

Graduate Curriculum Committee

Minutes

May 9, 2024
Meeting Materials

Voting Conducted
via Zoom

I. Presentation and review of the Minutes from the April Meeting of the Graduate Curriculum Committee (GCC).

II. Update(s) to the Committee: The following was reviewed by the Graduate Curriculum Committee (GCC) previously. The GCC felt further follow-up and/or clarifications were necessary before the proposals could move forward to the University Curriculum Committee (UCC). Suggestions and/or follow-up required are noted below the proposals.

There are no updates to present.

III. Course Change Proposals: The following proposals are newly requested revisions to existing courses already within the current course catalog in curriculum inventory. The changes requested are listed below each of the proposals.

There are no course modifications to present.

IV. New 5XXX Course Proposal(s) (with attached syllabi): The following are newly requested course proposals. Proposed course titles and descriptions are listed below. Syllabi have been included with these new course requests, at the request of GCC Members.

HHP – Applied Physiology and Kinesiology

1. APK 5XXX *Anatomy & Physiology for Sport & Exercise Science*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19943>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

DCP – Architecture

2. ARC 5XXX *Fundamentals Of Coding and Computation - Introduction to Computer Programming for Architects*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19922>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

3. ARC 5XXX *Introduction to Healthcare Design*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19918>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

v. New Course Proposal(s) (with attached syllabi): The following are newly requested course proposals. Proposed course titles and descriptions are listed below. Syllabi have been included with these new course requests, at the request of GCC Members.

CLAS – Anthropology

1. ANG 6XXX *Cattle Cultures*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19123>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

CLAS – Animal Sciences

2. ANS 6XXX *Dairy Farm Evaluation*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19658>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

DCP – Architecture

3. ARC 6XXX *Clocks and Clouds*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19816>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

4. ARC 6XXX *Co-design Lab for Healthcare Environments*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19813>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

5. ARC 6XXX *Healthcare Design Practice*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19810>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

6. ARC 6XXX *Machine Learning for Architects*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19827>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

7. ARC 6XXX *Planning and Design for Health Environments*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19809>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

CLAS – Classics

8. CLA 6XXX *Classical Civilization, rotating topic*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19455>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

COE – School of Special Education, School Psychology, and Early Childhood Studies

9. EEX 6XXX *Family and Teacher Perspectives on Disability*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19041>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

10. EEX 7XXX *Applied Research in Special Education*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19040>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

CLAS – Political Science

11. INR XXXX *Feminist International Relations*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19914>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved without further review by the GCC.

CBA – Management

12. MAN 6XXX *Strategy & Disruption in Technology Industries*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19805>

Proposal has been conditionally approved. Once revised, the GCC wishes to review the proposal again.

HHP – Sport Management

13. PET 5XXX *Athlete Sexual Health and Wellness*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/18351>

Proposal has been conditionally approved. Once revised, the proposal can be administratively approved after further review by the Chair of the GCC.

vi. Information Items:

1. [CHM 6943](#) – 19930 – Change variable and maximum repeatable credit
2. [DCP 6230](#) – 19788 – Change Course Title, Contact Type, Course Description, and Objectives
3. [EGS 6949](#) – 19445 – Change to course description, prerequisites, and co-requisites
4. [ENT 6930](#) – 19700 – Change maximum repeatable credit
5. [FYC 7980](#) – 19750 – Change maximum repeatable credit
6. [FYC 7979](#) – 19942 – Change maximum repeatable credit
7. [MAR 6105](#) – 19811 – Change prerequisites
8. [MAR 6157](#) – 19812 – Change prerequisites
9. [MAR 6237](#) – 19818 – Change prerequisites
10. [MAR 6335](#) – 18919 – Change prerequisites
11. [MAR 6508](#) – 19820 – Change prerequisites
12. [MAR 6591](#) – 19821 – Change prerequisites
13. [MAR 6667](#) – 19822 – Change prerequisites
14. [MAR 6722](#) – 19823 – Change prerequisites
15. [MAR 6833](#) – 19824 – Change prerequisites
16. [MAR 6861](#) – 19825 – Change prerequisites
17. [MAT 6932](#) – 19756 – Change maximum repeatable credit
18. [PHC 7979](#) – 19850 – Change maximum repeatable credit
19. [POS 6933](#) – 19742 – Change maximum repeatable credit
20. [REE 6395](#) – 19732 – Change Course Title
21. [SPA 6581](#) – 19833 – Change maximum repeatable credit
22. [SPN 6735](#) – 19873 – Change maximum repeatable credit
23. [SPM 5936](#) – 19837 – Change maximum repeatable credit

24. [SYA 7933](#) – 19762 – Change maximum repeatable credit

Graduate Curriculum Committee

Agenda

June 13, 2024
Meeting Materials

Voting Conducted
via Zoom

I. Presentation and review of the Minutes from the May Meeting of the Graduate Curriculum Committee (GCC).

II. Update(s) to the Committee: The following was reviewed by the Graduate Curriculum Committee (GCC) previously. The GCC felt further follow-up and/or clarifications were necessary before the proposals could move forward to the University Curriculum Committee (UCC). Suggestions and/or follow-up required are noted below the proposals.

CBA – Management

1. ENT 6XXX *Strategy and Disruption in Technology Industries*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19805>

GCC requested revisions to the course title, description, and objectives. The unit was also asked to clarify or correct the contact hours. The Committee requested to re-review this proposal once revised. The unit has since revised the attached submission materials, attached here.

III. Course Change Proposals: The following proposals are newly requested revisions to existing courses already within the current course catalog in the curriculum inventory. The changes requested are listed below each of the proposals.

There are no course modifications to present.

IV. New 5XXX Course Proposal(s) (with attached syllabi): The following are newly requested course proposals. Proposed course titles and descriptions are listed below. Syllabi have been included with these new course requests, at the request of GCC Members.

DCP – Architecture

1. ARC 5XXX *Graduate Architectural History 1*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20028>

An examination of the theories and methods in which architectural history is written through social, religious, cultural, environmental, and political paradigms. The course covers movements, architects, ideas, empires, and discourses that produced architecture until 1400 CE. This is the first part of the architectural history survey for architecture students. 3-credits.

