology

MCAUSLANE, HEATHER J., PH.D.
(Texas A&M University)
Associate Professor, Entomology and Nematology

MCBRIDE, RICHARD S., PH.D.
(Rutgers University)
Scientist, Fisheries and Aquatic Sciences

MCCARTER, ROBERT S., M.ARCH.
(Columbia University)
Professor, Architecture

MCCARTHY, KEVIN M., PH.D.
(University of North Carolina)
Professor, English

MCCARTY, CHRISTOPHER, PH.D.
(University of Florida)
Associate Professor, Anthropology

MCCARTY, DONALD R., PH.D.
(University of Wisconsin)
Professor, Horticultural Science

MCCLAURIN, IRMA P., PH.D.
(University of Massachusetts at Amherst)
Associate Professor, Anthropology

MCCLELLAN, GUERRY H., PH.D.
(University of Illinois)
Professor, Geological Sciences

MCCOLLOUGH, WILLIAM A., PH.D.
(University of Florida)
Professor, Finance, Insurance and Real Estate

MCCONNELL, DENNIS B., PH.D.
(University of Wisconsin)
Professor, Environmental Horticulture

MCCORMACK, WAYNE T., PH.D.
(Florida State University)
Associate Professor, Pathology, Immunology and Laboratory Medicine

MCCOY, CLAYTON W., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

MCCOY, TERRY L., PH.D.
(University of Wisconsin)
Professor, Political Science

MCCRAE, CHRISTINA S., PH.D.
(Washington University)
Assistant Professor, Psychology

MCCREA, BRIAN R., PH.D.
(University of Virginia)
Professor, English

MCCULLOUGH, SCOTT, PH.D.
(University of California at San Diego)
Professor, Mathematics

MCDADE, BARBARA E., PH.D.
(University of Texas at Austin)
Associate Professor, Geography

MCDANIEL, PAUL R., LL.B.
(Harvard University)
Eminent Scholar, Taxation

MCDOWELL, LEE R., PH.D.
(Washington State University)
Professor, Animal Sciences

MCELWEE-WHITE, LISA A., PH.D.
(California Institute of Technology)
Professor, Chemistry

MCGILL, GARY A., PH.D.
(Texas Tech University)
Associate Professor, Accounting

MCGILL-FRANZEN, ANNE, PH.D.
(State University of New York at Albany)
Professor, Teaching and Learning

MCGLOTHLIN, MARK A., M.ARCH.
(Harvard University)
Assistant Professor, Architecture

MCGORRAY, SUSAN P., PH.D.
(University of Washington)
Research Assistant Professor, Statistics

MCGOVERN, ROBERT J., PH.D.
(Cornell University)
Professor, Plant Pathology

MCGUIRE, PETER M., PH.D.
(University of North Carolina at Chapel Hill)
Associate Professor, Biochemistry and Molecular Biology

MCKAY, NICCIE L., PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Health Services Research, Management and Policy

MCKEEN, WILLIAM L., PH.D.
(University of Oklahoma)
Professor, Journalism and Communications

MCKENNA, ROBERT, PH.D.
(University of London)
Assistant Professor, Biochemistry and Molecular Biology

MCKENZIE, MICHAEL W., PH.D.
(Purdue University)
Professor, Pharmacy

MCKNIGHT, STEPHEN A., PH.D.
(Emory University)
Professor, History

MCLAUGHLIN, FIONA, PH.D.
(University of Texas at Austin)
Associate Professor, Linguistics

MCLESKEY, JAMES L., PH.D.
(Georgia State University)
Professor, Special Education

MCMAHON, MARTIN J. JR., LL.M.
(Boston University)
Professor, Taxation

MCMAHON, ROBERT J., PH.D.
(University of Connecticut)
Professor, History

MCMILLAN, DELLA E., PH.D.
(Northwestern University)
Assistant Scientist, Anthropology

MCMILLAN, ROBERT T. JR., PH.D.
(Washington State University)
Professor, Plant Pathology

MCNAB, BRIAN K., PH.D.
(University of Wisconsin)
Professor, Zoology

MCNAIR, JANISE Y., PH.D.
(Georgia Institute of Technology)
Assistant Professor, Electrical and Computer Engineering

MCNEAL, BRIAN L., PH.D.
(University of California at Riverside)
Professor, Soil and Water Science

MCSORLEY, ROBERT, PH.D.
(Purdue University)
Professor, Entomology and Nematology

MCVAY, MICHAEL C., PH.D.
(University of Massachusetts)
Professor, Civil and Coastal Engineering

MEAGHER, ROBERT L., PH.D.
(Pennsylvania State University)
Assistant Professor, Entomology and Nematology

MECHOLSKY, JOHN J., PH.D.
(Catholic University of America)
Professor, Materials Science and Engineering

MEEKS, SANFORD L., PH.D.
(University of Florida)
Assistant Professor, Nuclear and Radiological Engineering

MEERT, JOSEPH G., PH.D.
(University of Michigan)
Assistant Professor, Geological Sciences

MEHTA, ASHISH J., PH.D.
(University of Florida)
Professor, Civil and Coastal Engineering

MEI, RENWEI, PH.D.
(University of Illinois at Urbana-Champaign)
Professor, Mechanical and Aerospace Engineering

MEISEL, MARK W., PH.D.
(Northwestern University)
Professor, Physics

MEISTER, KEITH, M.D.
(Boston University)
Associate Professor, Applied Physiology and Kinesiology

MELDRUM, MICHAEL J., PH.D.
(Ohio State University)
Associate Professor, Pharmacodynamics

MELENDEZ, PEDRO, PH.D.
(University of Florida)
Assistant Professor, Veterinary Medicine

MELKER, RICHARD J., M.D.
(Albert Einstein College of Medicine)
Professor, Biomedical Engineering

MELTZER, MARTIN I., PH.D.
(Cornell University)
Assistant Scientist, Veterinary Medicine

MENDENHALL, NANCY P., M.D.
(University of Florida)
Professor, Nuclear and Radiological Engineering

MENDOZA, VALERIE, M.F.A.
(California College of Arts and Crafts)
Assistant Professor, Art and Art History

MENNEL, BARBARA, PH.D.
(Cornell University)
Assistant Professor, Germanic and Slavic Studies

MENZEL, NANCY N., PH.D.
(University of South Florida)
Assistant Professor, Nursing

MERCER, CECIL D., ED.D.
(University of Virginia)
Distinguished Professor, Special Education

MERGIA, AYALEW, PH.D.
(University of California at Davis)
Associate Professor, Veterinary Medicine

MERRITT, ALFRED M., D.V.M.
(Cornell University)
Professor, Veterinary Medicine

METZLER, DAVID S., PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Mathematics

MEYER, EDWIN M., PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Pharmacology and Therapeutics

MEYER, KENNETH D., PH.D.
(University of North Carolina)
Associate Professor, Wildlife Ecology and Conservation

MEYER, MERLE E., PH.D.
(University of Washington)
Professor, Psychology

MICHA, DAVID A., PH.D.
(Uppsala University)
Professor, Physics

MIDDLEBROOKS, JOHN C., PH.D.
(University of California at San Francisco)
Associate Professor, Neuroscience

MIKOLAITIS, DAVID W., PH.D.
(University of Illinois)
Associate Professor, Mechanical and Aerospace Engineering

MILANICH, JERALD T., PH.D.
(University of Florida)
Professor, Anthropology

MILBRATH, SUSAN, PH.D.
(Columbia University)
Professor, Anthropology

MILES, RICHARD D., PH.D.
(Purdue University)
Professor, Animal Sciences

MILLARD, WILLIAM J., PH.D.
(University of Toledo)
Professor, Pharmacodynamics

MILLER, CLEVE D., LL.M.
(New York University)
Professor, Taxation

MILLER, D. GARY, PH.D.
(Harvard University)
Professor, Linguistics

MILLER, DEBORAH L., PH.D.
(Texas A&M University)
Associate Professor, Wildlife Ecology and Conservation

MILLER, GRADY L., PH.D.
(Auburn University)
Associate Professor, Horticultural Science

MILLER, LEE D., PH.D.
(University of Pittsburgh)
Professor, Entomology and Nematology

MILLER, M. DAVID., PH.D.
(University of California at Los Angeles)
Professor, Educational Psychology

MILLER, MICHAEL K., PH.D.
(Pennsylvania State University)
Professor, Sociology

MILLER, PATRICIA H., PH.D.
(University of Minnesota)
Professor, Psychology

MILLER, RICHARD T., M.D.
(Case Western Reserve University)
Associate Professor, Pharmacology and Therapeutics

MILLER, ROSALIE, PH.D.
(University of Florida)
Associate Professor, Occupational Therapy

MILLER, SCOTT A., PH.D.
(University of Minnesota)
Professor, Psychology

MILLER, THOMAS, PH.D.
(University of Florida)
Professor, Forest Resources and Conservation

MILLER, WILLIAM M., PH.D.
(Pennsylvania State University)
Professor, Agricultural and Biological Engineering

MILLS, TEHERAN L., PH.D.
(University of Southern California)
Associate Professor, Sociology

MILNER, ROWAN J., M.M.V.
(University of Pretoria)
Assistant Professor, Veterinary Medicine

MINCHIN, ROBERT E., PH.D.
(Pennsylvania State University)
Assistant Professor, Civil and Coastal Engineering

MISHOE, J. WAYNE, PH.D.
(North Carolina State University)
Professor, Agricultural and Biological Engineering

MISHRA, PRABHAT, PH.D.
(University of California at Irvine)
Assistant Professor, Computer and Information Science and Engineering

MISLEVY, PAUL, PH.D.
(Pennsylvania State University)
Professor, Agronomy

MITCHELL, DAVID J., PH.D.
(University of California at Berkeley)
Professor, Plant Pathology

MITCHELL, WILLIAM, PH.D.
(University of California at Berkeley)
Professor, Mathematics

MITRA, DEBANJAN, PH.D.
(New York University)
Assistant Professor, Marketing

MITROOK, MICHAEL A., PH.D.
(University of Alabama)
Assistant Professor, Journalism and Communications

MITSELMAKHER, GENA, PH.D.
(Joint Institute for Nuclear Research, Russia)
Distinguished Professor, Physics

MIYABAYASHI, TAKAYOSHI, PH.D.
(University of California at Davis)
Associate Professor, Veterinary Medicine

MIYAMOTO, MICHAEL M., PH.D.
(University of Southern California)
Professor, Zoology

MIZELL, RUSSELL F., PH.D.
(Mississippi State University)
Professor, Entomology and Nematology

MJOR, IVAR A., D.D.S.
(University of St. Andrews)
Eminent Scholar, Dentistry

MOBLEY, WILLIAM C., PH.D.
(University of Florida)
Assistant Professor, Pharmaceutics

MOLLEDA, JUAN CARLO, PH.D.
(University of South Carolina)
Assistant Professor, Journalism and Communications

MOMOL, TIMUR M., PH.D.
(University of Florida)
Associate Professor, Plant Pathology

MONKHORST, HENDRIK J., PH.D.
(University of Groningen)
Professor, Physics

MONROE, MARTHA C., PH.D.
(University of Michigan)
Associate Professor, Forest Resources and Conservation

MONTAGUE, CLAY L., PH.D.
(University of Georgia)
Associate Professor, Environmental Engineering Sciences

MONTGOMERY, CHARLES H., PH.D.
(Cornell University)
Associate Professor, History

MOORE, ANNA B., PH.D.
(University of California at San Diego)
Assistant Professor, Clinical and Health Psychology

MOORE, GLORIA A., PH.D.
(University of Kentucky)
Professor, Horticultural Science

MOORE, JOHN H., PH.D.
(New York University)
Professor, Anthropology

MOORE, KAREN, PH.D.
(Texas A&M University)
Assistant Professor, Animal Sciences

MOORE, THERAL O., PH.D.
(University of Missouri)
Associate Professor, Mathematics

MORADI, BANAFSHEH, PH.D.
(University of Akron)
Assistant Professor, Psychology

MORASKI, BRYON, PH.D.
(University of Iowa)
Assistant Professor, Political Science

MOREL, LAURENCE, PH.D.
(Universite Aix-Marseille)
Associate Professor, Pathology, Immunology and Laboratory Medicine

MORGAN, JAMES I., ED.D.
(University of Florida)
Professor, Psychology

MORGAN, KELLY TINDEL, PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

MOROZ, LEONID L., PH.D.
(Belorussian State University)
Associate Professor, Neuroscience

MORRIS, JON D., PH.D.
(University of Florida)
Professor, Journalism and Communications

MORRIS-WIMAN, JOYCE, PH.D.
(University of Michigan)
Assistant Scientist, Dentistry

MORTON, CYNTHIA R., PH.D.
(University of Texas at Austin)
Assistant Professor, Journalism and Communications

MORTON, DEAN, M.S.
(University of Iowa)
Associate Professor, Dentistry

MOSELEY, MICHAEL E., PH.D.
(Harvard University)
Professor, Anthropology

MOSKOW, SHARI, PH.D.
(Rutgers University)
Associate Professor, Mathematics

MOSS, CHARLES B., PH.D.
(Purdue University)
Professor, Food and Resource Economics

MOSSA, JOANN, PH.D.
(Louisiana State University)
Associate Professor, Geography

MOTZ, LOUIS H., PH.D.
(Vanderbilt University)
Associate Professor, Civil and Coastal Engineering

MOU, ZHONGLIN, PH.D.
(Institute of Genetics and Developmental Biology)
Associate Professor, Microbiology and Cell Science

MOUDGIL, BRIJ M., D.ENG.SC.
(Columbia University)
Professor, Materials Science and Engineering

MOULTON, MICHAEL P., PH.D.
(University of Tennessee)
Associate Professor, Wildlife Ecology and Conservation

MOUSSATCHE, HELENA, PH.D.
(Universidade Federal do Rio de Janeiro)
Assistant Professor, Interior Design

MOYER, RICHARD W., PH.D.
(University of California at Los Angeles)
Professor, Molecular Genetics and Microbiology

MOYER, SUE A., PH.D.
(Columbia University)
Professor, Molecular Genetics and Microbiology

MUCHOVEJ, ROSA M., PH.D.
(Virginia Polytechnic Institute and State University)
Assistant Professor, Agronomy

MUELLER, HANS-FRIED, PH.D.
(University of North Carolina at Chapel Hill)
Associate Professor, Classics

MUELLER, JAMES R., PH.D.
(Duke University)
Associate Professor, Religion

MUELLER, PAUL A., PH.D.
(Rice University)
Professor, Geological Sciences

MUELLER, ROBERT C., M.F.A.
(Arizona State University)
Associate Professor, Art and Art History

MUGA, MARVIN L., PH.D.
(University of Texas at Austin)
Professor, Chemistry

MUIR, ANDREW B., M.D.
(University of Toronto)
Clinical Associate Professor, Pathology, Immunology and Laboratory Medicine

MUIR, DAVE F., PH.D.
(Mount Sinai School of Medicine)
Professor, Neuroscience

MUKHERJEE, BHRAMAR, PH.D.
(Purdue University)
Assistant Professor, Statistics

MULKEY, STEPHEN S., PH.D.
(University of Pennsylvania)
Associate Professor, Botany

MULKEY, WILLIAM D., PH.D.
(Clemson University)
Professor, Food and Resource Economics

MULLAHEY, JOHN J., PH.D.
(University of Nebraska)
Professor, Wildlife Ecology and Conservation

MULLALLY, LEE J., PH.D.
(Michigan State University)
Associate Professor, Teaching and Learning

MULLER, GUIDO, PH.D.
(University of Hanover)
Assistant Professor, Physics

MULLIGAN, CONNIE J., PH.D.
(Yale University)
Assistant Professor, Anthropology

MULLINS, J. T., PH.D.
(University of North Carolina)
Professor, Botany

MUNOZ-CARPENA, RAFAEL, PH.D.
(North Carolina State University)
Assistant Professor, Agricultural and Biological Engineering

MURIE, DEBRA J., PH.D.
(University of Victoria)
Assistant Professor, Fisheries and Aquatic Sciences

MURPHEY, MILLEDGE, PH.D.
(University of Florida)
Associate Professor, Applied Physiology and Kinesiology

MURPHY, CAROL J., PH.D.
(University of Pennsylvania)
Professor, Romance Languages and Literatures

MURRAY, GERALD F., PH.D.
(Columbia University)
Associate Professor, Anthropology

MUSZYNSKI, LARRY C., PH.D.
(Purdue University)
Associate Professor, Building Construction

MUTTALIB, KHANDKER A., PH.D.
(Princeton University)
Professor, Physics

MUZYCZKA, NICHOLAS, PH.D.
(Johns Hopkins University)
Eminent Scholar, Molecular Genetics and Microbiology