2. ARC 5XXX *Graduate Architectural History 2*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20007>

A history of architecture and urbanism from 1400 to 1850. Students analyze formal, spatial, structural, and environmental principles grounded in architecture movements, discourses, social, political, material, technological, cultural forces, seen in synchronous developments of global architecture and urbanism. The second of the architectural history surveys for architecture students. 3-credits.

3. ARC 5XXX *Graduate Core Studio 1*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20005>

Project-based introduction to fundamental design techniques, including design theory, three-dimensional development, and spatial relationships with an emphasis on hybrid digital/analog methods. Design issues, including scale, measure, materiality, cultural history, methodology, program and mapping are explored within activities and discussion of context, architectural language and issues of representation. 6 credit hours.

4. ARC 5XXX *Graduate Core Studio 2*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20012>

Project-based continuation of fundamental design issues, including scale, measure, movement, edges, boundaries, and materiality. Analysis of context, cultural history, mapping, architectural language, and issues of representation are applied by students in a constructed synthesis of program, space, tectonics, and occupation. Hybrid digital/analog prototyping methods of fabrication and modeling. 6 credit hours.

5. ARC 5XXX *IPAL Seminar 1*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20025>

Architects and their Collaborators – IPAL (Integrated Path to Architecture Licensure) 1 is an introduction to professional practice. Students visit architecture firms, engineering consultants, and integrated product suppliers (lighting, furnishing, similar). Firm leaders give a brief presentation, to show types of work, philosophy, office organization, hierarchy, operation – and engage in open discussion. Students tour the offices are introduced to staff. 1 credit hour.

6. ARC 5XXX *IPAL Seminar 2*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20026>

The Construction Site – IPAL (Integrated Path to Architecture Licensure) 2 is an introduction to the Construction Administration role of the architect. Students visit construction sites with project team members present; owner, architect, building contractor, and subcontractors. Students learn Division 1 – General Conditions of Construction, jobsite safety, construction observation, leadership and collaboration during construction. 1 credit hour.

7. ARC 5XXX *IPAL Seminar 3*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20027>

Preparing for Licensure– IPAL (Integrated Path to Architecture Licensure) 3 introduces the Architecture Registration Exam (ARE), and Architectural Experience Program (AXP) strategy, tools, study group formation. 1 credit hour.

v. New Course Proposal(s) (with attached syllabi): The following are newly requested course proposals. Proposed course titles and descriptions are listed below. Syllabi have been included with these new course requests, at the request of GCC Members.

MED – General Medicine

1. CAI 5XXX *AI Design Studio I*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19998>

This experiential seminar course will feature numerous faculty experts from diverse backgrounds who will guide students through more than a dozen unique real-world examples of machine learning for healthcare applications. Students will gain valuable experience in designing, developing, and deploying AI systems using contemporary tools, models, and platforms.

2. CAI 5XXX *AI Design Studio II*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19999>

AI Design Studio II is an experiential applied research course in which each student will propose a self-directed clinical AI research project that addresses a real-world healthcare challenge and spend the full semester building and testing their AI system. Students will be supervised by an AI faculty member as they organize, develop, evaluate, and refine their approach. This course follows the guided experiential learning and high-level overview of the clinical AI landscape presented in AI Desi

3. CAI 5XXX *AI for Clinical Decision Support*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20020>

Students will explore the current landscape of clinical artificial intelligence (AI) for augmenting patient care, including real-world deployments, promising cutting-edge research, and ethical and societal implications of current clinical AI progress. A hybrid flipped classroom/journal club structure which emphasizes peer engagement will empower students to join the ongoing conversation and become versed in the contemporary clinical AI topics that are currently shaping the field.

4. CAI 5XXX *AI in Medical Image Analysis*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20018>

Medical imaging, technologies that visualize the interior of the human body, has become an increasingly important tool for the early diagnosis, prognosis, and treatment of various diseases. This course will focus on recent advances in artificial intelligence for medical image analysis, including: Basics of medical imaging, Image visualization, Convolutional neural networks, Image classification, Image segmentation, Transformer networks, Image registration, Generative adversarial networks.

5. CAI 5XXX *AI-Powered Drug Discovery*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20022>

AI-Powered Drug Discovery explores the cutting-edge application of Artificial Intelligence (AI) in discovering novel compounds to be used as therapeutics. We will delve into the fundamental principles of machine learning and deep learning techniques used for virtual screening, lead optimization, and de novo molecule design. The course will also address the integration of biological data with AI models and explore the practical challenges and limitations of this approach.

6. CAI 5XXX *Biostatistics for AI*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20019>

Biostatistics for AI highlights the crucial role of biostatistics in AI-driven medical applications. Students will master foundational biostatistical methods, design effective medical experiments, and navigate the intricacies of large biomedical datasets. Emphasizing the union of traditional biostatistics with contemporary AI techniques, the course ensures proficiency in data analysis, AI model validation, and addressing ethical challenges in medical data use.

7. CAI 5XXX *Economic, Social, Legal, and Ethical Implications of AI in Medicine*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19995>

This graduate-level course provides an in-depth exploration of the intersection between Artificial Intelligence (AI) and society, with a focus on alignment, ethics, economic implications, and legal policy. Students will: analyze the ethical dilemmas arising from AI technologies; analyze potential economic disruptions and identify strategies for inclusive growth and equitable distribution of AI-generated benefits; consider legal frameworks for aligning AI

8. CAI 5XXX *Fundamentals of Artificial Intelligence in Medicine I*
Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19996>

This course introduces the fundamental concepts of Artificial Intelligence and Machine Learning (AI/ML) with a focus on applications in the medical field. It covers foundational AI/ML concepts, diverse medical data sources, and the complete lifecycle of AI/ML in healthcare, complemented by insights into model evaluation and ethical considerations. The course offers a mix of lectures, hands-on labs, and project work, emphasizing practical application in real-world scenarios.

9. CAI 5XXX *Fundamentals of Artificial Intelligence in Medicine II*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19997>

Building on the foundational concepts introduced in Fundamentals of Artificial Intelligence in Medicine I, this course explores deeper into Artificial Intelligence (AI), with a specific focus on deep learning and its applications in the field of medicine. Students will learn more advanced deep learning architectures, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers.

10. CAI 6XXX *Applied Generative AI in Medicine*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20023>

This course provides a comprehensive overview of generative artificial intelligence (AI) and its applications in healthcare. Students will learn the fundamentals of generative models, including Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models.

11. CAI 6XXX *Clinical AI Design Studio I*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20000>

Clinical AI Design Studio I offers an immersive learning experience for students interested in the intersection of artificial intelligence (AI) and clinical practice. Throughout the semester, students will participate in rotations, spending time working in various faculty members' labs or clinical domains.

12. CAI 6XXX *Clinical AI Design Studio II*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20017>

Clinical AI Design Studio II offers a unique, extended engagement with a faculty advisor, building upon the foundational experiences from Clinical AI Design Studio I. Students will delve into the specialized clinical domain of their advisor, gaining firsthand insights into the intricacies of patient care and medical decision-making processes.

13. CAI 6XXX *Supervised Research in AI for Health*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20021>

Students will work with their technical and clinical advisors to design, develop, and complete an agreed-upon substantive project. Students may take this course in order to advance their research interests, to complete a capstone project, or to complete a Master's Thesis.

DCP – Design, Construction and Planning

14.DCP 6XXX *Green Building Strategies*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/19963>

This is an interactive multidisciplinary course, in which students are introduced to green strategies and technologies for the design, construction and operation of high-performance buildings. The course is designed to equip students with the skills and knowledge needed to be effective communicators, critical thinkers, project managers, problem solvers, and team players. Students learn the Department of Energy Zero Design and prepare to earn LEED credentials.

JOU – Mass Communication

15.MMC 6XXX *Computational Methods for Media Research*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20038>

Computational methods for media research is an introductory and project-oriented course with an emphasis on data collection and computational methods. Students learn how to conduct social research using digital trace data (broadly defined as data collected through digital means) and computational methods (including but not limited to text analysis and social network analysis). Includes hands-on practice.

16.MMC 6XXX *Human Machine Communication*

Link to proposal: <https://secure.aa.ufl.edu/Approval/reports/20032>

Human-machine communication is an area of study that investigates the creation of meanings among humans and machines. It involves communication with digital interlocutors including embodied machine communicators, virtual/artificially intelligent agents, and technologically augmented persons, either in real or augmented environments.

vi. Information Items:

1. [LAS 6938](#) – 19923 – Change maximum repeatable credit from 9 to 18
2. [PHC 6937](#) – 20016 – Change maximum repeatable credit from 6 to 12
3. [URP 6979](#) – 19931 – Change credits from Non-repeatable to Repeatable (max 12)

MAN 6XXX Strategy & Disruption in Technology Industries (19805)

Please address the following concerns expressed by the Graduate Curriculum Committee after their complete review of this new course request ---once addressed, the GCC requests to review this proposal again.

The GCC recommends the following revisions to the submitted form (and syllabus where appropriate):

- 1) Suggest changing the ampersand in the course title to “and”.
- 2) The course description needs minor revisions.
 - a) Delete preliminary words to reduce unneeded introduction to simply begin at “Explores the strategic...”
 - b) The course description isn’t clear and should be revised.
 - c) Ensure that the course description on the submitted form and syllabus match.
- 3) Course description and objectives should be in separate sections.
- 4) Clarify or correct the contact hours.
 - a) You have listed: 2 credits, 4 contact hours
 - b) Typically, semesters are 15 weeks of instruction with the 16th week for final examinations. The number of contact hours for this course would come out to 60. This is more than a 3-credit course with 3 contact hours for a total of 45.
- 5) Objectives need to be stated more conventionally.
- 6) The syllabus does not follow the UF template. Follow the syllabus guidelines found here:
<http://syllabus.ufl.edu/syllabus-policy/>
- 7) These items are missing: Grading scale, class schedule, assignments, tests, and boilerplate information. The course description and objectives are not separated.

Course|New for request 19805

Info

Request: ENT 6XXX Strategy & Disruption in Technology Industries

Description of request: Explores the strategic issues related to the management of new technologies and business systems. Considers how firms successfully enter existing industries, how they can manage technological innovations, and the market failures that the technology can address. Defines technology broadly to include not only "high tech" industries but also technical and managerial innovations in traditional manufacturing and service industries.

Submitter: Kathryn Pearce kathryn.pearce@warrington.ufl.edu

Created: 5/28/2024 5:05:05 PM

Form version: 5

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ENT

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:

None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Intermediate

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Strategy and Disruption in Technology Industries

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Strategy/Disruption in Tech

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:
On-Campus

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
2

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week <i>on average </i>throughout the duration of the course.

Response:
4

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
Explores the strategic issues related to the management of new technologies and business systems. Considers how firms successfully enter existing industries, how they can manage technological innovations, and the market failures that the technology can address. Defines technology broadly to include not only "high tech" industries but also technical and managerial innovations in traditional manufacturing and service industries.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

*Undergraduate courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.*

Response:
ENT6006 or MAN 6636

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course will be in the Master of Science in Entrepreneurship curriculum as part of the Spring offering in the “Innovation Track” (no pre-requisites needed) but will be opened as an elective for other graduate business degrees as well.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The course material is grouped into three modules. The first, titled “Market Entry,” studies how new companies seize a competitive position in an industry. The second module, “Managing Technology,” analyzes the challenges and opportunities of managing technology itself. In the final module, “Corporate Lifecycle,” we consider how technological and cultural evolution within an industry create entrepreneurial challenges and opportunities.

Course Textbook(s) and/or Other Assigned Reading

Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks.

Response:
coursepack

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:
CASES AND TOPICS (cases in course pack at Harvard Business Publishing, ordering information on Canvas; the cases are listed in order, but please see Canvas for exact dates when we will cover the cases)
Market Entry
Segmentation
Strategy Reading: Competitive Advantage
Ryanair
Disruption
What is Disruptive Innovation?
Netflix
Market Failure
Competing with Social Networks – Social Failures
eHarmony
Regulatory Arbitrage
Spontaneous Deregulation
Uber
Managing Technology
Distributed Innovation
Using the Crowd as an Innovation Partner
Threadless
Network Effects I
Scale Effects, Network Effects, and Investment Strategy
LinkedIn
Network Effects II
Google
Monetization I
Why Some Platforms Thrive and Others Don't
Jumia
Monetization II
Altruism and Hedonism: A Review and Discussion of Recent Findings...
AfreecaTV
Corporate Lifecycle
Page 4 of 4
Organizational Renewal I
Ambidextrous Organizations
LEGO
Organizational Renewal II
Sustainability Lessons from the Front Lines
Aspen Skiing
Technological Evolution I
Match the Size of the Organization to the Size of the Market
BRL Hardy
Technological Evolution II
Unilever Butter Beater