MYER, ROBERT O., PH.D.
(Washington State University)
Professor, Animal Sciences

MYERS, BRIAN E., PH.D.
(University of Florida)
Assistant Professor, Agricultural Education and Communication

MYLAVARAPU, SAMBASIVA R., PH.D.
(Clemson University)
Assistant Professor, Soil and Water Science

MYRICK, ROBERT D., PH.D.
(Arizona State University)
Professor, Counselor Education

N

NADEAU, STEPHEN E., M.D.
(University of Florida)
Professor, Neuroscience

NAGAN, WINSTON, J.S.D.
(Yale University)
Professor, Comparative Law

NAGATA, RUSSELL T., PH.D.
(University of Florida)
Associate Professor, Horticultural Science

NAGY, REBECCA, PH.D.
(University of North Carolina at Chapel Hill)
Lecturer, Art and Art History

NAIR, RAMACHANDR P., PH.D.
(Patnagar Agricultural University)
Distinguished Professor, Forest Resources and Conservation

NAIR, VIMALA D., PH.D.
(University of Goettingen)
Research Assistant Professor, Soil and Water Science

NAJAFI, FAZIL T., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Civil and Coastal Engineering

NARANG, ATUL, PH.D.
(Purdue University)
Assistant Professor, Chemical Engineering

NARANJO, ANDY, PH.D.
(Claremont Graduate University)
Associate Professor, International Business

NARAYAN, SATYA, PH.D.
(Panjab University)
Associate Professor, Anatomy and Cell Biology

NARAYANAN, RANGANATHA, PH.D.
(Illinois Institute of Technology)
Professor, Chemical Engineering

NARAYANAN, VASUDHA R., PH.D.
(University of Bombay)
Professor, Religion

NATION, JAMES L., PH.D.
(Cornell University)
Professor, Entomology and Nematology

NATZKE, ROGER P., PH.D.
(University of Wisconsin)
Professor, Animal Sciences

NAVAB, DESIREE, PH.D.
(Columbia University)
Assistant Professor, Art and Art History

NAYAR, JAI K., PH.D.
(University of Illinois)
Professor, Entomology and Nematology

NECHYBA, MICHAEL C., PH.D.
(Carnegie Mellon University)
Assistant Professor, Electrical and Computer Engineering

NEEDELL, JEFFREY D., PH.D.
(Stanford University)
Associate Professor, History

NEELIS, JASON E., PH.D.
(University of Washington)
Assistant Professor, Religion

NEFF, DONNA F., PH.D.
(Case Western Reserve University)
Assistant Professor, Nursing

NEILSON, JOHN T., PH.D.
(University of Glasgow)
Professor, Veterinary Medicine

NEIMEYER, GREG J., PH.D.
(University of Notre Dame)
Professor, Psychology

NEIMS, ALLEN H., M.D.
(Johns Hopkins University)
Professor, Pharmacology and Therapeutics

NELL, TERRIL A., PH.D.
(Michigan State University)
Professor, Horticultural Science

NELMS, BEN F., PH.D.
(University of Iowa)
Professor, Teaching and Learning

NELSON, MARIE, PH.D.
(University of Oregon)
Professor, English

NESHEIM, OLAF N., PH.D.
(University of Illinois)
Professor, Food Science and Human Nutrition

NETHERLAND, MICHAEL D., PH.D.
(University of Florida)
Associate Professor, Agronomy

NEUGROSCHEL, ARNOST, PH.D.
(Technion Israel Institute of Technology)
Professor, Electrical and Computer Engineering

NEUHOFF, PHILIP S., PH.D.
(Stanford University)
Assistant Professor, Geological Sciences

NEVILL, GALE E. JR., PH.D.
(Stanford University)
Professor, Mechanical and Aerospace Engineering

NEW, MELVYN, PH.D.
(Vanderbilt University)
Professor, English

NEWMAN, ARTHUR J., ED.D.
(Indiana University)
Professor, Educational Leadership, Policy and Foundations

NEWMAN, JANA M., PH.D.
(University of Connecticut)
Assistant Professor, Soil and Water Science

NEWMAN, LOUISE M., PH.D.
(Brown University)
Associate Professor, History

NEWMAN, RICHARD E., PH.D.
(University of Rochester)
Assistant Professor, Computer and Information Science and Engineering

NEWMAN, SUSAN, PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

NGO, KHAI D., PH.D.
(California Institute of Technology)
Professor, Electrical and Computer Engineering

NGUYEN, MINH-HONG, M.D.
(Temple University)
Associate Professor, Molecular Genetics and Microbiology

NGUYEN, RU, PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

NIBLETT, CHARLES L., PH.D.
(University of California at Riverside)
Professor, Plant Pathology

NICHOLAS, JAMES C., PH.D.
(University of Illinois)
Professor, Urban and Regional Planning

NICHOLS, GERALDINE C., PH.D.
(Johns Hopkins University)
Professor, Romance Languages and Literatures

NICHOLS, WILMER W., PH.D.
(University of Alabama)
Professor, Physiology and Functional Genomics

NICHOLSON, WAYNE L., PH.D.
(University of Wisconsin)
Associate Professor, Microbiology and Cell Science

NICK, HARRY S., PH.D.
(University of Pennsylvania)
Professor, Biochemistry and Molecular Biology

NICKERSON, MAX A., PH.D.
(Arizona State University)
Professor, Wildlife Ecology and Conservation

NICOLETTI, PAUL L., D.V.M.
(University of Missouri)
Professor, Veterinary Medicine

NIEZRECKI, CHRISTOPHER, PH.D.
(Virginia Polytechnic Institute and State University)
Assistant Professor, Mechanical and Aerospace Engineering

NIGG, HERBERT N., PH.D.
(University of Illinois)
Professor, Entomology and Nematology

NIMALENDRAN, MAHENDRARA, PH.D.
(University of Michigan)
Professor, Finance, Insurance and Real Estate

NIMMO, ARTHUR, D.D.S.
(University of Maryland)
Professor, Dentistry

NINO, JUAN C., PH.D.
(Pennsylvania State University)
Assistant Professor, Materials Science and Engineering

NISHIDA, TOSHIKAZU, PH.D.
(University of Illinois)
Associate Professor, Electrical and Computer Engineering

NKEDA-KIZZA, PETER, PH.D.
(University of California at Davis)
Professor, Soil and Water Science

NOLING, JOSEPH W., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

NOONAN, JOHN B., PH.D.
(Harvard University)
Associate Professor, Classics

NORCINI, JEFFREY G., PH.D.
(Pennsylvania State University)
Associate Professor, Horticultural Science

NORDLIE, FRANK G., PH.D.
(University of Minnesota)
Professor, Zoology

NORDSTEDT, ROGER A., PH.D.
(Ohio State University)
Professor, Agricultural and Biological Engineering

NORLAND, MICHAEL R., PH.D.
(University of Minnesota)
Associate Professor, Soil and Water Science

NORMAN, DAVID J., PH.D.
(University of Hawaii)
Associate Professor, Plant Pathology

NORMAN, MARILYN N., PH.D.
(University of Illinois at Chicago)
Associate Professor, Family, Youth and Community Sciences

NORMANN, SIGURD J., PH.D.
(University of Washington)
Professor, Pathology, Immunology and Laboratory Medicine

NORR, LYNETTE, PH.D.
(University of Illinois)
Assistant Professor, Anthropology

NORTON, DAVID P., PH.D.
(Louisiana State University)
Professor, Materials Science and Engineering

NOWAK, JAROSLAW, PH.D.
(Mississippi State University)
Assistant Professor, Forest Resources and Conservation

NUESSLY, GREGG S., PH.D.
(Texas A&M University)
Associate Professor, Entomology and Nematology

NUNES, MARIA CECI N., PH.D.
(Catholic University of Portugal)
Assistant Professor, Horticultural Science

NYE, DAVID J., PH.D.
(University of Pennsylvania)
Professor, Finance, Insurance and Real Estate

NYGREN, SCOTT, PH.D.
(State University of New York at Buffalo)
Associate Professor, English

O

O, KENNETH K., PH.D.
(Massachusetts Institute of Technology)
Professor, Electrical and Computer Engineering

OAKLAND, THOMAS D., PH.D.
(Indiana University)
Professor, Educational Psychology

OBANNON, JOHN H., PH.D.
(Arizona State University)
Professor, Entomology and Nematology

OBERLANDER, HERBERT, PH.D.
(Case Western Reserve University)
Professor, Entomology and Nematology

OBERST, MICHAEL A., J.D.
(University of Florida)
Professor, Taxation

OBREZA, THOMAS A., PH.D.
(University of Florida)
Professor, Soil and Water Science

O'BRIEN, CHARLES W., PH.D.
(University of California at Berkeley)
Associate Professor, Entomology and Nematology

O'BRIEN, SUSAN M., PH.D.
(University of Wisconsin)
Associate Professor, History

O'BRIEN, THOMAS W., PH.D.
(Marquette University)
Professor, Biochemistry and Molecular Biology

O'BRIEN, WILLIAM J., PH.D.
(Stanford University)
Assistant Professor, Civil and Coastal Engineering

OBUKHOV, SERGEI, PH.D.
(Landau Institute for Theoretical Physics)
Associate Professor, Physics

O'CONNOR, JOHN A., M.A.
(University of California at Berkeley)
Professor, Art and Art History

O'CONNOR, GEORGE A., PH.D.
(Colorado State University)
Professor, Soil and Water Science

ODOM, LESLIE S., PH.D.
(Eastman School of Music)
Associate Professor, Music

OGRAM, ANDREW V., PH.D.
(University of Tennessee)
Associate Professor, Soil and Water Science

OH, SUK P., PH.D.
(Harvard University)
Associate Professor, Physiology and Functional Genomics

O'HAIR, STEPHEN K., PH.D.
(Texas A&M University)
Associate Professor, Horticultural Science

OHRN, NILS Y., PH.D.
(Uppsala University)
Professor, Chemistry

OI, DAVID H., PH.D.
(University of California at Riverside)
Assistant Professor, Entomology and Nematology

OI, FAITH M., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

O'KEEFE, SEAN F., PH.D.
(Iowa State University)
Associate Professor, Food Science and Human Nutrition

OLEXA, MICHAEL T., PH.D.
(University of Florida)
Professor, Food and Resource Economics

OLI, MADAN K., PH.D.
(Auburn University)
Assistant Professor, Wildlife Ecology and Conservation

OLIVER, JOHN P., PH.D.
(University of California at Los Angeles)
Associate Professor, Astronomy

OLIVER SMITH, ANTHONY R., PH.D.
(Indiana University)
Professor, Anthropology

OLIVERIO, JAMES C., M.F.A.
(Bard College)
Professor, Music

OLSON, STEPHEN M., PH.D.
(Clemson University)
Professor, Horticultural Science

OLSON, TIMOTHY E., PH.D.
(Auburn University)
Associate Professor, Mathematics

OLSON, TIMOTHY A., M.S.
(Iowa State University)
Professor, Animal Sciences

OMENETTO, NICOLO, PH.D.
(University of Pavia)
Scientist, Chemistry

O'NEILL, DANIEL I., PH.D.
(University of California at Los Angeles)
Assistant Professor, Political Science

ONGIRI, AMY A., PH.D.
(Cornell University)
Assistant Professor, English

ONO, FUMIHITO, M.D.
(University of Tokyo)
Assistant Professor, Neuroscience

O**PDYKE, NEIL D., PH.D.**
(University of Durham)
Distinguished Professor, Geological Sciences

OPPENHEIM, PAUL, PH.D.
(University of Maryland)
Professor, Building Construction

OPPENHEIMER, DAVID, PH.D.
(University of Minnesota)
Associate Professor, Botany

ORAZEM, MARK E., PH.D.
(University of California at Berkeley)
Professor, Chemical Engineering

ORBAN, BARBARA L., PH.D.
(University of California at Los Angeles)
Associate Professor, Health Services Research, Management and Policy

OREN, IDO, PH.D.
(University of Chicago)
Associate Professor, Political Science

ORR, KEVIN R., D.M.A.
(Case Western Reserve University)
Assistant Professor, Music

OSBORNE, EDWARD W., PH.D.
(Ohio State University)
Professor, Agricultural Education and Communication

OSBORNE, LANCE S., PH.D.
(University of California at Davis)
Professor, Entomology and Nematology

OSENBERG, CRAIG W., PH.D.
(Michigan State University)
Professor, Zoology

OSHANA, MARINA I., PH.D.
(University of California at Davis)
Associate Professor, Philosophy

OSTROFF, DAVID H., PH.D.
(Ohio University)
Professor, Journalism and Communications

OSTROV, DAVID A., PH.D.
(University of Washington)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

OTT, EDGAR A., PH.D.
(Purdue University)
Professor, Animal Sciences

OTWELL, WALTER S., PH.D.
(North Carolina State University)
Professor, Food Science and Human Nutrition

OU, LI-TSE, PH.D.
(University of Rochester)
Scientist, Soil and Water Science

OUYANG, YING, PH.D.
(Oregon State University)
Assistant Professor, Soil and Water Science

OVERHOLT, WILLIAM A., PH.D.
(Texas A&M University)
Assistant Professor, Entomology and Nematology

OVERMAN, ALLEN R., PH.D.
(North Carolina State University)
Professor, Agricultural and Biological Engineering

P

PABLO, LUISITO S., M.S.
(Auburn University)
Associate Professor, Veterinary Medicine

PACE, BARBARA G., PH.D.
(University of Florida)
Assistant Professor, Teaching and Learning

PACKHAM, CHRISTOPHER C., PH.D.
(University of Hertfordshire)
Assistant Scientist, Astronomy

PACTOR, HOWARD S., PH.D.
(University of Tennessee)
Associate Professor, Journalism and Communications

PAGAN-WOLPERT, VICTORIA E., PH.D.
(University of Chicago)
Assistant Professor, Classics

PAGE, JUDITH W., PH.D.
(University of Chicago)
Associate Professor, English

PAGE, LAWRENCE M., PH.D.
(University of Illinois)
Scientist, Zoology

PALENIK, GUS, PH.D.
(University of Southern California)
Professor, Chemistry

PALMER, CAROL J., PH.D.
(University of Hawaii)
Research Professor, Veterinary Medicine

PALMER, JOHN A., PH.D.
(Princeton University)
Associate Professor, Philosophy

PALTA, JATINDER R., PH.D.
(University of Missouri)
Professor, Nuclear and Radiological Engineering

PAPKE, ROGER L., PH.D.
(Cornell University)
Associate Professor, Pharmacology and Therapeutics

PAPPENHEIMER, WILLIAM D., M.F.A.
(School of the Museum of Fine Arts)
Assistant Professor, Art and Art History

PARDALOS, PANAGOTE M., PH.D.
(University of Minnesota)
Professor, Industrial and Systems Engineering

PAREDES, JAMES A., PH.D.
(University of New Mexico)
Professor, Anthropology

PARISH, MICKEY E., PH.D.
(North Carolina State University)
Professor, Food Science and Human Nutrition

PARK, CHANG-WON, PH.D.
(Stanford University)
Professor, Chemical Engineering

PARKER, KAREN F., PH.D.
(North Carolina State University)
Associate Professor, Sociology

PARKER, W. MAX., PH.D.
(University of Florida)
Professor, Counselor Education

PARKYN, DARYL C., PH.D.
(University of Victoria)
Research Assistant Professor, Fisheries and Aquatic Sciences

PARSONS, LAWRENCE R., PH.D.
(Duke University)
Professor, Horticultural Science

PATEL, JAWAHARLAL M., PH.D.
(Marathwada University)
Professor, Pharmacology and Therapeutics

PATHAK, PRAVEEN, PH.D.
(University of Michigan)
Assistant Professor, Decision and Information Sciences

PATTERSON, RICHARD S., PH.D.
(Cornell University)
Professor, Entomology and Nematology

PAUL, ANAND A., PH.D.
(University of Texas at Austin)
Assistant Professor, Decision and Information Sciences

PAULAY, GUSTAV, PH.D.
(University of Washington)
Associate Professor, Zoology

PAULUS, DAVID A., M.D.
(University of Vermont)
Professor, Mechanical and Aerospace Engineering

PAXSON, JAMES J., PH.D.
(State University of New York at Stony Brook)
Associate Professor, English

PEARTON, STEPHEN J., PH.D.
(University of Tasmania)
Distinguished Professor, Materials Science and Engineering

PECK, AMMON B., PH.D.
(University of Wisconsin)
Professor, Pathology, Immunology and Laboratory Medicine

PEEK, CHARLES W., PH.D.
(University of Michigan)
Associate Professor, Sociology

PEIR, JIH-KWON, PH.D.
(University of Illinois at Urbana-Champaign)
Associate Professor, Computer and Information Science and Engineering

PENA, JORGE E., PH.D.
(University of Florida)
Professor, Entomology and Nematology

PENA, MILAGROS, PH.D.
(State University of New York at Stony Brook)
Associate Professor, Sociology

PENFIELD, RANDALL D., PH.D.
(University of Toronto)
Assistant Professor, Educational Psychology

PENNINGTON, LORI, PH.D.
(Michigan State University)
Assistant Professor, Tourism, Recreation and Sport Management

PEOPLES-SHEPS, MARY, D.P.H.
(University of North Carolina)
Associate Professor, Public Health

PEPINE, CARL J., M.D.
(New Jersey College of Medicine)
Eminent Scholar, Medicine

PERCIVAL, HENRY F., PH.D.
(Clemson University)
Associate Professor, Wildlife Ecology and Conservation

PERCIVAL, SUSAN S., PH.D.
(University of Texas at Austin)
Professor, Food Science and Human Nutrition

PEREIRA, DEIDRE B., PH.D.
(University of Miami)
Assistant Professor, Clinical and Health Psychology

PEREZ-MENDEZ, ALFONSO, M.ARCH.
(Columbia University)
Professor, Architecture

PERFIT, MICHAEL R., PH.D.
(Columbia University)
Professor, Geological Sciences

PERIS, JOANNA N., PH.D.
(Oregon Health Sciences University)
Associate Professor, Pharmacodynamics

PERKINS, PETER V., PH.D.
(University of Florida)
Professor, Entomology and Nematology

PERLETTE, JOHN M., PH.D.
(University of Chicago)
Associate Professor, English

PERLSTEIN, WILLIAM, PH.D.
(University of Delaware)
Assistant Professor, Clinical and Health Psychology

PERNEZNY, KENNETH L., PH.D.
(Ohio State University)
Professor, Plant Pathology

PERRI, MICHAEL G., PH.D.
(University of Missouri-Columbia)
Professor, Clinical and Health Psychology

PERRONE, CHARLES A., PH.D.
(University of Texas at Austin)
Professor, Romance Languages and Literatures

PERRY, MARIAN L., PH.D.
(University of Florida)
Assistant Professor, Journalism and Communications

PERZ, STEPHEN G., PH.D.
(University of Texas at Austin)
Assistant Professor, Sociology

PESCADOR, MANUEL L., PH.D.
(Florida State University)
Professor, Entomology and Nematology

PETER, GARY F., PH.D.
(University of California at Los Angeles)
Associate Professor, Forest Resources and Conservation

PETERS, DON C., J.D.
(University of Iowa)
Professor, Comparative Law

PETERS, JORG, PH.D.
(University of Wisconsin)
Associate Professor, Computer and Information Science and Engineering

PETERSEN, BRYON E., PH.D.
(University of Pittsburgh)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

PETERSON, ANNA L., PH.D.
(University of Chicago)
Professor, Religion

PETERSON, JILL E., PH.D.
(Rice University)
Associate Professor, Mechanical and Aerospace Engineering

PETIGNY, ALAN C., PH.D.
(Brown University)
Assistant Professor, History

PETITT, FREDERICK L., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

PETITTO, JOHN M., M.D.
(University of North Carolina at Chapel Hill)
Professor, Neuroscience

PEVONKA, M. P., M.S.P.
(University of Florida)
Professor, Pharmacy

PFAHLER, PAUL L., PH.D.
(Purdue University)
Professor, Agronomy

PHARIES, DAVID A., PH.D.
(University of California at Berkeley)
Professor, Romance Languages and Literatures

PHELPS, STEVEN M., PH.D.
(University of Texas at Austin)
Assistant Professor, Zoology

PHILLIPS, RHONDA G., PH.D.
(Georgia Institute of Technology)
Associate Professor, Urban and Regional Planning

PHILLIPS, WINFRED M., D.SC.
(University of Virginia)
Professor, Mechanical and Aerospace Engineering

PHILLPOT, SIMON R., PH.D.
(University of Florida)
Professor, Materials Science and Engineering

PHLIPS, EDWARD J., PH.D.
(University of Miami)
Professor, Fisheries and Aquatic Sciences

PIENTA, AMY M., PH.D.
(State University of New York at Buffalo)
Assistant Professor, Sociology

PIGG, R. MORGAN, D.H.S.
(Indiana University)
Professor, Health Education and Behavior

PILYUGIN, SERGEI, PH.D.
(Emory University)
Assistant Professor, Mathematics

PINA, ROBERT K., PH.D.
(University of California at San Diego)
Assistant Professor, Astronomy

PINKNEY, MICHAEL L., M.A.
(Ohio State University)
Associate Professor, Theatre and Dance

PIQUERO, ALEXIS R., PH.D.
(University of Maryland)
Professor, Sociology

PIQUERO, NICOLE L., PH.D.
(University of Maryland)
Assistant Professor, Sociology

PIRAMUTHU, SELWYN, PH.D.
(University of Illinois at Urbana-Champaign)
Associate Professor, Decision and Information Sciences

PISANI, JOSEPH R., PH.D.
(University of Maryland)
Professor, Journalism and Communications

PITTS, JAMES H., PH.D.
(University of Northern Colorado)
Associate Professor, Counselor Education

PLACE, NICK T., PH.D.
(Pennsylvania State University)
Associate Professor, Agricultural Education and Communication

PLEASANTS, JULIAN M., PH.D.
(University of North Carolina)
Professor, History

PLOETZ, RANDY C., PH.D.
(University of Florida)
Professor, Plant Pathology

POCESKI, MARIO, PH.D.
(University of California at Los Angeles)
Assistant Professor, Religion

POE, ALICE H., M.N.
(Emory University)
Assistant Professor, Nursing

POHL, MARY E., PH.D.
(Howard University)
Associate Professor, Anthropology

POHLMAN, RICHARD W., M.ARCH.
(Cornell University)
Associate Professor, Architecture

POLSTON, JANE E., PH.D.
(University of California at Riverside)
Professor, Plant Pathology

POP STOJANOVIC, ZORAN R., PH.D.
(University of Belgrade)
Professor, Mathematics

POPENOE, HUGH L., PH.D.
(University of Florida)
Professor, Soil and Water Science

PORTER, CHARLOTTE M., PH.D.
(Harvard University)
Professor, History

PORTER, SANFORD D., PH.D.
(Florida State University)
Assistant Professor, Entomology and Nematology

PORTER, WENDELL A., PH.D.
(University of Florida)
Assistant Research Scientist, Agricultural and Biological Engineering

PORTIER, KENNETH M., PH.D.
(University of North Carolina)
Associate Professor, Statistics

PORTILLO, MARGARET B., PH.D.
(University of Wisconsin)
Associate Professor, Interior Design

POTSDAM, ERIC H., PH.D.
(University of California at Santa Cruz)
Assistant Professor, Linguistics

POWELL, CHARLES A., PH.D.
(University of Nebraska)
Professor, Plant Pathology

POWELL, DAVID H., PH.D.
(University of Florida)
Scientist, Chemistry

POWELL, PADGETT, M.A.
(University of Houston)
Professor, English

POWERS, MICHAEL E., PH.D.
(University of Virginia)
Assistant Professor, Applied Physiology and Kinesiology

POWERS, SCOTT K., PH.D.
(Louisiana State University)
Professor, Applied Physiology and Kinesiology

POYNOR, ROBIN E., PH.D.
(Indiana University)
Professor, Art and Art History

PRATT, PAUL D., PH.D.
(Oregon State University)
Assistant Professor, Entomology and Nematology

PRENGER, JOSEPH P., PH.D.
(University of Missouri at Columbia)
Research Assistant Professor, Soil and Water Science

PRESNELL, BRETT D., PH.D.
(Florida State University)
Associate Professor, Statistics

PRESTON, JAMES F., PH.D.
(University of Minnesota)
Professor, Microbiology and Cell Science

PRICE, DONALD, PH.D.
(Purdue University)
Professor, Agricultural and Biological Engineering

PRICE, DONALD D., PH.D.
(University of California)
Professor, Neuroscience

PRICE, JAMES F., PH.D.
(Clemson University)
Associate Professor, Entomology and Nematology

PRIMOSCH, ROBERT E., D.D.S.
(Medical College of Virginia)
Professor, Dentistry

PRINCIPE, JOSE C., PH.D.
(University of Florida)
Distinguished Professor, Electrical and Computer Engineering

PRINE, GORDON M., PH.D.
(Ohio State University)
Professor, Agronomy

PRING, DARYL R., PH.D.
(North Dakota State University)
Professor, Plant Pathology

PRINGLE, ROSE M., PH.D.
(Florida State University)
Assistant Professor, Teaching and Learning

PROGULSKE-FOX, ANN, PH.D.
(University of Massachusetts)
Professor, Oral Biology

PROKAI, LASZLO, PH.D.
(Vezprem University)
Professor, Pharmaceutics

PROPERZIO, WILLIAM S., PH.D.
(University of Florida)
Associate Professor, Nuclear and Radiological Engineering

PRUETT, STEVEN R., PH.D.
(University of Wisconsin)
Assistant Professor, Rehabilitation Counseling

PRUGH, PETER E., M.ARCH.
(Harvard University)
Associate Professor, Architecture

PUCKETT, WILLIAM E., PH.D.
(University of Florida)
Assistant Professor, Soil and Water Science

PURCIFULL, DAN E., PH.D.
(University of California at Davis)
Professor, Plant Pathology

PURICH, DANIEL L., PH.D.
(Iowa State University)
Professor, Biochemistry and Molecular Biology

PUTZ, FRANCIS E., PH.D.
(Cornell University)
Professor, Botany

Q

QIN, HONG, PH.D.
(University of Toronto)
Assistant Professor, Computer and Information Science and Engineering

QIU, ZONGAN, PH.D.
(University of Chicago)
Associate Professor, Physics

QUESENBERRY, KENNETH H., PH.D.
(University of Kentucky)
Professor, Agronomy

QUITTNER, ALEXANDRA L., PH.D.
(University of Western Ontario)
Professor, Clinical and Health Psychology

R

RABENS, MICHAEL B., PH.D.
(Princeton University)
Assistant Professor, Architecture

RADCLIFF, TIFFANY A., PH.D.
(University of Minnesota)
Assistant Professor, Health Services Research, Management and Policy

RADCLIFFE, ROBERT C., PH.D.
(Ohio State University)
Associate Professor, Finance, Insurance and Real Estate

RAE, DARRELL O., D.V.M.
(Colorado State University)
Associate Professor, Veterinary Medicine

RAID, RICHARD N., PH.D.
(Pennsylvania State University)
Professor, Plant Pathology

RAIZADA, MOHAN K., PH.D.
(University of Kanpur)
Professor, Physiology and Functional Genomics

RAJAGOPALAN, RAJ, PH.D.
(Syracuse University)
Professor, Chemical Engineering

RAKOV, VLADIMIR A., PH.D.
(Tomsk Polytechnic Institute, Russia)
Professor, Electrical and Computer Engineering

RAMASWAMY, VELLAYAN, PH.D.
(Northwestern University)
Professor, Electrical and Computer Engineering

RAMOND, PIERRE, PH.D.
(Syracuse University)
Distinguished Professor, Physics

RAMPHAL, REUBEN, M.D.
(McGill University)
Professor, Molecular Genetics and Microbiology

RAND, KENNETH H., M.D.
(Stanford University)
Professor, Pathology, Immunology and Laboratory Medicine

RANDAZZO, ANTHONY F., PH.D.
(University of North Carolina)
Professor, Geological Sciences

RANDLES, RONALD H., PH.D.
(Florida State University)
Professor, Statistics

RANGARAJAN, ANAND, PH.D.
(University of Southern California)
Associate Professor, Computer and Information Science and Engineering

RANKA, SANJAY, PH.D.
(University of Minnesota)
Professor, Computer and Information Science and Engineering

RAO, MURALI, PH.D.
(Tata Institute)
Professor, Mathematics

RAO, PALAKURTHI S., PH.D.
(University of Hawaii)
Graduate Research Professor, Soil and Water Science

RAO, PEJAVER V., PH.D.
(University of Georgia)
Professor, Statistics

RAPOFF, ANDREW J., PH.D.
(University of Wisconsin)
Assistant Professor, Mechanical and Aerospace Engineering

RAREY, KYLE E., PH.D.
(Indiana University)
Professor, Anatomy and Cell Biology

RASCHE, MADELINE E., PH.D.
(University of California at Riverside)
Associate Professor, Microbiology and Cell Science

RASHID, MUHAMMAD H., PH.D.
(University of Birmingham)
Professor, Electrical and Computer Engineering

RASKIN, ROSE E., PH.D.
(Michigan State University)
Associate Professor, Veterinary Medicine

RATHINASABAPATHI, BALA, PH.D.
(University of Saskatchewan)
Associate Professor, Horticultural Science

RAY, GREG B., PH.D.
(University of California at Berkeley)
Associate Professor, Philosophy

RAY, ROBERT B., PH.D.
(Indiana University)
Professor, English

REA, JENNIFER, PH.D.
(University of Wisconsin)
Assistant Professor, Classics

RECHCIGL, JOHN E., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Soil and Water Science

REDDY, KONDA R., PH.D.
(Louisiana State University)
Graduate Research Professor, Soil and Water Science

REDDY, VIJAY S., PH.D.
(Memorial University of Newfoundland)
Assistant Professor, Medicine

REED, JILL V., D.V.M.
(Louisiana State University)
Associate Scientist, Anatomy and Cell Biology

REEP, ROGER L., PH.D.
(Michigan State University)
Professor, Veterinary Medicine

REEVES, WESTLEY H., M.D.
(Yale University)
Eminent Scholar, Pathology, Immunology and Laboratory Medicine

REICHARD, CARY L., ED.D.
(University of Northern Colorado)
Professor, Special Education

REID, MARK A., PH.D.
(University of Iowa)
Professor, English

REIER, PAUL J., PH.D.
(Case Western Reserve University)
Eminent Scholar, Neuroscience

REISKIND, JONATHAN, PH.D.
(Harvard University)
Associate Professor, Zoology

REITZE, DAVID H., PH.D.
(University of Texas at Austin)
Professor, Physics

REMSHARDT, RALF E., PH.D.
(University of California at Santa Barbara)
Associate Professor, Theatre and Dance

REN, FAN, PH.D.
(Polytechnic Institute of Brooklyn)
Professor, Chemical Engineering

RENNE, ROLF, PH.D.
(Albert-Ludwigs University)
Associate Professor, Molecular Genetics and Microbiology

RENNER, RICHARD R., PH.D.
(University of Texas at Austin)
Professor, Educational Psychology

RENNERT, HELLMUT H., PH.D.
(University of Washington)
Associate Professor, Germanic and Slavic Studies

REPETTO, JEANNE, PH.D.
(University of Missouri)
Associate Professor, Special Education

RESNICK, JAMES L., PH.D.
(University of Pittsburgh)
Associate Professor, Molecular Genetics and Microbiology

RESNICK, JAQUELYN L., PH.D.
(University of Florida)
Professor, Counselor Education

RESNICK, MICHAEL B., ED.D.
(University of Florida)
Professor, Pediatrics

REVELLE, BARBARA J., PH.D.
(University of Colorado)
Professor, Art and Art History

REY, JORGE, PH.D.
(Florida State University)
Professor, Entomology and Nematology

REYES, FRANCISCO J., PH.D.
(University of Florida)
Associate Scientist, Astronomy

REYNOLDS, JOHN E., PH.D.
(Iowa State University)
Professor, Food and Resource Economics

REYNOLDS, JOHN R., PH.D.
(University of Massachusetts)
Professor, Chemistry

RHUE, ROY D., PH.D.
(Oregon State University)
Professor, Soil and Water Science

RICE, KENNETH G., PH.D.
(University of Florida)
Associate Professor, Wildlife Ecology and Conservation

RICE, KENNETH G., PH.D.
(University of Notre Dame)
Associate Professor, Psychology

RICE, RONALD W., PH.D.
(University of Florida)
Assistant Professor, Horticultural Science

RICH, JIMMY R., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

RICHARD, GEORGE A., M.D.
(University of Pittsburgh)
Professor, Pediatrics

RICHARDS, HANNO B., M.D.
(Heidelberg University)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

RICHARDS, LORIE G., PH.D.
(Syracuse University)
Associate Professor, Occupational Therapy

RICHARDS, NIGEL G., PH.D.
(University of Cambridge)
Professor, Chemistry

RICHARDS, PAUL S., D.M.A.
(University of Texas)
Associate Professor, Music

RICHARDSON, DAVID E., PH.D.
(Stanford University)
Professor, Chemistry

RICHARDSON, DAVID M., LL.M.
(New York University)
Professor, Taxation

RIDGDILL, GARY D., M.ARCH.
(Massachusetts Institute of Technology)
Professor, Architecture