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Grading will be based on class participation, two individual case analyses, and a final group project. These three components of grade are weighted as follows:

Class Participation 30%

Case Analyses (2) 30%

Final Group Project 40%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

David Ross

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#)*

It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Strategy and Disruption in Technology Industries

ENTXXXX

Spring 2025

A case-based course on formulating and implementing strategy
in technologically-intensive settings

Class Periods: TBD

Location: TBD

Academic Term: Spring 2025

David Gaddis Ross

223 STZ

E-mail: david.ross@warrington.ufl.edu

Phone: (352) 294-3931

Office Hours: In the hour after class or by appointment

Course Description

Explores the strategic issues related to the management of new technologies and business systems. Considers how firms successfully enter existing industries, how they can manage technological innovations, and the market failures that the technology can address. Defines technology broadly to include not only “high tech” industries but also technical and managerial innovations in traditional manufacturing and service industries.

Course Pre-Requisites / Co-Requisites

This is an advanced elective, so a certain familiarity with strategy is assumed. Specifically, students should have taken either the introductory course in the UF MSE program (ENT6006 Entrepreneurship) or an introductory graduate course in strategy such as MAN6636 Global Strategic Management or its equivalent. If you are unsure whether you have an appropriate prerequisite, please contact the instructor before registering.

Course Objectives

The primary objective of the course is to allow you to analyze the sources of a company’s success, i.e., its competitive advantage, in contexts where innovation and technology play a major role. This skill is not only critical for those who aspire to start their own firms but also for those who aspire to careers in banking, consulting, and general management. You will learn this skill through our case discussions and by applying the lessons from these discussions on two individual assignments and a final group project.

Required Textbooks

The required reading materials for this course can be obtained as a coursepack from Harvard Business Publishing. Details will be posted to Canvas before the course begins.

Evaluation of Grades

Class Participation	30%
Case Analyses (2)	30%
Final Group Project	40%

Class participation

A. Class discussion is an important course requirement. Your participation is essential—for both your own learning and that of other students. Because this is a case-based course, much of the learning will take place in our collective discussion of the business cases. I expect every student to be well prepared. It is essential that you participate often enough that I can assess the quality of your thinking. Once you pass a certain quantity threshold, your participation

grade hinges solely on quality. If you are a regular participant, and I hope that all of you will be, you don't have to worry about whether someone else is speaking more than you are. The best class comments:

- Make or raise issues that are relevant to the current focus of the class
- Show curiosity and a willingness to experiment
- Use data or examples to support conclusions
- Take into consideration the ideas offered by others
- Offer support for arguments
- Help others feel safe about participating

B. Except for the two cases that are used for the individual case analyses (see below), each case has an associated poll question on an important strategic issue related to the case. These polls are also listed on Canvas and are a mandatory part of class participation.

C. I will start out by allowing the use of electronic devices (e.g., a laptop or tablet) in class to take notes and peruse course material. It is expected that you will not use electronic devices for email, social media, investing, or any other activity not related to the class discussion. Let's all work together to make sure that we, as a group, comply with these guidelines. It is disruptive to class when people use electronic devices for other purposes. Likewise, arriving late and going in and out of class are also disruptive. Let's try to restrict this to genuinely urgent situations.

Case analyses: You will be responsible for submitting written analyses of two cases. These are individual assignments. Details are on Canvas and will be discussed in class. Please note that because we discuss these cases in class on the day they are due, late submissions cannot be accepted.

Final group project: Students will form small groups to undertake a final project in which they apply course concepts to a real-world situation of their own choosing using primary sources (e.g., news articles, company reports, company contacts). Consultation with the instructor about the topic is strongly advised but not required. Details are on Canvas and will be discussed in class. The group project will be due during finals week.

Attendance Policy, Class Expectations, and Make-Up Policy

If you cannot attend class due to unavoidable circumstances, I expect you to send me an email prior to class, notifying me of your absence. Please note that any unexcused absences will significantly impact your overall grade for the course. I encourage students who had to miss a session to ask their classmates for notes. Excused absences must be consistent with university policies in the [Graduate Catalog](#) and require appropriate documentation. Additional information can be found in [Attendance Policies](#).

Grading Policy

Final grades will be based on obtaining the following percentage of total course points: 94-100% = A; 90-93% = A-; 87-89% = B+; 83-86% = B; 80-82% = B-; 77-79% = C+; 73-76% = C; 70-72% = C-; 67-69% = D+; 63-66% = D; 60-62% = D-; 0-59% = E. **Required percentages may be reduced based on a course curve.**

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Cases and topics

Please see Canvas for exact dates when we will cover the cases. As discussed above under class participation, every case has an associated poll except the two cases noted below that are associated with the individual case analyses.

Market Entry

Class 1: Segmentation

Strategy Reading: Competitive Advantage
KITEA

Class 2: Disruption

What is Disruptive Innovation?

Netflix

Class 3: Market Failure

Competing with Social Networks – Social Failures

eHarmony

Class 4: Regulatory Arbitrage

Spontaneous Deregulation

Uber

Managing Technology

Class 5: Distributed Innovation

Using the Crowd as an Innovation Partner

Threadless

Class 6: Network Effects I

Scale Effects, Network Effects, and Investment Strategy

LinkedIn

Class 7: Network Effects II

Case-Analysis 1: Google

Class 8: Monetization I

Why Some Platforms Thrive and Others Don't

Jumia

Class 9: Monetization II

Altruism and Hedonism: A Review and Discussion of Recent Findings...

AfreecaTV

Corporate Lifecycle

Class 10: Organizational Renewal I

Ambidextrous Organizations

LEGO

Class 11: Organizational Renewal II

Sustainability Lessons from the Front Lines

Aspen Skiing

Class 12: Technological Evolution I

Match the Size of the Organization to the Size of the Market

BRL Hardy

Class 13: Technological Evolution II

Case Analysis 2: Unilever Butter Beater

Class 14: Exporting Culture

The Mistake Companies Make When Marketing to Different Cultures

Big Hit Entertainment (BTS/Kpop)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus

On-Line Students Complaints

Course|New for request 20028

Info

Request: ARC 5XXX Graduate Architectural History 1

Description of request: Graduate Architectural History 1 is part of the graduate Master of Architecture Degree Track Three (Core Program). Graduate Architectural History 1 is the first of a foundational sequence of history courses.

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/15/2024 4:28:01 PM

Form version: 1

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

Graduate Architectural History 1 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Architectural History 1 is the first of a foundational sequence of history courses.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Graduate Architectural History 1

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Graduate Architect History 2

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i> *<i>planned</i> to be delivered.***

Response:
Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

An examination of the theories and methods in which architectural history is written through social, religious, cultural, environmental, and political paradigms. The course covers movements, architects, ideas, empires, and discourses that produced architecture until 1400 CE. This is the first part of the architectural history survey for architecture students. 3-credits.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite. Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

**

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Graduate Architectural History 1 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Architectural History 1 is the first of a foundational sequence of history courses.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Examine historical traditions and global culture by analyzing buildings and cities.
2. Examine community and social responsibility by analyzing buildings and cities.
3. Examine diverse cultural production by analyzing buildings and cities.
4. Develop and apply analysis skills through sketching, diagramming, and drawing.
5. Develop and apply communication skills by presenting case studies and literature.
6. Examine and critique theoretical frameworks by directly engaging architecture and by engaging the literature.
7. Apply research skills to produce academic writing using primary sources, images, and archeological evidence.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Required Textbooks and Software

Ching, F. D. K., Jarzombek, M., & Prakash, V. (2017). A global history of architecture (Third edition). Wiley.

- ISBN number 9781118981337, 1118981332

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week Topic

Week 1 Introduction

 The Beginning of Architecture

Week 2 The Beginning of Architecture

 River civilizations: Egypt and Indus valley

Week 3 River civilizations: Egypt and Indus valley

 Mediterranean World: Crete and Mycenae

Week 4 Mediterranean World: Greece

 Etruscan Cities and Chinese Cities

Week 5 Silk Road: China and Rome

 Roman and Chinese Cities

Week 6 Silk Road: China and Rome

 The Hindu Temple: South and Southeast Asia

Week 7 The Hindu Temple: South and Southeast Asia

 Introduction to Library Resources

Week 8 Buddhist Architectural Networks

- India, China, Japan, and Korea
- Week 9 Indigenous American architecture
Indigenous American architecture
- Week 10 Islamic Architecture: From Spain to China
Islamic Architecture: From Spain to China
- Week 11 Early Christian and Byzantine Architecture
Early Christian and Byzantine Architecture
- Week 12 Carolingian and Romanesque
Carolingian and Romanesque
- Week 13 Gothic Architecture
Gothic Architecture
- Week 14 How to write an architectural history paper
How to write an architectural history paper
- Week 15 No class Thanksgiving Break
No class: Thanksgiving Holiday
- Week 16 Wrap Up and Evaluations

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Evaluation of Grades

Methodology

Learning objectives are reinforced through in-class assignments and scaffolded using case studies, and research presentations and papers.

- In-class assignments (200 points): Notes and sketches, diagrams submitted at the end of the class.
- Exams - multiple-choice open book exams of 100 points each. Exams will test knowledge of terminology, building types, precedents of building types, city plans, urban form and spaces, geometry, and spatial relationships: Ability to describe plans, sections, elevations, spatial sequences, defining features of type/style of architecture, construction systems, names of architects and patrons. Ability to describe geography.
- Papers – (6000 words minimum): Students will select a building, building type, city, or a city type from prehistory to 1400 CE. Students will analyze information from multiple perspectives using primary and secondary sources and develop reasoned explanations to questions within architectural history. Written submissions will be reviewed and graded on the quality of the search, and content of your writing, assessed by the instructor.

Assignment	Total Points	Percentage of Final Grade
In-class assignments (10)	200	20
Exams (2)	100 each = 200	20
Periodic writing assignments (10)	10 each = 100	10
Paper	500	50
	1000	100%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.*

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- *Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/. *

Response:
Yes

Graduate Architectural History 1

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

Email Address

Office Phone Number

Office Hours: Days of week, hours available, office location

Teaching Assistants:

Please contact through the Canvas website

- Name of TA, email address, office location, office hours
- Name of TA, email address, office location, office hours

Course Description

An examination of the theories and methods in which architectural history is written through social, religious, cultural, environmental, and political paradigms. The course covers movements, architects, ideas, empires, and discourses that produced architecture until 1400 CE. This is the first part of the architectural history survey for architecture students. 3-credits.

Course Pre-Requisites / Co-Requisites

Department permission

Course Objectives

1. Examine historical traditions and global culture by analyzing buildings and cities.
2. Examine community and social responsibility by analyzing buildings and cities.
3. Examine diverse cultural production by analyzing buildings and cities.
4. Develop and apply analysis skills through sketching, diagramming, and drawing.
5. Develop and apply communication skills by presenting case studies and literature.
6. Examine and critique theoretical frameworks by directly engaging architecture and by engaging the literature.
7. Apply research skills to produce academic writing using primary sources, images, and archeological evidence.

Materials and Supply Fees

None.

Required Textbooks and Software

- Ching, F. D. K., Jarzombek, M., & Prakash, V. (2017). A global history of architecture (Third edition). Wiley.
- ISBN number 9781118981337, 1118981332

Course Schedule

Week	Topic
Week 1	Introduction
	The Beginning of Architecture
Week 2	The Beginning of Architecture
	River civilizations: Egypt and Indus valley
Week 3	River civilizations: Egypt and Indus valley
	Mediterranean World: Crete and Mycenae

Week 4	Mediterranean World: Greece
	Etruscan Cities and Chinese Cities
Week 5	Silk Road: China and Rome
	Roman and Chinese Cities
Week 6	Silk Road: China and Rome
	The Hindu Temple: South and Southeast Asia
Week 7	The Hindu Temple: South and Southeast Asia
	Introduction to Library Resources
Week 8	Buddhist Architectural Networks
	India, China, Japan, and Korea
Week 9	Indigenous American architecture
	Indigenous American architecture
Week 10	Islamic Architecture: From Spain to China
	Islamic Architecture: From Spain to China
Week 11	Early Christian and Byzantine Architecture
	Early Christian and Byzantine Architecture
Week 12	Carolingian and Romanesque
	Carolingian and Romanesque
Week 13	Gothic Architecture
	Gothic Architecture
Week 14	How to write an architectural history paper
	How to write an architectural history paper
Week 15	No class Thanksgiving Break
	No class: Thanksgiving Holiday
Week 16	Wrap Up and Evaluations

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

Learning objectives are reinforced through in-class assignments and scaffolded using case studies, and research presentations and papers.