RIED, LYLE D., PH.D.
(University of Minnesota)
Professor, Pharmacy Health Care Administration

RIENZO, BARBARA A., PH.D.
(Southern Illinois University)
Professor, Health Education and Behavior

RIFFEE, WILLIAM H., PH.D.
(Ohio State University)
Professor, Pharmacodynamics

RILEY, DAVID G., PH.D.
(Texas A&M University)
Assistant Professor, Animal Sciences

RILEY, JOSEPH L., PH.D.
(University of Florida)
Assistant Professor, Dentistry

RINZLER, ANDREW G., PH.D.
(University of Connecticut)
Associate Professor, Physics

RISCO, CARLOS A., D.V.M.
(University of Florida)
Professor, Veterinary Medicine

RITCHIE, JOE T., PH.D.
(Iowa State University)
Visiting Professor, Agricultural and Biological Engineering

RITENOUR, MARK A., PH.D.
(University of California)
Associate Professor, Horticultural Science

RITTER, GERHARD, PH.D.
(University of Wisconsin)
Professor, Computer and Information Science and Engineering

RITTER, JAY R., PH.D.
(University of Chicago)
Joseph B. Cordell Eminent Scholar, Finance, Insurance and Real Estate

RITZ, LOUIS A., PH.D.
(University of Florida)
Associate Professor, Neuroscience

ROAN, VERNON P. JR., PH.D.
(University of Illinois)
Professor, Mechanical and Aerospace Engineering

ROBBINS, ANDREA, B.A.
(Hunter College)
Assistant Professor, Art and Art History

ROBERGE, CELESTE, M.F.A.
(Nova Scotia College of Art and Design)
Associate Professor, Art and Art History

ROBERTS, CHURCHILL L., PH.D.
(University of Iowa)
Professor, Journalism and Communications

ROBERTS, GREGORY D., PH.D.
(Kansas State University)
Clinical Assistant Professor, Veterinary Medicine

ROBERTS, MARILYN, PH.D.
(University of Texas at Austin)
Associate Professor, Journalism and Communications

ROBERTS, PAMELA D., PH.D.
(University of Florida)
Assistant Professor, Plant Pathology

ROBERTS, STEPHEN M., PH.D.
(University of Utah)
Professor, Veterinary Medicine

ROBERTSON, KEITH D., PH.D.
(Johns Hopkins University)
Assistant Professor, Biochemistry and Molecular Biology

ROBINSON, J. DANIEL, PHARM.D.
(University of Cincinnati)
Professor, Pharmacy

ROBINSON, MICHAEL E., PH.D.
(Bowling Green State University)
Professor, Clinical and Health Psychology

ROBINSON, PAUL L., PH.D.
(University of Warwick)
Professor, Mathematics

ROBINSON, RUSSELL L., PH.D.
(University of Miami)
Professor, Music

ROBISON, MARY, M.A.
(Johns Hopkins University)
Professor, English

ROCKWOOD, DONALD L., PH.D.
(North Carolina State University)
Professor, Forest Resources and Conservation

RODRICK, GARY E., PH.D.
(University of Oklahoma)
Professor, Food Science and Human Nutrition

RODRIGUE, JAMES R., PH.D.
(Memphis State University)
Professor, Clinical and Health Psychology

RODRIGUEZ, CARMEN S., PH.D.
(University of South Florida)
Assistant Professor, Nursing

ROGAL, MARIA K., M.F.A.
(Virginia Commonwealth University)
Assistant Professor, Art and Art History

ROGERS, KELLY E., PH.D.
(Columbia University)
Assistant Professor, Philosophy

ROGERS, MICHAEL E., PH.D.
(University of Kentucky)
Assistant Professor, Entomology and Nematology

ROGERS, RICHARD J., PH.D.
(University of Florida)
Assistant Professor, Physiology and Functional Genomics

ROITBERG, ADRIAN E., PH.D.
(University of Illinois at Chicago)
Associate Professor, Chemistry

ROKA, FRITZ M., PH.D.
(North Carolina State University)
Associate Professor, Food and Resource Economics

ROLAND, DENNIS C., ED.D.
(Illinois State University)
Associate Professor, Art and Art History

ROLLINS, JEFFREY A., PH.D.
(Purdue University)
Assistant Professor, Plant Molecular and Cellular Biology

ROMANO, RICHARD E., PH.D.
(University of Pittsburgh)
Professor, Economics

ROMEIJN, HILBRAND E., PH.D.
(Erasmus University)
Associate Professor, Industrial and Systems Engineering

ROMERO, CARLOS H., PH.D.
(Michigan State University)
Scientist, Veterinary Medicine

ROMRELL, LYNN J., PH.D.
(Utah State University)
Professor, Anatomy and Cell Biology

ROOSENRAAD, JON A., PH.D.
(Florida State University)
Professor, Journalism and Communications

ROPER, STEVEN N., M.D.
(University of Texas)
Professor, Neuroscience

ROQUE, REYNALDO, PH.D.
(University of Florida)
Professor, Civil and Coastal Engineering

ROSALSKY, ANDREW J., PH.D.
(Rutgers University)
Professor, Statistics

ROSE, RICHARD A., M.F.A.
(Connecticut College)
Associate Professor, Theatre and Dance

ROSENBAUM, WALTER A., PH.D.
(Princeton University)
Professor, Political Science

ROSENBEK, JOHN C., PH.D.
(University of Colorado)
Clinical Professor, Rehabilitation Science

ROSENBERG, LEAH R., PH.D.
(Cornell University)
Assistant Professor, English

ROSENSON, BETH A., PH.D.
(Massachusetts Institute of Technology)
Assistant Professor, Political Science

ROSS, DORENE D., ED.D.
(University of Virginia)
Professor, Teaching and Learning

ROSS, JAMES P., PH.D.
(University of Florida)
Associate Scientist, Wildlife Ecology and Conservation

ROTHMAN, HOWARD B., PH.D.
(Stanford University)
Professor, Communication Sciences and Disorders

ROUSE, ROBERT E., PH.D.
(University of Florida)
Associate Professor, Horticultural Science

ROUSEFF, RUSSELL L., PH.D.
(University of Georgia)
Professor, Food Science and Human Nutrition

ROVINE, VICTORIA, PH.D.
(Indiana University)
Assistant Professor, Art and Art History

ROWE, MEREDETH A., PH.D.
(University of Rochester)
Associate Professor, Nursing

ROWE, THOMAS C., PH.D.
(University of Florida)
Associate Professor, Pharmacology and Therapeutics

ROWLAND, NEIL E., PH.D.
(University of London)
Professor, Psychology

ROZENSKY, RONALD H., PH.D.
(University of Pittsburgh)
Professor, Clinical and Health Psychology

RUDD, RICK, PH.D.
(Virginia Polytechnic Institute and State University)
Associate Professor, Agricultural Education and Communication

RUDNYTSKY, PETER L., PH.D.
(Yale University)
Professor, English

RUDYAK, YULI B., PH.D.
(Moscow State University)
Assistant Professor, Mathematics

RUPPERT, KATHLEEN C., PH.D.
(University of Florida)
Assistant Extension Scientist, Horticultural Science

RUSH, MARK, PH.D.
(University of Rochester)
Professor, Economics

RUSH, SHARON E., J.D.
(Cornell University)
Professor, Comparative Law

RUSKIN, JAMES D., D.M.D.
(University of Florida)
Professor, Dentistry

RUSSELL, WAYNE L., PHARM.D.
(University of Florida)
Clinical Associate Professor, Pharmacy Health Care Administration

RUSSELL-BROWN, KATHERYN, PH.D.
(University of Maryland)
Professor, Comparative Law

RUSSELL-BROWN, SHERRIE L., LL.M.
(Columbia University)
Associate Professor, Comparative Law

RUSSO, SANDRA L., PH.D.
(University of Florida)
Associate Scientist, Women's Studies

RUTH, BYRON E., PH.D.
(West Virginia University)
Professor, Civil and Coastal Engineering

RUTLEDGE, CYNTHIA R., PH.D.
(Louisiana State University)
Assistant Professor, Entomology and Nematology

RYLKOVA, GALINA S., PH.D.
(University of Toronto)
Assistant Professor, Germanic and Slavic Studies

RYNDAK, DIANE, PH.D.
(University of Illinois)
Associate Professor, Special Education

RYNGAERT, MICHAEL D., PH.D.
(University of Chicago)
Professor, Finance, Insurance and Real Estate

S

SABIN, JOHN R., PH.D.
(University of New Hampshire)
Professor, Physics

SACKELLARES, CHRIS J., M.D.
(Medical College of Georgia)
Professor, Neuroscience

SADLEIR, ROSALIND JANE., PH.D.
(University of Western Australia)
Assistant Scientist, Physics

SAH, CHIH-TANG, PH.D.
(Stanford University)
Graduate Research Professor and Robert C. Pittman Eminent Scholar, Electrical and Computer Engineering

SAHNI, SARTAJ, PH.D.
(Cornell University)
Distinguished Professor, Computer and Information Science and Engineering

SAIN, JAMES P., D.M.A.
(University of Alabama)
Associate Professor, Music

SALYANI, MASOUD, PH.D.
(North Carolina State University)
Professor, Agricultural and Biological Engineering

SAMUELSON, DON A., PH.D.
(University of Florida)
Professor, Veterinary Medicine

SANCHEZ, LINDA C., PH.D.
(University of Florida)
Assistant Professor, Veterinary Medicine

SAND, ROBERT S., PH.D.
(University of Kentucky)
Associate Professor, Animal Sciences

SANDEEN, CARL A., PH.D.
(Michigan State University)
Professor, Educational Leadership, Policy and Foundations

SANDERS, BEVERLY A., PH.D.
(Harvard University)
Associate Professor, Computer and Information Science and Engineering

SANDERS, NANCY M., M.ARCH.
(Harvard University)
Assistant Professor, Architecture

SANDROCK, DAVID R., PH.D.
(Oregon State University)
Assistant Professor, Environmental Horticulture

SANKAR, BHAVANI V., PH.D.
(Purdue University)
Professor, Mechanical and Aerospace Engineering

SAPIENZA, CHRISTINE M., PH.D.
(State University of New York at Buffalo)
Professor, Communication Sciences and Disorders

SAPPINGTON, DAVID, PH.D.
(Princeton University)
Lanzilotti-McKethan Eminent Scholar, Economics

SARAJEDINI, ATA, PH.D.
(Yale University)
Associate Professor, Astronomy

SARAJEDINI, VICKI L., PH.D.
(University of Arizona)
Assistant Professor, Astronomy

SARGENT, STEVEN A., PH.D.
(Michigan State University)
Professor, Horticultural Science

SARNTINORANONT, MALISA, PH.D.
(University of California at Berkeley)
Assistant Professor, Mechanical and Aerospace Engineering

SARTAIN, JERRY B., PH.D.
(North Carolina State University)
Professor, Soil and Water Science

SASSAMAN, KENNETH E., PH.D.
(University of Massachusetts)
Associate Professor, Anthropology

SATOH, MINORU, PH.D.
(Keio University)
Research Associate Professor, Pathology, Immunology and Laboratory Medicine

SAWYER, ALAN G., PH.D.
(Stanford University)
Professor, Marketing

SAWYER, HORACE W., ED.D.
(Auburn University)
Professor, Rehabilitation Counseling

SAWYER, WALLACE G., PH.D.
(Rensselaer Polytechnic Institute)
Assistant Professor, Mechanical and Aerospace Engineering

SAXON, JOHN P., PH.D.
(University of Georgia)
Professor, Rehabilitation Counseling

SAXON, STEPHEN A., PH.D.
(Florida State University)
Professor, Mathematics

SAYESKI, PETER P., PH.D.
(University of Alabama)
Assistant Professor, Physiology and Functional Genomics

SCANZONI, JOHN H., PH.D.
(University of Oregon)
Professor, Sociology

SCARPACE, NIHAL T., PH.D.
(Hacettepe University)
Professor, Pharmacology and Therapeutics

SCARPACE, PHILIP J., PH.D.
(University of Rochester)
Professor, Pharmacology and Therapeutics

SCHAEFER, JOSEPH M., PH.D.
(Iowa State University)
Professor, Wildlife Ecology and Conservation

SCHAFFER, BRUCE A., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Horticultural Science

SCHAFFER, SUSAN D., PH.D.
(George Mason University)
Assistant Professor, Nursing

SCHANZE, KIRK S., PH.D.
(University of North Carolina at Chapel Hill)
Professor, Chemistry

SCHARF, MICHAEL E., PH.D.
(Purdue University)
Assistant Scientist, Entomology and Nematology

SCHATZ, DESMOND A., PH.D.
(University of Witwatersrand)
Professor, Pathology, Immunology and Laboratory Medicine

SCHAUB, DIANE A., PH.D.
(Arizona State University)
Lecturer, Industrial and Systems Engineering

SCHAUBLE, PAUL G., PH.D.
(Michigan State University)
Professor, Psychology

SCHEFFRAHN, RUDOLF H., PH.D.
(University of California at Riverside)
Professor, Entomology and Nematology

SCHEIBER, SLOANE M., PH.D.
(University of Georgia)
Assistant Professor, Horticultural Science

SCHER, RICHARD K., PH.D.
(Columbia University)
Professor, Political Science

SCHLENKER, BARRY R., PH.D.
(State University of New York at Albany)
Professor, Psychology

SCHMELING, GARETH L., PH.D.
(University of Wisconsin)
Distinguished Professor, Classics

SCHMIDT, PATRICIA, PH.D.
(Pennsylvania State University)
Professor, English

SCHMIDT, PETER R., PH.D.
(Northwestern University)
Professor, Anthropology

SCHMIDT, ROBERT A., PH.D.
(Pennsylvania State University)
Professor, Forest Resources and Conservation

SCHMIDT, RONALD H., PH.D.
(University of Minnesota)
Professor, Food Science and Human Nutrition

SCHMINK, MARIANNE C., PH.D.
(University of Texas at Austin)
Professor, Anthropology

SCHMIT, MARK J., PH.D.
(Bowling Green State University)
Assistant Professor, Management

SCHMITZ, ANDREW, PH.D.
(University of Wisconsin)
Eminent Scholar, Food and Resource Economics

SCHMITZ, TONY L., PH.D.
(University of Florida)
Assistant Professor, Mechanical and Aerospace Engineering

SCHNADELBACH, RAYMOND T., M.L.A.
(Harvard University)
Professor, Landscape Architecture

SCHNEIDER, KEITH R., PH.D.
(University of Florida)
Assistant Professor, Food Science and Human Nutrition

SCHNEIDER, MARKUS, PH.D.
(Fern Universitat Hagen)
Assistant Professor, Computer and Information Science and Engineering

SCHNEIDER, RICHARD H., PH.D.
(University of Florida)
Professor, Urban and Regional Planning

SCHOEB, TRENTON R., PH.D.
(University of Alabama)
Professor, Veterinary Medicine

SCHOELLHORN, RICHARD K., PH.D.
(University of Florida)
Associate Professor, Horticultural Science

SCHOESSOW, GLEN J., M.S.M.E.
(Purdue University)
Professor, Nuclear and Radiological Engineering

SCHOLBERG, JOHANNES M., PH.D.
(University of Florida)
Assistant Professor, Agronomy

SCHOOLFIELD, CLYDE, PH.D.
(Johns Hopkins University)
Assistant Professor, Statistics

SCHUELLER, JOHN K., PH.D.
(Purdue University)
Professor, Mechanical and Aerospace Engineering

SCHUELLER, MALINI J., PH.D.
(Purdue University)
Professor, English

SCHUERGER, ANDREW C., PH.D.
(University of Florida)
Assistant Professor, Plant Pathology

SCHULMAN, STEPHEN G., PH.D.
(University of Arizona)
Professor, Medicinal Chemistry

SCHULTZ, GREGORY S., PH.D.
(Oklahoma State University)
Professor, Biochemistry and Molecular Biology

SCHULZ, GERALYN M., PH.D.
(University of Maryland)
Assistant Professor, Communication Sciences and Disorders

SCHUSTER, DAVID J., PH.D.
(Oklahoma State University)
Professor, Entomology and Nematology

SCHUSTER, SHELDON M., PH.D.
(University of Arizona)
Professor, Biochemistry and Molecular Biology

SCHUTTE, OFELIA, PH.D.
(Yale University)
Professor, Philosophy

SCHUUR, EDWARD A., PH.D.
(University of California at Berkeley)
Assistant Professor, Botany