- In-class assignments (200 points): Notes and sketches, diagrams submitted at the end of the class.
- Exams - multiple-choice open book exams of 100 points each. Exams will test knowledge of terminology, building types, precedents of building types, city plans, urban form and spaces, geometry, and spatial relationships: Ability to describe plans, sections, elevations, spatial sequences, defining features of type/style of architecture, construction systems, names of architects and patrons. Ability to describe geography.
- Papers – (6000 words minimum): Students will select a building, building type, city, or a city type from prehistory to 1400 CE. Students will analyze information from multiple perspectives using primary and secondary sources and develop reasoned explanations to questions within architectural history. Written submissions will be reviewed and graded on the quality of the search, and content of your writing, assessed by the instructor.

Assignment	Total Points	Percentage of Final Grade
In-class assignments (10)	200	20
Exams (2)	100 each = 200	20
Periodic writing assignments (10)	10 each = 100	10
Paper	500	50
	1000	100%

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF’s COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems
	E	0. - 60.9	0.0	Inadequate work

More information on UF grading policy may be found at:

- [UF Graduate Catalog](#)
- [Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and](#)
Course Title, Prefix, and Number
Course Instructor and Academic Term

[respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)
- design, planning, and management projects or portions of projects
- class reports and papers (again, both written and graphic information)
- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual

violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20007

Info

Request: ARC 5XXX Graduate Architectural History 2

Description of request: Graduate Architectural History 2 is part of the graduate Master of Architecture Degree Track Three (Core Program).

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/10/2024 4:21:23 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

Graduate Architectural History 2 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Architectural History 2 is the second of a foundational sequence of history courses.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Graduate Architectural History 2

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Graduate Architect History 2

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *currently* *planned* to be delivered.*

Response:
Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

A history of architecture and urbanism from 1400 to 1850. Students analyze formal, spatial, structural, and environmental principles grounded in architecture movements, discourses, social, political, material, technological, cultural forces, seen in synchronous developments of global architecture and urbanism. The second of the architectural history surveys for architecture students. 3-credits.

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

ARC 5XXX Graduate Architectural History 1

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Graduate Architectural History 2 is the second of a foundational sequence of history courses that are part of the graduate Master of Architecture Degree Track Three (Core Program).

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Examine historical traditions and global culture by conducting case studies.
2. Examine community and social responsibility by conducting case studies.
3. Examine diverse cultural production by conducting case studies.
4. Develop and apply analysis skills through sketching, diagramming, and drawing.
5. Develop and apply communication skills by presenting case studies and literature.
6. Examine and critique theoretical frameworks by directly engaging architecture and by engaging the literature.
7. Apply research skills by methodically accessing and interpreting the body of knowledge.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

- Ching, F. D. K., Jarzombek, M., & Prakash, V. (2017). A global history of architecture (Third edition). Wiley.
- ISBN number 9781118981337, 1118981332

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

- Week 1 Introduction
Renaissance and Renaissance Cities
- Week 2 Mughal, Ottoman, and Safavid Empires
Student Presentation 1 Building Comparison
Student Presentations on Renaissance and Renaissance Cities
- Week 3 China and Japan
Student Presentation 2 Building Comparison
Student Presentations on Mughal, Ottoman, and Safavid Empires
- Week 4 Baroque Architecture in Europe and Latin America
Student Presentation 3 Building Comparison
Student Presentations on China and Japan
- Week 5 Global Architecture of the Eighteenth century
Student Presentations 4 and 5 Building/City Comparison
Two Student Presentations on Baroque Europe and Latin America
- Week 6 Architecture of the Nineteenth century
Student Presentations 6 and 7 Building/City Comparison
Two Student Presentations on Architecture of the Eighteenth century
- Week 7 Architecture of the Nineteenth century
Student Presentations 8 Building Comparison
Student Presentations on Architecture of the Nineteenth century
- Week 8 Asynchronous class: Watch Lecture Videos on Primary Sources
- Week 9 Cities of the Eighteenth and Nineteenth centuries
Paris, Vienna, London, New York, Washington DC
Student Presentation 1 on Primary sources
- Week 10 Colonial Architecture of the Nineteenth century
Globalization and Gothic Revival, Neoclassical Architecture,
Student Presentation 9 City Comparison
Student Presentations Cities of the Eighteenth and Nineteenth centuries
- Week 11 Cities of the Eighteenth and Nineteenth centuries
High End Globalization Mumbai and Shanghai
Student Presentation 10 City Comparison

Student Presentation on Cities of the Eighteenth and Nineteenth centuries
Week 12 Cities of the Eighteenth and Nineteenth centuries
Low End Globalization Mumbai and Shanghai
Presentation 2 on Primary sources

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Learning objectives are reinforced through in-class assignments and scaffolded using case studies, and research presentations and papers.

- In-class assignments (100 points): Notes and sketches, diagrams submitted at the end of the class.
- Case Studies (700 points): Students compare buildings or cities. Case studies will be performed individually and delivered in the form of a presentation. Case studies include student drawings. Ten studies for 50 points each, assessed by the instructor.
- Presentations - Primary Sources (100): Students complete two presentations each on primary sources for two buildings or cities, assessed by instructor.
- Papers - Annotated bibliography (100) of minimum 12 selected sources resulting from an unbiased literature search. Written submissions will be reviewed and graded on the quality of the search, and content of your writing, assessed by the instructor.

Assignment	Total Points	Percentage of Final Grade
In-class assignments (10)	100	15%
Case Studies (10)	500 each = 100	15%
Presentations	200	30%
Papers	200	30%

100%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Graduate Architectural History 2

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

[Email Address](#)

Office Phone Number

Office Hours: Days of week, hours available, office location

Teaching Assistants:

Please contact through the Canvas website

- Name of TA, email address, office location, office hours
- Name of TA, email address, office location, office hours

Course Description

A history of architecture and urbanism from 1400 to 1850. Students analyze formal, spatial, structural, and environmental principles grounded in architecture movements, discourses, social, political, material, technological, cultural forces, seen in synchronous developments of global architecture and urbanism. The second of the architectural history surveys for architecture students. 3-credits.

Course Pre-Requisites / Co-Requisites

ARC 5XXX Graduate Architectural History 1

Course Objectives

1. Examine historical traditions and global culture by conducting case studies.
2. Examine community and social responsibility by conducting case studies.
3. Examine diverse cultural production by conducting case studies.
4. Develop and apply analysis skills through sketching, diagramming, and drawing.
5. Develop and apply communication skills by presenting case studies and literature.
6. Examine and critique theoretical frameworks by directly engaging architecture and by engaging the literature.
7. Apply research skills by methodically accessing and interpreting the body of knowledge.

Materials and Supply Fees

None.

Required Textbooks and Software

Ching, F. D. K., Jarzombek, M., & Prakash, V. (2017). A global history of architecture (Third edition). Wiley.

- ISBN number 9781118981337, 1118981332

Course Schedule

Week 1	Introduction
	Renaissance and Renaissance Cities
Week 2	Mughal, Ottoman, and Safavid Empires
	Student Presentation 1 Building Comparison
	Student Presentations on Renaissance and Renaissance Cities
Week 3	China and Japan
	Student Presentation 2 Building Comparison
	Student Presentations on Mughal, Ottoman, and Safavid Empires

Course Title, Prefix, and Number

Course Instructor and Academic Term

Page 1

Week 4	Baroque Architecture in Europe and Latin America
	Student Presentation 3 Building Comparison
	Student Presentations on China and Japan
Week 5	Global Architecture of the Eighteenth century
	Student Presentations 4 and 5 Building/City Comparison
	Two Student Presentations on Baroque Europe and Latin America
Week 6	Architecture of the Nineteenth century
	Student Presentations 6 and 7 Building/City Comparison
	Two Student Presentations on Architecture of the Eighteenth century
Week 7	Architecture of the Nineteenth century
	Student Presentations 8 Building Comparison
	Student Presentations on Architecture of the Nineteenth century
Week 8	Asynchronous class: Watch Lecture Videos on Primary Sources
Week 9	Cities of the Eighteenth and Nineteenth centuries
	Paris, Vienna, London, New York, Washington DC
	Student Presentation 1 on Primary sources
Week 10	Colonial Architecture of the Nineteenth century
	Globalization and Gothic Revival, Neoclassical Architecture,
	Student Presentation 9 City Comparison
	Student Presentations Cities of the Eighteenth and Nineteenth centuries
Week 11	Cities of the Eighteenth and Nineteenth centuries
	High End Globalization Mumbai and Shanghai
	Student Presentation 10 City Comparison
	Student Presentation on Cities of the Eighteenth and Nineteenth centuries
Week 12	Cities of the Eighteenth and Nineteenth centuries
	Low End Globalization Mumbai and Shanghai
	Presentation 2 on Primary sources

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

Learning objectives are reinforced through in-class assignments and scaffolded using case studies, and research presentations and papers.

- In-class assignments (100 points): Notes and sketches, diagrams submitted at the end of the class.
- Case Studies (700 points): Students compare buildings or cities. Case studies will be performed individually and delivered in the form of a presentation. Case studies include student drawings. Ten studies for 50 points each, assessed by the instructor.

- Presentations - Primary Sources (100): Students complete two presentations each on primary sources for two buildings or cities, assessed by instructor.
- Papers - Annotated bibliography (100) of minimum 12 selected sources resulting from an unbiased literature search. Written submissions will be reviewed and graded on the quality of the search, and content of your writing, assessed by the instructor.

Assignment	Total Points	Percentage of Final Grade
In-class assignments (10)	100	15%
Case Studies (10)	500 each = 100	15%
Presentations	200	30%
Papers	200	30%
		100%

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF's COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems
	E	0. - 60.9	0.0	Inadequate work

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluer.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)
- design, planning, and management projects or portions of projects
- class reports and papers (again, both written and graphic information)
- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)

- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20005

Info

Request: ARC 5XXX Graduate Core Studio 1

Description of request: Graduate Core Studio 1 is part of the graduate Master of Architecture Degree Track Three (Core Program).

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/13/2024 11:19:39 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

Graduate Core Studio 1 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Core Studio 1 is the first of a foundational sequence of four design studio courses.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:

L

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Graduate Core Studio 1

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Graduate Core Studio 1

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *currently* *planned* to be delivered.*

Response:
Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
6

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
Yes

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
6

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Project-based introduction to fundamental design techniques, including design theory, three-dimensional development, and spatial relationships with an emphasis on hybrid digital/analog methods. Design issues, including scale, measure, materiality, cultural history, methodology, program and mapping are explored within activities and discussion of context, architectural language and issues of representation. 6 credit hours.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

department permission

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Graduate Core Studio 1 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory “Core/Foundations” coursework, followed by 52 credits of “Advanced” graduate-level coursework. Graduate Core Studio 1 is the first of a foundational sequence of four design studio courses.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Design Issues: introduce fundamental design ideas through studio involvement with a formal language challenge that language to communicate architecturally significant ideas.
2. Drawing and Making: recognize and construct quality line drawings using both projection and orthographic methods; construct models that recognize the systemic foundations of form and space.
3. Spatial Acuity: understand, communicate, and manipulate spatial systems as a fundamental component of design activity; visual/spatial acuity and drawing/modeling character.
4. Abstraction: define and study abstraction as a tool of investigation with all its possibilities for the discipline of Design; clarity and diversity of graphic languages and distill/rarefy as a fundamental activity.
5. Design Activity: develop the expectation that design activity requires diligence and focus; design process and transformation.
6. Tectonic Vocabulary: develop an intellectually grounded tectonic vocabulary of materials and construction by understanding architecture as simultaneously a mental construct and a physical reality

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Di Mari, A. (2014). Conditional design : an introduction to elemental architecture. BIS Publishers.

- ISBN: 9789063693657, 9063693656

Di Mari, A., & Yoo, N. (2018). Operative design : a catalogue of spatial verbs (Seventh printing). BIS Publishers.