SCHWARTZ, MICHAEL A., PH.D.
(University of Wisconsin)
Professor, Pharmaceutics

SCHWARTZ, STUART E., ED.D.
(University of Kansas)
Professor, Special Education

SCICCHITANO, MICHAEL J., PH.D.
(University of Georgia)
Associate Professor, Political Science

SCORNIK, JUAN C., M.D.
(University of La Plata)
Professor, Pathology, Immunology and Laboratory Medicine

SCOTT, DARYL M., PH.D.
(Towson State University)
Associate Professor, History

SCOTT, EDWARD W., PH.D.
(University of Florida)
Associate Professor, Molecular Genetics and Microbiology

SCOTT, JOHN F., PH.D.
(Columbia University)
Professor, Art and Art History

SCOTT, JOHN W., PH.D.
(Ohio State University)
Professor, Horticultural Science

SCOTT, MICHAEL J., PH.D.
(Harvard University)
Associate Professor, Chemistry

SCOTT, TERRY M., PH.D.
(University of Oregon)
Associate Professor, Special Education

SCREATON, ELIZABETH J., PH.D.
(Lehigh University)
Assistant Professor, Geological Sciences

SCULLY, BRIAN T., PH.D.
(Cornell University)
Professor, Horticultural Science

SEALE, JAMES L., PH.D.
(Michigan State University)
Professor, Food and Resource Economics

SEAMAN, WILLIAM, PH.D.
(University of Florida)
Professor, Fisheries and Aquatic Sciences

SEARS, SAMUEL F., PH.D.
(University of Florida)
Associate Professor, Clinical and Health Psychology

SEAWRIGHT, JACK A., PH.D.
(University of Florida)
Associate Professor, Entomology and Nematology

SEELYE, JOHN D., PH.D.
(Claremont McKenna College)
Graduate Research Professor, English

SEGAL, CORIN, PH.D.
(University of Virginia)
Associate Professor, Mechanical and Aerospace Engineering

SEGAL, ERIC J., PH.D.
(University of California at Los Angeles)
Assistant Professor, Art and Art History

SEGAL, MARK S., PH.D.
(University of Southwestern Texas)
Assistant Professor, Anatomy and Cell Biology

SEGAL, RICHARD, PH.D.
(Virginia Commonwealth University)
Professor, Pharmacy Health Care Administration

SEIBERLING, LUCY E., PH.D.
(California Institute of Technology)
Professor, Physics

SEIFERT, HANS JUERGEN, PH.D.
(University of Stuttgart)
Associate Professor, Materials Science and Engineering

SELFRIDGE, RALPH G., PH.D.
(University of Oregon)
Professor, Computer and Information Science and Engineering

SELMAN, KAY E., PH.D.
(Harvard University)
Associate Professor, Anatomy and Cell Biology

SEMPLE-ROWLAND, SUSAN L., PH.D.
(University of Florida)
Associate Professor, Neuroscience

SENSBACH, JON, PH.D.
(Duke University)
Associate Professor, History

SEPULVEDA, MARIA S., PH.D.
(University of Florida)
Assistant Scientist, Veterinary Medicine

SERAPHINE, ANNE E., PH.D.
(University of Florida)
Assistant Professor, Educational Psychology

SETTLES, ANDREW M., PH.D.
(State University of New York at Stony Brook)
Assistant Professor, Horticultural Science

SEUNG, HEY-KYEUNG, PH.D.
(University of Wisconsin)
Assistant Professor, Communicative Disorders

SEVERY, LAWRENCE J., PH.D.
(University of Colorado)
Professor, Psychology

SEYMOUR, SANDRA F., PH.D.
(Florida State University)
Associate Professor, Nursing

SFORZA, PAT M., PH.D.
(Polytechnic Institute of Brooklyn)
Professor, Mechanical and Aerospace Engineering

SHAH, DINESH O., PH.D.
(Columbia University)
Professor, Chemical Engineering

SHANKER, AJAY, PH.D.
(Texas Tech University)
Associate Professor, Building Construction

SHANMUGAM, KEELNATHAM T., PH.D.
(University of Hawaii)
Professor, Microbiology and Cell Science

SHAPIRO, JEFFREY P., PH.D.
(Cornell University)
Professor, Entomology and Nematology

SHARMA, JYOTSNA, PH.D.
(University of Missouri at Columbia)
Assistant Professor, Environmental Horticulture

SHARON, BOAZ, M.M.
(Boston University)
Professor, Music

SHARP, DANIEL C., PH.D.
(University of Massachusetts)
Professor, Animal Sciences

SHARPE, KEVIN M., D.M.A.
(Indiana University)
Associate Professor, Music

SHATTERS, ROBERT G., PH.D.
(Washington State University)
Assistant Professor, Agronomy

SHAW, GERARD P., PH.D.
(University of London)
Professor, Neuroscience

SHAW, HARRY B., PH.D.
(University of Illinois)
Associate Professor, English

SHAW, LELAND G., M.ARCH.
(University of California at Berkeley)
Professor, Architecture

SHAW, LINDA R., PH.D.
(Florida State University)
Associate Professor, Rehabilitation Counseling

SHE, JIN-XIONG, PH.D.
(University of Montpellier)
Professor, Pathology, Immunology and Laboratory Medicine

SHEA, JOHN M., PH.D.
(Clemson University)
Assistant Professor, Electrical and Computer Engineering

SHEARER, JAN K., D.V.M.
(Ohio State University)
Professor, Veterinary Medicine

SHECHTMAN, ORIT, PH.D.
(Indiana University)
Associate Professor, Occupational Therapy

SHEEHAN, THOMAS J., PH.D.
(Cornell University)
Professor, Horticultural Science

SHEHAN, CONSTANCE L., PH.D.
(Pennsylvania State University)
Professor, Sociology

SHELTON, DAVID L., PH.D.
(University of Missouri)
Professor, Theatre and Dance

SHEN, CHIAYI, PH.D.
(University of Cincinnati)
Associate Professor, Materials Science and Engineering

SHEN, LI-CHIEN, PH.D.
(University of Wisconsin)
Professor, Mathematics

SHEN, WEI, PH.D.
(Texas A&M University)
Assistant Professor, Management

SHEN, ZUO-JUN, PH.D.
(Northwestern University)
Assistant Professor, Industrial and Systems Engineering

SHENG, Y. P., PH.D.
(Case Western Reserve University)
Professor, Civil and Coastal Engineering

SHENKMAN, ELIZABETH, PH.D.
(University of Florida)
Professor, Epidemiology and Health Policy

SHENKMAN, FREDERICK A., ED.D.
(University of Florida)
Associate Professor, Sociology

SHEPLAK, MARK, PH.D.
(Syracuse University)
Associate Professor, Mechanical and Aerospace Engineering

SHEPPARD, DONALD M., PH.D.
(Arizona State University)
Professor, Civil and Coastal Engineering

SHEPPERD, JAMES A., PH.D.
(University of Missouri)
Associate Professor, Psychology

SHERIF, SHERIF A., PH.D.
(Iowa State University)
Professor, Mechanical and Aerospace Engineering

SHERMAN, WAYNE B., PH.D.
(Purdue University)
Professor, Horticultural Science

SHERRARD, PETER A., ED.D.
(University of Massachusetts)
Associate Professor, Counselor Education

SHEU, JIUNN-JYE, PH.D.
(University of Texas)
Assistant Professor, Health Education and Behavior

SHIH, CHUAN-KANG, PH.D.
(Stanford University)
Assistant Professor, Anthropology

SHILLING, DONN G., PH.D.
(North Carolina State University)
Professor, Agronomy

SHIREMAN, JEROME V., PH.D.
(Iowa State University)
Professor, Fisheries and Aquatic Sciences

SHIRK, PAUL D., PH.D.
(Texas A&M University)
Assistant Professor, Entomology and Nematology

SHIVERICK, KATHLEEN A., PH.D.
(University of Vermont)
Professor, Pharmacology and Therapeutics

SHOAF, RICHARD A., PH.D.
(Cornell University)
Professor, English

SHRESTHA, RAMESH L., PH.D.
(University of Wisconsin)
Professor, Civil and Coastal Engineering

SHRIVASTAV, RAHUL, PH.D.
(Indiana University)
Assistant Professor, Communication Sciences and Disorders

SHUGAN, STEVEN M., PH.D.
(Northwestern University)
Russell Berrie Eminent Scholar, Marketing

SHUKLA, SANJAY, PH.D.
(Virginia Polytechnic Institute and State University)
Assistant Professor, Agricultural and Biological Engineering

SHUKLA, SHAILENDRA S., PH.D.
(Ohio University)
Research Assistant Professor, Nuclear and Radiological Engineering

SHUSTER, JONATHAN J., PH.D.
(McGill University)
Professor, Statistics

SHYY, WEI, PH.D.
(University of Michigan)
Distinguished Professor, Mechanical and Aerospace Engineering

SICKMAN, JAMES, PH.D.
(University of California at Santa Barbara)
Assistant Professor, Soil and Water Science

SIDERS, RONALD A., PH.D.
(University of Oregon)
Associate Professor, Applied Physiology and Kinesiology

SIDHU, SHIVJIT S., M.ARCH.
(University of California at Los Angeles)
Assistant Professor, Architecture

SIEBEIN, GARY W., M.ARCH.
(University of Florida)
Professor, Architecture

SIEMANN, DIETMAR W., PH.D.
(University of Toronto)
Professor, Pharmacology and Therapeutics

SIEVING, KATHRYN E., PH.D.
(University of Illinois)
Associate Professor, Wildlife Ecology and Conservation

SIGMUND, WOLFGANG M., PH.D.
(Max Planck Institute)
Associate Professor, Materials Science and Engineering

SIGUA, GILBERT C., PH.D.
(Louisiana State University)
Assistant Professor, Soil and Water Science

SIKIVIE, PIERRE, PH.D.
(Yale University)
Professor, Physics

SILHACEK, DONALD L., PH.D.
(University of Wisconsin)
Associate Professor, Entomology and Nematology

SILVERMAN, DAVID N., PH.D.
(Columbia University)
Distinguished Professor, Pharmacology and Therapeutics

SILVERSTEIN, JANET H., M.D.
(University of Pennsylvania)
Professor, Clinical and Health Psychology

SIMMONS, GWENDOLYN Z., PH.D.
(Temple University)
Assistant Professor, Religion

SIMMONS, JOHN K., PH.D.
(Ohio State University)
Peat, Marwick Distinguished Service Professor, Accounting

SIMMONS, JOSEPH H., PH.D.
(Catholic University of America)
Professor, Materials Science and Engineering

SIMONNE, AMARAT H., PH.D.
(University of Georgia)
Assistant Professor, Food Science and Human Nutrition

SIMONNE, ERIC H., PH.D.
(University of Georgia)
Assistant Professor, Horticultural Science

SIMPKINS, JAMES W., PH.D.
(Michigan State University)
Professor, Pharmacodynamics

SIMPSON, SHARLEEN H., PH.D.
(University of Florida)
Associate Professor, Nursing

SIMS, BRADFORD L., PH.D.
(Purdue University)
Assistant Professor, Building Construction

SIMS, CHARLES A., PH.D.
(University of Arkansas)
Professor, Food Science and Human Nutrition

SIN, PETER, D.PHIL.
(University of Oxford)
Professor, Mathematics

SINCLAIR, THOMAS R., PH.D.
(Cornell University)
Professor, Agronomy

SINDELAR, PAUL T., PH.D.
(University of Minnesota)
Professor, Special Education

SINGER, ROBERT N., PH.D.
(Ohio State University)
Professor, Applied Physiology and Kinesiology

SINGH, MEGH, PH.D.
(University of Florida)
Professor, Horticultural Science

SINGH, RAJIV K., PH.D.
(North Carolina State University)
Professor, Materials Science and Engineering

SINGLETON, GEORGE T., M.D.
(Baylor University)
Professor, Communication Sciences and Disorders

SINNOTT, SUSAN B., PH.D.
(Iowa State University)
Associate Professor, Materials Science and Engineering

SITHARAM, MEERA, PH.D.
(University of Wisconsin)
Associate Professor, Computer and Information Science and Engineering

SITREN, HARRY S., PH.D.
(Rutgers University)
Professor, Food Science and Human Nutrition

SIVINSKI, JOHN M., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

SKELLEY, PAUL E., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

SKELLEY, ROBERT C., M.F.A.
(Indiana University)
Professor, Art and Art History

SLANSKY, FRANK, PH.D.
(Cornell University)
Professor, Entomology and Nematology

SLATTON, KENNETH C., PH.D.
(University of Texas at Austin)
Assistant Professor, Electrical and Computer Engineering

SLAWSON, BRIAN, M.F.A.
(University of Michigan)
Associate Professor, Art and Art History

SLAYTON, WILLIAM B., M.D.
(University of Florida)
Assistant Professor, Molecular Genetics and Microbiology

SLINN, DONALD N., PH.D.
(University of Washington)
Associate Professor, Civil and Coastal Engineering

SLOAN, DON R., PH.D.
(University of Florida)
Associate Professor, Animal Sciences

SLOAN, KENNETH B., PH.D.
(University of Missouri)
Professor, Medicinal Chemistry

SLOBOGIN, CHRIS, LL.M.
(University of Virginia)
Professor, Comparative Law

SLUTSKY, STEVEN M., PH.D.
(Yale University)
Professor, Economics

SMALL, PARKER A., M.D.
(University of Cincinnati)
Professor, Pathology, Immunology and Laboratory Medicine

SMART, GROVER C., PH.D.
(University of Wisconsin)
Professor, Entomology and Nematology

SMERAGE, GLEN H., PH.D.
(Stanford University)
Associate Professor, Agricultural and Biological Engineering

SMITH, BENJAMIN W., PH.D.
(University of Florida)
Scientist, Chemistry

SMITH, BRENDA JO, D.M.A.
(University of Maryland)
Assistant Professor, Music

SMITH, CAMILLE M., PH.D.
(Indiana University)
Associate Professor, Music

SMITH, DANIEL A., PH.D.
(University of Wisconsin)
Associate Professor, Political Science

SMITH, DOUGLAS L., PH.D.
(University of Minnesota)
Professor, Geological Sciences

SMITH, HAYWOOD C., PH.D.
(University of Virginia)
Associate Professor, Astronomy

SMITH, JENNIFER K., M.A.
(University of North Carolina at Chapel Hill)
Associate Professor, Theatre and Dance

SMITH, LESLIE, PH.D.
(Florida State University)
Professor, Journalism and Communications

SMITH, LORA L., PH.D.
(University of Florida)
Assistant Professor, Wildlife Ecology and Conservation

SMITH, MARC T., PH.D.
(Ohio State University)
Associate Professor, Building Construction

SMITH, NAN S., M.F.A.
(Ohio State University)
Professor, Art and Art History

SMITH, NIGEL J., PH.D.
(University of California at Berkeley)
Professor, Geography

SMITH, REX L., PH.D.
(Iowa State University)
Professor, Agronomy

SMITH, RICK L., PH.D.
(Pennsylvania State University)
Associate Professor, Mathematics

SMITH, SCOT E., PH.D.
(University of Michigan)
Associate Professor, Civil and Coastal Engineering

SMITH, SONDRA, PH.D.
(University of North Carolina at Greensboro)
Assistant Professor, Counselor Education

SMITH, STANLEY K., PH.D.
(University of Michigan)
Professor, Economics

SMITH, STEPHANIE A., PH.D.
(University of California at Berkeley)
Associate Professor, English

SMITH, STEPHEN W., PH.D.
(University of Kansas)
Professor, Special Education

SMITH, SUZANNA D., PH.D.
(University of Georgia)
Associate Professor, Sociology

SMITH, WAYNE H., PH.D.
(Mississippi State University)
Professor, Forest Resources and Conservation

SMITH, WESLEY C., PH.D.
(Yale University)
Assistant Professor, Neuroscience

SMITH-BONAHUE, TINA M., PH.D.
(University of North Carolina at Chapel Hill)
Associate Professor, Educational Psychology

SMITTLE, BURRELL J., PH.D.
(Rutgers University)
Professor, Entomology and Nematology

SMOCOVITIS, VASSILIKI, PH.D.
(Cornell University)
Associate Professor, History

SNELSON, FRANKLIN F., PH.D.
(Cornell University)
Professor, Fisheries and Aquatic Sciences

SNIDER, MARTHA J., ED.D.
(University of Florida)
Associate Professor, Nursing

SNODGRASS, CHRIS G., PH.D.
(State University of New York at Buffalo)
Professor, English

SNOWBALL, DOUG A., PH.D.
(University of Washington)
Professor, Accounting

SNYDER, GEORGE H., PH.D.
(Ohio State University)
Professor, Soil and Water Science

SNYDER, RICHARD O., PH.D.
(State University of New York at Stony Brook)
Assistant Professor, Molecular Genetics and Microbiology

SOBEL, ERIC S., M.D.
(Case Western Reserve University)
Associate Professor, Pathology, Immunology and Laboratory Medicine

SODERHOLM, KARL J., D.D.S.
(University of Umea, Sweden)
Professor, Materials Science and Engineering

SOLLENBERGER, LYNNE E., PH.D.
(University of Florida)
Professor, Agronomy

SOLTIS, DOUGLAS E., PH.D.
(Indiana University)
Professor, Botany

SOLTIS, PAMELA S., PH.D.
(University of Kansas)
Professor, Botany

SOMMERVILLE, CHARLES J., PH.D.
(University of Iowa)
Professor, History

SONG, SIHONG, PH.D.
(University of Florida)
Assistant Professor, Pharmaceutics

SONG, WEN-YUAN, PH.D.
(University of California at Davis)
Assistant Professor, Plant Pathology

SORKIN, ROBERT D., PH.D.
(University of Michigan)
Professor, Psychology

SOUTHWICK, FREDERICK S., M.D.
(Columbia University)
Professor, Molecular Genetics and Microbiology

SOUTHWORTH, JANE, PH.D.
(Indiana University)
Assistant Professor, Geography

SOW, ALIOUNE, PH.D.
(Universite Paris IV Sorbonne)
Assistant Professor, Romance Languages and Literatures

SPALDING, MARILYN G., D.V.M.
(University of Florida)
Associate Scientist, Veterinary Medicine

SPANGLER, DANIEL P., PH.D.
(University of Arizona)
Associate Professor, Geological Sciences

SPECTOR, ALAN C., PH.D.
(Florida State University)
Professor, Psychology

SPENGLER, JOHN O., PH.D.
(Indiana University)
Assistant Professor, Tourism, Recreation and Sport Management

SPIKER, TED, M.S.
(Columbia University)
Assistant Professor, Journalism and Communications

SPILLANE, JOSEPH F., PH.D.
(Carnegie Mellon University)
Associate Professor, History

SPITZNAGEL, RONALD J., ED.D.
(Auburn University)
Associate Professor, Rehabilitation Counseling

SPRANGER, MICHAEL S., PH.D.
(Portland State University)
Professor, Family, Youth and Community Sciences

SPREEN, THOMAS H., PH.D.
(Purdue University)
Professor, Food and Resource Economics

SPRENKEL, RICHARD K., PH.D.
(University of Illinois)
Professor, Entomology and Nematology

SPRING, ANITA, PH.D.
(Cornell University)
Professor, Anthropology

SRIVASTAVA, ARUN, PH.D.
(Indian Institute of Science, Bangalore)
Professor, Pediatrics

SRIVASTAVA, RAMAKANT, PH.D.
(Indiana University)
Professor, Electrical and Computer Engineering

ST. MARY, COLETTE M., PH.D.
(University of California at Santa Barbara)
Associate Professor, Zoology

STACPOOLE, PETER W., M.D., PH.D.
(University of California at San Francisco)
Professor, Biochemistry and Molecular Biology

STALL, WILLIAM M., PH.D.
(University of Florida)
Professor, Horticultural Science

STAMPER, MICHAEL A., PH.D.
(Purdue University)
Assistant Professor, Fisheries and Aquatic Sciences

STAMPS, ROBERT H., PH.D.
(University of Florida)
Professor, Horticultural Science

STANGE, LIONEL A., PH.D.
(University of California at Davis)
Associate Professor, Entomology and Nematology

STANLEY, CRAIG D., PH.D.
(Iowa State University)
Professor, Soil and Water Science

STANLEY, DAVID J., PH.D.
(Pennsylvania State University)
Associate Professor, Art and Art History

STANSBURY, JAMES P., PH.D.
(University of Kentucky)
Assistant Professor, Anthropology

STANSLY, PHIL A., PH.D.
(Texas A&M University)
Professor, Entomology and Nematology

STANTON, CHRISTOPHER J., PH.D.
(Cornell University)
Professor, Physics

STAPLES, CHARLES R., PH.D.
(University of Illinois)
Professor, Animal Sciences

STARK, CHRISTOPHER W., PH.D.
(University of Michigan)
Associate Professor, Mathematics

STAVROPOULOS, MARY F., D.D.S.
(Virginia Commonwealth University)
Associate Professor, Dentistry

STEADMAN, DAVID W., PH.D.
(University of Arizona)
Professor, Zoology

STECHMILLER, JOYCE K., PH.D.
(University of Florida)
Associate Professor, Nursing

STECK, GARY J., PH.D.
(University of Tunis)
Assistant Professor, Entomology and Nematology

STEHOUWER, DONALD J., PH.D.
(Princeton University)
Professor, Psychology

STEIN, JAY M., PH.D.
(University of Michigan)
Professor, Urban and Regional Planning

STEIN, TAYLOR V., PH.D.
(University of Minnesota)
Associate Professor, Forest Resources and Conservation

STEINDLER, DENNIS A., PH.D.
(University of California at San Francisco)
Professor, Neuroscience

STEINER, RUTH L., PH.D.
(University of California at Berkeley)
Associate Professor, Urban and Regional Planning

STEPP, JOHN R., PH.D.
(University of Georgia)
Assistant Professor, Anthropology

STERK, ANDREA L., PH.D.
(Princeton Theological Seminary)
Assistant Professor, History

STERNS, JAMES A., PH.D.
(Michigan State University)
Assistant Professor, Food and Resource Economics

STEVENS, BRUCE R., PH.D.
(Illinois State University)
Professor, Physiology and Functional Genomics

STEWART, CAROL M., D.D.S.
(Indiana University)
Associate Professor, Dentistry

STEWART, GREGORY R., PH.D.
(Stanford University)
Professor, Physics

STEWART, JON D., PH.D.
(Cornell University)
Associate Professor, Chemistry

STILES, CAROL M., PH.D.
(Washington State University)
Assistant Professor, Plant Pathology

STIMAC, JERRY L., PH.D.
(Oregon State University)
Professor, Entomology and Nematology

STOCKER, RANDALL K., PH.D.
(Washington State University)
Professor, Agronomy

STOFFELLA, PETER J., PH.D.
(Cornell University)
Professor, Horticultural Science

STONER, KRISTEN L., D.M.A.
(University of Cincinnati)
Assistant Professor, Music

STOPKA-BOYD, CHRISTINE E., PH.D.
(University of Virginia)
Professor, Applied Physiology and Kinesiology

STOVER, EDDIE W., PH.D.
(University of Maryland)
Associate Professor, Horticultural Science

STRANDBERG, JAMES O., PH.D.
(University of Wisconsin)
Professor, Plant Pathology

STRANGIS, DIANE E., PH.D.
(University of Kentucky)
Assistant Professor, Teaching and Learning

STRAUSS, CYD C., PH.D.
(University of Georgia)
Clinical Associate Professor, Clinical and Health Psychology

STREIT, WOLFGANG J., PH.D.
(Medical University of South Carolina)
Professor, Neuroscience

STROH, ROBERT C., PH.D.
(Pennsylvania State University)
Research Professor, Building Construction

STUART, NATHAN V., PH.D.
(Indiana University)
Assistant Professor, Accounting

STULTS, BRIAN J., PH.D.
(University of Albany)
Assistant Professor, Criminology, Law and Society

STUTTE, GARY W., PH.D.
(University of California at Davis)
Associate Professor, Horticultural Science

SU, NAN-YAO, PH.D.
(University of Hawaii)
Professor, Entomology and Nematology

SU, STANLEY Y., PH.D.
(University of Wisconsin)
Professor, Electrical and Computer Engineering

SUCHMAN, DAVID I., PH.D.
(Ohio State University)
Professor, Psychology

SUGRUE, STEPHEN P., PH.D.
(University of Cincinnati)
Professor, Anatomy and Cell Biology

SULLIVAN, NEIL S., PH.D.
(Harvard University)
Professor, Physics

SULLIVAN, SEAN M., PH.D.
(University of Tennessee)
Associate Professor, Pharmaceutics

SULLIVAN, WILLIAM J., PH.D.
(Yale University)
Associate Professor, Germanic and Slavic Studies

SUMMERS, STEPHEN J., PH.D.
(Harvard University)
Professor, Mathematics

SUMNERS, COLIN, PH.D.
(University of Southampton)
Professor, Physiology and Functional Genomics

SUN, ZHONGJIE, PH.D.
(Shanghai Medical University)
Assistant Professor, Physiology and Functional Genomics

SUNQUIST, MELVIN E., PH.D.
(University of Minnesota)
Professor, Wildlife Ecology and Conservation

SUSSMAN, LEWIS A., PH.D.
(University of North Carolina)
Professor, Classics

SUTHERLAND, JOHN C., PH.D.
(Michigan State University)
Professor, Journalism and Communications

SUTTON, DAVID L., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Agronomy

SUTTON, ERIC C., PH.D.
(University of Iowa)
Assistant Professor, Electrical and Computer Engineering

SVETLOV, STANISLAV I., PH.D.
(Institute of Pediatrics and Children's Surgery)
Assistant Professor, Pathology, Immunology and Laboratory Medicine

SVORONOS, SPYROS, PH.D.
(University of Minnesota)
Professor, Chemical Engineering

SWAIN, COLLEEN R., PH.D.
(University of North Texas)
Associate Professor, Teaching and Learning

SWAMINATHAN, SANKAR, M.D.
(Emory University)
Associate Professor, Molecular Genetics and Microbiology

SWANSON, BERT E., PH.D.
(University of Oregon)
Professor, Political Science

SWANSON, MAURICE S., PH.D.
(University of California at Berkeley)
Professor, Molecular Genetics and Microbiology

SWETT, ELIZABETH A., PH.D.
(University of Wisconsin)
Assistant Professor, Rehabilitation Counseling

SWETT, ROBERT A., PH.D.
(University of Florida)
Assistant Professor, Fisheries and Aquatic Sciences

SWISHER, MARILYN E., PH.D.
(University of Florida)
Associate Professor, Interdisciplinary Ecology

SYVERTSEN, JAMES P., PH.D.
(New Mexico State University)
Professor, Horticultural Science

SZABO, NANCY J., PH.D.
(University of Florida)
Assistant Scientist, Veterinary Medicine

T

TABACHNICK, WALTER J., PH.D.
(Rutgers University)
Professor, Entomology and Nematology

TAKANO, YASUMASA, PH.D.
(Helsinki University of Technology)
Professor, Physics

TALBOT, MICHAEL T., PH.D.
(University of Florida)
Associate Professor, Agricultural and Biological Engineering

TALCOTT, STEPHEN T., PH.D.
(University of Arkansas)
Assistant Professor, Food Science and Human Nutrition

TALHAM, DANIEL R., PH.D.
(Johns Hopkins University)
Professor, Chemistry

TAN, WEIHONG, PH.D.
(University of Michigan)
Professor, Chemistry

TANNER, DAVID B., PH.D.
(Cornell University)
Professor, Physics

TANNER, GEORGE W., PH.D.
(Texas A&M University)
Professor, Wildlife Ecology and Conservation

TANZER, KIM, M.ARCH.
(North Carolina State University)
Professor, Architecture

TAPLEY, T. C., D.B.A.
(Indiana University)
Lecturer, Finance, Insurance and Real Estate

TATE, SUSAN D., M.S.
(University of Tennessee)
Professor, Interior Design

TAYLOR, BRON, PH.D.
(University of Southern California)
Associate Professor, Religion

TAYLOR, FRED J., PH.D.
(University of Colorado)
Professor, Computer and Information Science and Engineering

TAYLOR, GRACE W., J.D.
(University of Florida)
Lecturer, Law

TAYLOR, TIMOTHY G., PH.D.
(University of Florida)
Professor, Food and Resource Economics

TEBBETT, IAN R., PH.D.
(University of Strathclyde)
Professor, Veterinary Medicine

TEDESCO, JOSEPH W., PH.D.
(Lehigh University)
Professor, Civil and Coastal Engineering

TEITELBAUM, PHILIP, PH.D.
(Johns Hopkins University)
Graduate Research Professor, Psychology

TEIXIERA, ARTHUR A., PH.D.
(University of Massachusetts)
Professor, Agricultural and Biological Engineering

TELESCO, CHARLES M., PH.D.
(University of Chicago)
Professor, Astronomy

TELG, RICKY W., PH.D.
(Texas A&M University)
Associate Professor, Agricultural Education and Communication

TENAH, KWAKU A., PH.D.
(Texas A&M University)
Associate Professor, Building Construction

TENBROECK, SAUNDRA H., PH.D.
(Texas A&M University)
Associate Professor, Animal Sciences

TERADA, NAOHIRO, M.D.
(Osaka University)
Associate Professor, Pathology, Immunology and Laboratory Medicine

TERHUNE, JAMES L., PH.D.
(Indiana University)
Professor, Journalism and Communications

TERZIAN, SEVAN G., PH.D.
(Indiana University)
Assistant Professor, Teaching and Learning

THAPA, BRIJESH, PH.D.
(Pennsylvania State University)
Assistant Professor, Tourism, Recreation and Sport Management

THATCHER, WILLIAM W., PH.D.
(Michigan State University)
Graduate Research Professor, Animal Sciences

THEBAUT, STEPHEN M., PH.D.
(Purdue University)
Assistant Professor, Computer and Information Science and Engineering

THERRIAULT, DAVID, PH.D.
(University of Illinois at Chicago)
Assistant Professor, Educational Psychology

THETFORD, MACK, PH.D.
(North Carolina State University)
Associate Professor, Horticultural Science

THIEKE, ROBERT J., PH.D.
(University of California at Berkeley)
Assistant Professor, Civil and Coastal Engineering

THIELE, LESLIE P., PH.D.
(Princeton University)
Professor, Political Science

THOMAS, JENNIFER S., PH.D.
(University of Cincinnati)
Assistant Professor, Music

THOMAS, MICHAEL C., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

THOMAS, ROBERT E., PH.D.
(Stanford University)
Associate Professor, Management

THOMAS-HOUSTON, MARILYN M., PH.D.
(New York University)
Assistant Professor, Anthropology

THOMPSON, FLOYD J., PH.D.
(Indiana University)
Associate Professor, Neuroscience

THOMPSON, FRED G., PH.D.
(University of Miami)
Professor, Zoology

THOMPSON, JAMES P., PH.D.
(University of Florida)
Professor, Veterinary Medicine

THOMPSON, JOHN G., PH.D.
(University of Chicago)
Graduate Research Professor, Mathematics

THOMPSON, NEAL P., PH.D.
(Princeton University)
Professor, Food Science and Human Nutrition

THOMPSON, PATRICK A., PH.D.
(University of Wisconsin)
Lecturer, Decision and Information Sciences

THOMPSON, ROGER M., PH.D.
(University of Texas at Austin)
Associate Professor, English

THOMPSON, SCOTT, PH.D.
(University of Florida)
Associate Professor, Electrical and Computer Engineering

THOMSON, EWEN M., PH.D.
(University of Queensland)
Associate Professor, Electrical and Computer Engineering

THOMSON, ROBERT S., PH.D.
(University of Cambridge)
Associate Professor, English

THORN, CHARLES B., PH.D.
(University of California at Berkeley)
Professor, Physics

THORNE, KARL S., M.ARCH.
(University of Pennsylvania)
Professor, Architecture

THORNSBURY, SUZANNE D., PH.D.
(Virginia Polytechnic Institute and State University)
Assistant Professor, Food and Resource Economics

THORPE, CRYSTAL L., PH.D.
(Stanford University)
Assistant Professor, Philosophy

THRALL, GRANT I., PH.D.
(Ohio State University)
Professor, Geography

THRIFT, TODD A., PH.D.
(Texas A&M University)
Assistant Professor, Animal Sciences

THURNER, MARK W., PH.D.
(University of Wisconsin)
Associate Professor, History

THURSBY, GENE R., PH.D.
(Duke University)
Associate Professor, Religion

TIA, MANG, PH.D.
(Purdue University)
Professor, Civil and Coastal Engineering

TIAN, LILI, PH.D.
(University of Rochester)
Assistant Professor, Statistics

TIEDERMAN, WILLIAM G., PH.D.
(Stanford University)
Professor, Mechanical and Aerospace Engineering

TIEP, PHAM H., PH.D.
(Moscow State University)
Professor, Mathematics

TILLMAN, MARK D., PH.D.
(University of Florida)
Assistant Professor, Applied Physiology and Kinesiology

TILSON, WILLIAM L., M.ARCH.
(Virginia Polytechnic Institute and State University)
Professor, Architecture

TIMMER, LAVERN W., PH.D.
(University of California at Riverside)
Professor, Plant Pathology

TIMMERS, ADRIAN M., PH.D.
(Nymegan University)
Assistant Professor, Neuroscience

TINSLEY, HOWARD E., PH.D.
(University of Minnesota)
Assistant Professor, Psychology

TIPTON, LEONARD P., PH.D.
(University of Wisconsin)
Professor, Journalism and Communications

TISHER, C. CRAIG, M.D.
(Washington University)
Professor, Anatomy and Cell Biology

TODA, YASUSHI, PH.D.
(Harvard University)
Associate Professor, Economics

TODD, EUGENE A., ED.D.
(University of Houston)
Professor, Teaching and Learning

TODOROVICH, JOHN R., PH.D.
(University of Alabama)
Assistant Professor, Applied Physiology and Kinesiology

TOMAR, SCOTT L., D.P.H.
(University of Michigan)
Associate Professor, Public Health

TORRES, BARBARA A., PH.D.
(University of Florida)
Associate Scientist, Microbiology and Cell Science

TORRES, NAYDA I., PH.D.
(Ohio State University)
Professor, Family, Youth and Community Sciences

TOSI, HENRY, PH.D.
(Ohio State University)
McGriff Family Professor, Management

TOWLE, HERBERT J. III, D.D.S.
(Georgetown University)
Professor, Dentistry

TOWNSEND, FRANK C., PH.D.
(Oklahoma State University)
Professor, Civil and Coastal Engineering

TOWNSEND, JANE S., PH.D.
(University of Texas at Austin)
Associate Professor, Teaching and Learning

TOWNSEND, TIMOTHY G., PH.D.
(University of Florida)
Associate Professor, Environmental Engineering Sciences

TRAIL, GALEN T., PH.D.
(Ohio State University)
Associate Professor, Tourism, Recreation and Sport Management

TRAN-SON-TAY, ROGER, D.SC.
(Washington University)
Professor, Mechanical and Aerospace Engineering

TRAVIS, PATRICIA A., PH.D.
(Yale University)
Assistant Professor, Women's Studies

TREISE, DEBORAH M., PH.D.
(University of Tennessee)
Professor, Journalism and Communications

TRELOAR, DONNA M., PH.D.
(University of Florida)
Associate Professor, Nursing

TRENHOLM, LAURIE E., PH.D.
(University of Georgia)
Assistant Professor, Horticultural Science

TRICKEY, SAMUEL B., PH.D.
(Texas A&M University)
Professor, Physics

TRINDADE, ADAO A., PH.D.
(Colorado State University)
Assistant Professor, Statistics

TRIPLETT, ERIC W., PH.D.
(University of Missouri-Columbia)
Professor, Microbiology and Cell Science

TRIPP, BERNELL E., PH.D.
(University of Alabama)
Associate Professor, Journalism and Communications

TROEDSSON, MATS H., PH.D.
(University of California at Davis)
Professor, Veterinary Medicine

TROTTER, EUGENE E., ED.D.
(University of Illinois)
Professor, Agricultural Education and Communication

TRUHART, REGINA, M.F.A.
(University of Cincinnati)
Assistant Professor, Theatre and Dance

TSAI, JAMES H., PH.D.
(Michigan State University)
Professor, Entomology and Nematology

TSIN, MICHAEL, PH.D.
(Princeton University)
Associate Professor, History

TU, CHINGKUANG, PH.D.
(University of Miami)
Associate Scientist, Pharmacology and Therapeutics

TUCKER, CAROLYN M., PH.D.
(State University of New York at Stony Brook)
Professor, Psychology

TUCKER, JENNY, PH.D.
(New York University)
Assistant Professor, Accounting

TUELL, GRADY H., PH.D.
(Ohio State University)
Associate Professor, Civil and Coastal Engineering

TUFEKCI, SULEYMAN, PH.D.
(Georgia Institute of Technology)
Associate Professor, Industrial and Systems Engineering

TULENKO, JAMES S., M.S.
(Massachusetts Institute of Technology)
Professor, Nuclear and Radiological Engineering

TUMLINSON, JAMES H., PH.D.
(Mississippi State University)
Professor, Entomology and Nematology

TURIM, MAUREEN C., PH.D.
(University of Wisconsin)
Professor, English

TURNER, ALLEN E., PH.D.
(Purdue University)
Lecturer, Agricultural and Biological Engineering

TURNER, ELDON R., PH.D.
(University of Kansas)
Associate Professor, History

TURNER, GLENN E., D.M.D.
(University of Alabama)
Associate Professor, Dentistry

TURNER, JOSEPHINE, PH.D.
(Purdue University)
Professor, Family, Youth and Community Sciences

TURNER, R. E., PH.D.
(Purdue University)
Associate Professor, Food Science and Human Nutrition

TURULL, ALEXANDRE, PH.D.
(University of Chicago)
Professor, Mathematics

TWITCHELL, JAMES B., PH.D.
(University of North Carolina)
Professor, English

TYREE, LAWRENCE W., ED.D.
(Indiana University)
Professor, Educational Leadership, Policy and Foundations

U

UHL, ELIZABETH W., PH.D.
(University of Florida)
Assistant Professor, Veterinary Medicine

ULMER, GREGORY L., PH.D.
(Brown University)
Professor, English

UMAN, MARTIN A., PH.D.
(Princeton University)
Professor, Electrical and Computer Engineering

UNGOR, ALPER, PH.D.
(University of Illinois at Urbana-Champaign)
Assistant Professor, Computer and Information Science and Engineering

UNRUH, JOSEPH B., PH.D.
(Iowa State University)
Associate Professor, Horticultural Science

UPHOLD, CONSTANCE R., PH.D.
(University of Maryland)
Professor, Health Services Research, Management and Policy

URAL, ANT, PH.D.
(Stanford University)
Assistant Professor, Electrical and Computer Engineering

URYASEV, STANISLAV, PH.D.
(Glushkov Institute of Cybernetics)
Associate Professor, Industrial and Systems Engineering

V

VAKHARIA, ASOO J., PH.D.
(University of Wisconsin)
Professor, Decision and Information Sciences

VALA, MARTIN T., PH.D.
(University of Chicago)
Professor, Chemistry

VALENSTEIN, EDWARD, M.D.
(Albert Einstein College of Medicine)
Professor, Clinical and Health Psychology

VALLEJOS, CARLOS E., PH.D.
(University of California at Davis)
Associate Professor, Horticultural Science

VAN BLOKLAND, PETER J., PH.D.
(University of Illinois)
Professor, Food and Resource Economics

VAN DER HEIJDEN, MERIJN, M.F.A.
(Ohio State University)
Assistant Professor, Art and Art History

VAN HARTESVELDT, CAROL, PH.D.
(University of Rochester)
Professor, Psychology

VAN HOOK, JOHN W., PH.D.
(University of Washington)
Associate University Librarian, English

VAN OOSTROM, JOHANNES H., PH.D.
(Eindhoven University of Technology)
Assistant Professor, Electrical and Computer Engineering

VAN RINSVELT, HENRI A., PH.D.
(University of Utrecht)
Professor, Physics

VANDENBORNE, KRISTA, PH.D.
(Free University of Brussels)
Associate Professor, Physical Therapy

VANDIVER, FRANCES M., ED.D.
(University of Miami)
Professor, Educational Leadership, Policy and Foundations

VANDIVER, VERNON V., PH.D.
(North Carolina State University)
Associate Professor, Agronomy

VANSICKLE, JOHN J., PH.D.
(Iowa State University)
Professor, Food and Resource Economics

VARNES, JILL W., ED.D.
(University of Southern Mississippi)
Professor, Health Education and Behavior

VASQUEZ, MANUEL A., PH.D.
(Temple University)
Associate Professor, Religion

VAVRINA, CHARLES S., PH.D.
(University of Georgia)
Professor, Horticultural Science

VEGA, SERGIO, M.F.A.
(Yale University)
Assistant Professor, Art and Art History

VEIGE, ADAM S., PH.D.
(Cornell University)
Assistant Professor, Chemistry

VELOZO, CRAIG A., PH.D.
(Ohio University)
Associate Professor, Occupational Therapy

VEMURI, BABA C., PH.D.
(University of Texas at Austin)
Professor, Computer and Information Science and Engineering

VENDRAME, WAGNER A., PH.D.
(University of Georgia)
Assistant Professor, Horticultural Science

VERA, HERNAN, PH.D.
(University of Kansas)
Professor, Sociology

VERGOT, PETER, PH.D.
(Michigan State University)
Associate Professor, Agricultural Education and Communication

VERNETSON, WILLIAM G., PH.D.
(University of Florida)
Associate Engineer, Nuclear and Radiological Engineering

VERSTEGEN, JOHN P. L., PH.D.
(University of Liege, Belgium)
Associate Professor, Veterinary Medicine

VERTUCCI, FRANK J., D.M.D.
(University of Medicine and Dentistry of New Jersey)
Professor, Dentistry

VICKROY, THOMAS W., PH.D.
(University of Texas)
Professor, Veterinary Medicine

VIERCK, CHARLES J., PH.D.
(University of Florida)
Professor, Neuroscience

VIESSMAN, WARREN, D.ENG.
(Johns Hopkins University)
Professor, Environmental Engineering Sciences

VILLALON, LEO, PH.D.
(University of Texas at Austin)
Associate Professor, Political Science

VILLEGAS, JORGE, PH.D.
(University of Texas at Austin)
Assistant Professor, Journalism and Communications

VINCE, ANDREW, PH.D.
(University of Michigan)
Professor, Mathematics

VINING, G. GEOFFREY, PH.D.
(Virginia Polytechnic Institute)
Associate Professor, Statistics

VINSON, BETTY, M.M.SC.
(Emory University)
Clinical Associate Professor, Communication Sciences and Disorders

VISNER, GARY A., D.O.
(Michigan State University)
Associate Professor, Biochemistry and Molecular Biology

VOELKLEIN, HELMUT K., PH.D.
(University of Erlangen)
Professor, Mathematics

VOGEL, WALTER B., PH.D.
(George Washington University)
Associate Professor, Health Services Research, Management and Policy

VOGLER, ROBERT W., D.S.N.
(University of Alabama at Birmingham)
Associate Professor, Nursing

VOICHYSONK, BERNARD F., M.F.A.
(Yale University)
Professor, Architecture

VOLLMER, TIMOTHY R., PH.D.
(University of Florida)
Associate Professor, Psychology

VU, JOSEPH C., PH.D.
(University of Florida)
Professor, Agronomy

VU-QUOC, LOC, PH.D.
(University of California at Berkeley)
Professor, Mechanical and Aerospace Engineering

VYAPARI, SUDEEP, PH.D.
(Kansas State University)
Assistant Professor, Environmental Horticulture

W

WACHSMAN, ERIC D., PH.D.
(Stanford University)
Professor, Materials Science and Engineering

WACKERLY, DENNIS D., PH.D.
(Florida State University)
Professor, Statistics

WADDILL, VAN H., PH.D.
(Clemson University)
Professor, Entomology and Nematology

WADE, MARK A., PH.D.
(University of Nebraska)
Assistant Professor, Food and Resource Economics

WADE, SIDNEY E., PH.D.
(University of Houston)
Professor, English

WAGENER, KENNETH B., PH.D.
(University of Florida)
Professor, Chemistry

WAGMAN, ROBERT S., PH.D.
(Johns Hopkins University)
Associate Professor, Classics

WAGNER, ELAINE L., M.A.
(University of Texas at Austin)
Professor, Journalism and Communications

WALD, KENNETH D., PH.D.
(Washington University)
Professor, Political Science

WALDO, DOUGLAS G., PH.D.
(University of North Carolina)
Associate Professor, Economics

WALDRON, NANCY L., PH.D.
(Indiana University)
Associate Professor, Educational Psychology

WALKER, CLAY B., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Oral Biology

WALKER, DON W., PH.D.
(Texas Christian University)
Professor, Neuroscience

WALKER, KAREN J., PH.D.
(University of Florida)
Assistant Scientist, Anthropology

WALKER, KAY F., PH.D.
(University of Florida)
Professor, Occupational Therapy

WALLACE, CHARLES E., PH.D.
(University of Florida)
Engineer, Civil and Coastal Engineering

WALLACE, MARGARET R., PH.D.
(Indiana University)
Professor, Biochemistry and Molecular Biology

WALSH, EDWARD K., PH.D.
(Brown University)
Professor, Mechanical and Aerospace Engineering

WALSH, STEPHEN J., PH.D.
(University of Florida)
Assistant Professor, Zoology

WALSH, THOMAS, PH.D.
(University of Chicago)
Associate Professor, Mathematics

WALSH-CHILDERS, KIM B., PH.D.
(University of North Carolina at Charlotte)
Professor, Journalism and Communications

WALTER, GLENN A., PH.D.
(University of Pennsylvania)
Assistant Professor, Physiology and Functional Genomics

WANG, KEVIN K., PH.D.
(University of British Columbia)
Associate Professor, Neuroscience

WARD, BRIAN, PH.D.
(University of Cambridge)
Associate Professor, History

WARD, JOHN L., PH.D.
(Boston University)
Professor, Art and Art History

WARD, RONALD W., PH.D.
(Iowa State University)
Professor, Food and Resource Economics

WARREN, LORI, PH.D.
(University of Florida)
Assistant Professor, Animal Sciences

WARREN, MICHAEL W., PH.D.
(University of Florida)
Assistant Professor, Anthropology

WASHBURN, SCOTT S., PH.D.
(University of Washington)
Assistant Professor, Civil and Coastal Engineering

WASHBURN, SHANNON G., PH.D.
(University of Missouri)
Assistant Professor, Agricultural Education and Communication

WATT, MARY A., PH.D.
(University of Toronto)
Assistant Professor, Romance Languages and Literatures

WAYBRIGHT, DAVID A., D.M.A.
(University of Cincinnati)
Professor, Music

WAYLAND, RATREE, PH.D.
(Cornell University)
Assistant Professor, Linguistics

WAYLEN, PETER R., PH.D.
(McMaster University)
Professor, Geography

WAYNE, MARTA L., PH.D.
(Princeton University)
Assistant Professor, Zoology

WEAVER, JASON F., PH.D.
(Stanford University)
Assistant Professor, Chemical Engineering

WEBB, ALISTAIR I., PH.D.
(University of Bristol)
Professor, Veterinary Medicine

WEBB, DANIEL W., PH.D.
(Kansas State University)
Professor, Animal Sciences

WEBB, RODMAN B., ED.D.
(Rutgers University)
Professor, Educational Psychology

WEBB, S. DAVID, PH.D.
(University of California at Berkeley)
Professor, Zoology

WEBB, SUSAN E., PH.D.
(Cornell University)
Associate Professor, Entomology and Nematology

WEBER, BRYAN A., PH.D.
(Case Western Reserve University)
Assistant Professor, Nursing

WEEMS, HOWARD V., PH.D.
(Ohio State University)
Professor, Entomology and Nematology

WEGNER, PHILLIP E., PH.D.
(Duke University)
Associate Professor, English

WEHLBURG, ALBERT, ED.D.
(University of Florida)
Professor, Theatre and Dance

WEHMEYER, ANN K., PH.D.
(University of Michigan)
Associate Professor, Linguistics

WEIGOLD, MICHAEL F., PH.D.
(University of Florida)
Associate Professor, Journalism and Communications

WEILER, ROBERT M., PH.D.
(Southern Illinois University)
Associate Professor, Health Education and Behavior

WEINER, DAVID I., M.D.
(Vanderbilt University)
Associate Professor, Medical Sciences

WEINGARTNER, DAVID P., PH.D.
(Michigan State University)
Associate Professor, Plant Pathology

WEISS, GERALD, PH.D.
(University of Michigan)
Professor, Anthropology

WEITZ, BARTON A., PH.D.
(Stanford University)
J. C. Penney Eminent Scholar, Marketing

WELDON, RICHARD N., PH.D.
(University of Minnesota)
Associate Professor, Food and Resource Economics

WELT, BRUCE A., PH.D.
(University of Florida)
Assistant Professor, Agricultural and Biological Engineering

WELTNER, WILLIAM, PH.D.
(University of California at Berkeley)
Professor, Chemistry

WERNER, MEGAN J., PH.D.
(University of California at San Diego)
Assistant Professor, Economics

WEST, CAROL A., PH.D.
(University of Michigan)
Professor, Economics

WEST, CHRISTOPHER M., PH.D.
(California Institute of Technology)
Associate Professor, Anatomy and Cell Biology

WEST, ROBIN L., PH.D.
(Vanderbilt University)
Professor, Psychology

WEST, SHERLIE M., PH.D.
(University of Illinois)
Professor, Agronomy

WESTIN, ROBERT H., PH.D.
(Pennsylvania State University)
Professor, Art and Art History

WESTON, EDWARD G., PH.D.
(Florida State University)
Associate Professor, Journalism and Communications

WETHERINGTON, LEON E., PH.D.
(University of Florida)
Lecturer, Building Construction

WEYRAUCH, WALTER O., J.S.D.
(Yale University)
Stephen C. O'Connell and Distinguished Professor, Comparative Law

WHEATON, THOMAS A., PH.D.
(University of California at Berkeley)
Professor, Horticultural Science

WHEELER, DONNA L., PH.D.
(University of Florida)
Assistant Professor, Anatomy and Cell Biology

WHEELER, RAYMOND M., PH.D.
(Utah State University)
Professor, Horticultural Science

WHEELER, TIMOTHY T., PH.D.
(University of Florida)
Professor, Dentistry

WHITE, ARTHUR O., ED.D.
(State University of New York at Buffalo)
Professor, Teaching and Learning

WHITE, JAMES M., PH.D.
(Ohio State University)
Associate Professor, Horticultural Science

WHITE, JOHN R., PH.D.
(University of Florida)
Research Assistant Professor, Soil and Water Science

WHITE, KEITH D., PH.D.
(Brown University)
Associate Professor, Psychology

WHITE, LESLEY J., PH.D.
(University of New Mexico)
Assistant Professor, Applied Physiology and Kinesiology

WHITE, LUISE S., PH.D.
(University of Cambridge)
Professor, History

WHITE, NEIL L., PH.D.
(Harvard University)
Professor, Mathematics

WHITE, TIMOTHY L., PH.D.
(Oregon State University)
Professor, Forest Resources and Conservation

WHITE, TONY, M.A.
(Oklahoma State University)
Professor, Architecture

WHITEHOUSE, BROOKS, D.M.A.
(State University of New York at Stony Brook)
Assistant Professor, Music

WHITING, BERNARD F., PH.D.
(Melbourne University)
Professor, Physics

WHITNEY, ELLSWORTH D., PH.D.
(New York University)
Professor, Materials Science and Engineering

WHITNEY, JODIE D., PH.D.
(Oklahoma State University)
Professor, Agricultural and Biological Engineering

WHITTY, ELMO B., PH.D.
(North Carolina State University)
Professor, Agronomy

WIDMER, CHARLES G., D.D.S.
(Emory University)
Associate Professor, Neuroscience

WIELBO, DONNA, PH.D.
(University of Illinois at Chicago)
Associate Professor, Medicinal Chemistry

WIENS, BRENDA A., PH.D.
(Southern Illinois University at Carbondale)
Assistant Professor, Clinical and Health Psychology

WIENS, GLORIA J., PH.D.
(University of Michigan)
Associate Professor, Mechanical and Aerospace Engineering

WILKEN, CAROLYN S., PH.D.
(Purdue University)
Associate Professor, Family, Youth and Community Sciences

WILKERSON, TIMOTHY J., M.F.A.
(University of Texas at Austin)
Assistant Professor, Journalism

WILKIE, ANN C., PH.D.
(University College of Galway)
Research Associate Professor, Soil and Water Science

WILKINSON, EDWARD J., M.D.
(Marquette University)
Professor, Pathology, Immunology and Laboratory Medicine

WILLETT, LOIS S., PH.D.
(University of California at Davis)
Professor, Food and Resource Economics

WILLIAMS, CAROL A., PH.D.
(Yale University)
Professor, Astronomy

WILLIAMS, CHARLES S., ED.D.
(University of Alabama)
Professor, Applied Physiology and Kinesiology

WILLIAMS, CLYDE M., PH.D.
(Oxford University)
Professor, Radiology

WILLIAMS, DAVID F., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

WILLIAMS, JONATHAN P., PH.D.
(University of California)
Assistant Professor, Astronomy

WILLIAMS, JUDITH W. B., PH.D.
(University of Michigan)
Professor, Theatre and Dance

WILLIAMS, JULIAN M., PH.D.
(Indiana University at Bloomington)
Assistant Professor, Journalism and Communications

WILLIAMS, KATHRYN R., PH.D.
(Florida State University)
Scholar, Chemistry

WILLIAMS, MARY J., PH.D.
(Auburn University)
Associate Professor, Agronomy

WILLIAMS, NORRIS H., PH.D.
(University of Miami)
Professor, Botany

WILLIAMS, PHILIP J., D.PHIL.
(University of Oxford)
Professor, Political Science

WILLIAMS, RICHARD A., PH.D.
(Texas A&M University)
Associate Professor, Forest Resources and Conservation

WILLIAMS, ROBERT B., PH.D.
(Ohio State University)
Clinical Professor, Pharmacy

WILLIAMS, SALLY K., PH.D.
(University of Florida)
Associate Professor, Animal Sciences

WILLIAMS, SARA K., M.L.A.
(Ohio State University)
Associate Professor, Landscape Architecture

WILLIAMS, WILLIAM N., PH.D.
(University of Florida)
Professor, Communication Sciences and Disorders

WILLIAMS, WINTON E., LL.M.
(Yale University)
Professor, Comparative Law

WILLIAMSON, JEFFREY G., PH.D.
(Clemson University)
Professor, Horticultural Science

WILLIS, STEVEN J., LL.M.
(New York University)
Professor, Taxation

WILLUMSON, GLENN G., PH.D.
(University of California at Santa Barbara)
Associate Professor, Art and Art History

WILSON, DAVID C., PH.D.
(Rutgers University)
Professor, Mathematics

WILSON, HENRY R., PH.D.
(University of Maryland)
Professor, Veterinary Medicine

WILSON, JOSEPH N., PH.D.
(University of Virginia)
Assistant Professor, Computer and Information Science and Engineering

WILSON, PATRICK C., PH.D.
(Clemson University)
Assistant Professor, Soil and Water Science

WILSON, ROBERT E., PH.D.
(University of Pennsylvania)
Professor, Astronomy

WILSON, SANDRA B., PH.D.
(Clemson University)
Assistant Professor, Environmental Horticulture

WILTSHIRE, CAROLINE R., PH.D.
(University of Chicago)
Associate Professor, Linguistics

WINARSKY, IRA H., M.F.A.
(Temple University)
Professor, Architecture

WINEBRENNER, JAMES E., M.F.A.
(Cranbrook Academy of Art)
Associate Professor, Interior Design

WINEFORDNER, JAMES D., PH.D.
(University of Illinois)
Graduate Research Professor, Chemistry

WINGO, CHARLES S., M.D.
(Louisiana State University)
Professor, Physiology and Pharmacology (IDP)

WINNER, LAWRENCE H., PH.D.
(North Carolina State University)
Lecturer, Statistics

WINTER, WILLIAM E., M.D.
(Loyola University of Chicago)
Professor, Immunology and Microbiology (IDP)

WINTERSTEIN, ALMUT G., PH.D.
(Humboldt University)
Clinical Assistant Professor, Pharmacy Health Care Administration

WIRTH, FERDINAND F., PH.D.
(Louisiana State University)
Associate Professor, Food and Resource Economics

WISE, WILLIAM R., PH.D.
(University of Texas at Austin)
Associate Professor, Environmental Engineering Sciences

WISLER, GAIL C., PH.D.
(University of Florida)
Professor, Plant Pathology

WITMER, D. EUGENE., PH.D.
(Rutgers University)
Associate Professor, Philosophy

WITTMER, PAUL J., PH.D.
(Indiana State University)
Distinguished Service Professor, Counselor Education

WOFFORD, DAVID S., PH.D.
(New Mexico State University)
Professor, Agronomy

WOJCIK, DANIEL P., PH.D.
(University of Florida)
Assistant Professor, Entomology and Nematology

WOLFF, RONALD G., PH.D.
(University of California at Berkeley)
Associate Professor, Zoology

WOLFREYS, JULIAN, PH.D.
(University of Sussex)
Professor, English

WONG, TAN F., PH.D.
(Purdue University)
Associate Professor, Electrical and Computer Engineering

WOO, RAYMUND, M.D.
(Wayne State University)
Assistant Professor, Physical Therapy

WOOD, CHARLES H., PH.D.
(University of Texas at Austin)
Professor, Sociology

WOOD, CHARLES E., PH.D.
(University of California at San Francisco)
Professor, Physiology and Functional Genomics

WOOD, R. CRAIG, ED.D.
(Virginia Polytechnic Institute and State University)
Professor, Educational Leadership, Policy and Foundations

WOODARD, RICHARD P., PH.D.
(Harvard University)
Professor, Physics

WOODRUFF, ROBERT E., PH.D.
(University of Florida)
Professor, Entomology and Nematology

WOODS, CHARLES A., PH.D.
(University of Massachusetts)
Professor, Zoology

WOODS, PATRICIA, PH.D.
(University of Washington)
Assistant Professor, Political Science

WOODSON, GAYLE A., M.D.
(Baylor College of Medicine)
Professor, Communication Sciences and Disorders

WOOTEN, LYNN P., PH.D.
(University of Michigan)
Assistant Professor, Management

WORTH, JOHN E., PH.D.
(University of Florida)
Assistant Professor, Anthropology

WRIGHT, ANITA C., PH.D.
(University of Maryland)
Assistant Professor, Food Science and Human Nutrition

WRIGHT, DAVID L., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Agronomy

WRIGHT, DENNIS L. III, PH.D.
(Ohio University)
Assistant Professor, Chemistry

WRIGHT, JOHN W., PH.D.
(Ohio State University)
Professor, Journalism and Communications

WRIGHT, SHARON D., PH.D.
(University of Tennessee)
Associate Professor, Political Science

WRONSKI, THOMAS J., PH.D.
(University of Utah)
Professor, Veterinary Medicine

WU, CHANG-YU, PH.D.
(University of Cincinnati)
Associate Professor, Environmental Engineering Sciences

WU, DAPENG, PH.D.
(Carnegie Mellon University)
Assistant Professor, Electrical and Computer Engineering

WU, DONG-HAI, PH.D.
(University of Texas)
Assistant Professor, Medicinal Chemistry

WU, RONGLING, PH.D.
(University of Washington)
Associate Professor, Statistics

WU, SAMUEL S., PH.D.
(Cornell University)
Assistant Professor, Statistics

WYATT-BROWN, ANNE M., PH.D.
(Case Western Reserve University)
Associate Professor, Linguistics

WYATT-BROWN, BERTRAM, PH.D.
(Johns Hopkins University)
Eminent Scholar, History

WYNNE, CLIVE D., PH.D.
(University of Edinburgh)
Professor, Psychology

WYSOCKI, ALLEN F., PH.D.
(Michigan State University)
Associate Professor, Food and Resource Economics

X

XIA, SHEN-LING, PH.D.
(University of Toronto)
Assistant Professor, Physiology and Functional Genomics

XIA, YE, PH.D.
(University of California at Berkeley)
Assistant Professor, Computer and Information Science and Engineering

XIAO, LEI, PH.D.
(Chinese Academy of Medical Sciences)
Assistant Professor, Anatomy and Cell Biology

XIE, HUIKAI, PH.D.
(Carnegie Mellon University)
Assistant Professor, Electrical and Computer Engineering

XIE, JINHONG, PH.D.
(Carnegie Mellon University)
Associate Professor, Marketing

XU, BIN, PH.D.
(Columbia University)
Associate Professor, Economics

XU, YU-LIN, PH.D.
(University of Florida)
Associate Scientist, Astronomy

Y

YACHNIS, ANTHONY T., M.D.
(George Washington University)
Associate Professor, Pathology, Immunology and Laboratory Medicine

YAI, OLABIYI B., M.A.
(University of Ibadan)
Professor, Linguistics

YAMAMOTO, JANET K., PH.D.
(University of Texas)
Professor, Veterinary Medicine

YAN, LIQING, PH.D.
(Purdue University)
Assistant Professor, Mathematics

YANG, LIUQING, PH.D.
(University of Minnesota)
Assistant Professor, Electrical and Computer Engineering

YANG, MARK C., PH.D.
(University of Wisconsin)
Professor, Statistics

YANG, THOMAS P., PH.D.
(University of California at Irvine)
Professor, Biochemistry and Molecular Biology

YANG, ZHOU, PH.D.
(University of North Carolina)
Assistant Professor, Health Services Research, Management and Policy

YANONG, ROY P., V.M.D.
(University of Pennsylvania)
Associate Professor, Fisheries and Aquatic Sciences

YARANDI, HOSSEIN N., PH.D.
(Indiana University)
Associate Professor, Nursing

YEAGER, ELIZABETH A., PH.D.
(University of Texas at Austin)
Associate Professor, Teaching and Learning

YEAGER, THOMAS H., PH.D.
(Virginia Polytechnic Institute and State University)
Professor, Horticultural Science

YELICH, JOEL V., PH.D.
(Oklahoma State University)
Associate Professor, Animal Sciences

YELTON, JOHN M., PH.D.
(University of Oxford)
Professor, Physics

YENDOL-HOPPEY, DIANE Y., PH.D.
(Pennsylvania State University)
Assistant Professor, Teaching and Learning

YEZIERSKI, ROBERT P., PH.D.
(West Virginia University)
Professor, Dentistry

YOON, SAUN-JOO L., PH.D.
(University of Florida)
Assistant Professor, Nursing

YOST, RICHARD A., PH.D.
(Michigan State University)
Professor, Chemistry

YOUNG, DAVID C., PH.D.
(University of Iowa)
Professor, Classics

YOUNG, DAVID, PH.D.
(Columbia Pacific University)
Graduate Research Professor, Theatre and Dance

YOUNG, LINDA, PH.D.
(Oklahoma State University)
Professor, Statistics

YOUNG, MARY E., PH.D.
(University of Georgia)
Assistant Professor, Rehabilitation Counseling

YOUNG, VANEICA Y., PH.D.
(University of Missouri)
Associate Professor, Chemistry

YOUNGBLADE, LISE M., PH.D.
(Pennsylvania State University)
Assistant Professor, Psychology

YU, SIMON S., PH.D.
(McGill University)
Professor, Entomology and Nematology

YUCHA, CAROLYN B., PH.D.
(State University of New York at Syracuse)
Professor, Nursing

Z

ZACHMANN, GAYLE, PH.D.
(University of Pennsylvania)
Associate Professor, Romance Languages and Literatures

ZAM, STEPHEN G., PH.D.
(University of Southern California)
Associate Professor, Microbiology and Cell Science

ZAMAN, ABBAS A., PH.D.
(University of Florida)
Associate Engineer, Materials Science and Engineering

ZAPLETAL, JINDRICH, PH.D.
(Pennsylvania State University)
Assistant Professor, Mathematics

ZARIN, DANIEL J., PH.D.
(University of Pennsylvania)
Associate Professor, Forest Resources and Conservation

ZAZUETA, FEDRO S., PH.D.
(Colorado State University)
Professor, Agricultural and Biological Engineering

ZETTLER, FRANCIS W., PH.D.
(Cornell University)
Professor, Plant Pathology

ZHANG, JIANHUI, PH.D.
(Springfield College)
Professor, Applied Physiology and Kinesiology

ZHANG, ZHUOMIN, PH.D.
(Massachusetts Institute of Technology)
Associate Professor, Mechanical and Aerospace Engineering

ZHOU, LEI, PH.D.
(University of Massachusetts)
Assistant Professor, Molecular Genetics and Microbiology

ZIEGER, ROBERT H., PH.D.
(University of Maryland)
Distinguished Professor, History

ZIEGERT, JOHN C., PH.D.
(University of Rhode Island)
Professor, Mechanical and Aerospace Engineering

ZILLER, ROBERT C., PH.D.
(University of Michigan)
Professor, Psychology

ZIMET, DAVID J., PH.D.
(University of Florida)
Associate Professor, Food and Resource Economics

ZIMMERMAN, ANDREW R., PH.D.
(College of William and Mary)
Assistant Professor, Geological Sciences

ZMUDA, HENRY, PH.D.
(Cornell University)
Associate Professor, Electrical and Computer Engineering

ZOLTEWICZ, JOHN A., PH.D.
(Princeton University)
Professor, Chemistry

ZORI, ROBERTO T., M.D.
(Odense University)
Associate Professor, Pathology, Immunology and Laboratory Medicine

ZORY, PETER S., PH.D.
(Carnegie Mellon University)
Professor, Electrical and Computer Engineering

ZOU, HUI, PH.D.
(Tongji University, China)
Assistant Professor, Architecture

ZSEMBIK, BARBARA A., PH.D.
(University of Texas at Austin)
Associate Professor, Sociology

ZUCALI, JAMES R., PH.D.
(New York University)
Professor, Molecular Genetics and Microbiology

ZWICK, PAUL D., PH.D.
(University of Florida)
Associate Professor, Urban and Regional Planning

Index

Index

INDEX
315

INDEX
316

N

O

P

Q

R

S

T

INDEX
317

Notes