- ISBN 9789063692896, 9063692897

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week	Topic	Assignment
Week 1	Project 1	Periodic Assignments 1
Week 2	Project 1	Periodic Assignments 2
Week 3	Project 1	Periodic Assignments 3
Week 4	Project 1	Periodic Assignments 4
Week 5	Project 1	Periodic Assignments 5
Week 6	Project 1	Periodic Assignments 6
Week 7	Project 1	Periodic Assignments 7
Week 8	Project 1	Periodic Assignments 8
Week 9	Project 1	Project 1 Review

Week 10	Project 2	Periodic Assignments 9
Week 11	Project 2	Periodic Assignments 10
Week 12	Project 2	Periodic Assignments 11
Week 13	Project 2	Periodic Assignments 12
Week 14	Project 2	Periodic Assignments 13
Week 15	Project 2	Review Preparation
Week 16	Project 2	Project 2 Review

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Learning objectives are reinforced through periodic assignments, scaffolded using problems defined by projects. To be successful in this course and curriculum, students must develop a creative iterative design process by direct experience of design evolution: ideation, prototyping, and testing, without fearing periodic failures. Each iteration is a small experiment in which the full range of outcomes, even mistakes, are considered productive knowledge gaining opportunities.

- Periodic Assignments - Model and drawing assignments are made each class meeting and are due at the beginning of the next class unless stated otherwise. Students are expected to engage in self-assessment, and peer assessment as a discourse to seek problems and propose answers. Final assessment is by the instructor.
- Projects - Periodic assignments increase in knowledge and complexity to scaffold projects which are designed to cause students to demonstrate ability to perform learning objectives in a synthetic whole. Minimum of two projects, additional projects may be added at the discretion of the instructor. Students are assessed by the quality completeness, and rigor of the submission as well as their presentation ability. Assessed by the instructor and a panel of faculty.

Assignment	Total Points	Percentage of Final Grade
Periodic assignments (25)	100	50
Projects (2 or more)	100	50
Total	200	100

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accomodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Graduate Core Studio 1

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

[Email Address](#)

Office Phone Number

Office Hours: Days of week, hours available, office location

Course Description

Project-based introduction to fundamental design techniques, including design theory, three-dimensional development, and spatial relationships with an emphasis on hybrid digital/analog methods. Design issues, including scale, measure, materiality, cultural history, methodology, program and mapping are explored within activities and discussion of context, architectural language and issues of representation. 6 credit hours.

Course Pre-Requisites / Co-Requisites

department permission

Course Objectives

1. Design Issues: introduce fundamental design ideas through studio involvement with a formal language challenge that language to communicate architecturally significant ideas.
2. Drawing and Making: recognize and construct quality line drawings using both projection and orthographic methods; construct models that recognize the systemic foundations of form and space.
3. Spatial Acuity: understand, communicate, and manipulate spatial systems as a fundamental component of design activity; visual/spatial acuity and drawing/modeling character.
4. Abstraction: define and study abstraction as a tool of investigation with all its possibilities for the discipline of Design; clarity and diversity of graphic languages and distill/rarefy as a fundamental activity.
5. Design Activity: develop the expectation that design activity requires diligence and focus; design process and transformation.
6. Tectonic Vocabulary: develop an intellectually grounded tectonic vocabulary of materials and construction by understanding architecture as simultaneously a mental construct and a physical reality.

Materials and Supply Fees

No fees

Required Textbooks and Software

Instructor will select software from:

UF|SOA Student Computing Requirements

UF|SOA Software Requirements

Recommended Materials

Di Mari, A. (2014). Conditional design : an introduction to elemental architecture. BIS Publishers.

- ISBN: 9789063693657, 9063693656

Di Mari, A., & Yoo, N. (2018). Operative design : a catalogue of spatial verbs (Seventh printing). BIS Publishers.

- ISBN 9789063692896, 9063692897

Course Schedule

Week	Topic	Assignment
Week 1	Project 1	Periodic Assignments 1
Week 2	Project 1	Periodic Assignments 2

Week 3	Project 1	Periodic Assignments 3
Week 4	Project 1	Periodic Assignments 4
Week 5	Project 1	Periodic Assignments 5
Week 6	Project 1	Periodic Assignments 6
Week 7	Project 1	Periodic Assignments 7
Week 8	Project 1	Periodic Assignments 8
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Week 10	Project 2	Periodic Assignments 9
Week 11	Project 2	Periodic Assignments 10
Week 12	Project 2	Periodic Assignments 11
Week 13	Project 2	Periodic Assignments 12
Week 14	Project 2	Periodic Assignments 13
Week 15	Project 2	Review Preparation
Week 16	Project 2	Project 2 Review

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

Learning objectives are reinforced through periodic assignments, scaffolded using problems defined by projects. To be successful in this course and curriculum, students must develop a creative iterative design process by direct experience of design evolution: ideation, prototyping, and testing, without fearing periodic failures. Each iteration is a small experiment in which the full range of outcomes, even mistakes, are considered productive knowledge gaining opportunities.

- Periodic Assignments - Model and drawing assignments are made each class meeting and are due at the beginning of the next class unless stated otherwise. Students are expected to engage in self-assessment, and peer assessment as a discourse to seek problems and propose answers. Final assessment is by the instructor.
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Assignment	Total Points	Percentage of Final Grade
Periodic assignments (25)	100	50
Projects (2 or more)	100	50
Total	200	100

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF's COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems
	E	0. - 60.9	0.0	Inadequate work

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner.](#) Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluer.com/ufl/. [Summaries of course evaluation results are available to students here.](#)

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be

sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)

- design, planning, and management projects or portions of projects

- class reports and papers (again, both written and graphic information)

- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20012

Info

Request: ARC 5XXX Graduate Core Studio 2

Description of request: Graduate Core Studio 2 is part of the graduate Master of Architecture Degree Track Three (Core Program).

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/13/2024 11:23:57 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

Graduate Core Studio 2 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Core Studio 2 is the second of a foundational sequence of four design studio courses.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Graduate Core Studio 2

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Graduate Core Studio 2

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *currently* *planned* to be delivered.*

Response:
Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
Yes

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
6

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Project-based continuation of fundamental design issues, including scale, measure, movement, edges, boundaries, and materiality. Analysis of context, cultural history, mapping, architectural language, and issues of representation are applied by students in a constructed synthesis of program, space, tectonics, and occupation. Hybrid digital/analog prototyping methods of fabrication and modeling. 6 credit hours.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

ARC 5XXX Graduate Core Studio 1
department permission

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Graduate Core Studio 2 is part of the graduate Master of Architecture Degree Track Three (Core Program), a 100-credit degree for students whose undergraduate degree is in a field other than architecture. It is typically completed in four academic years. This program includes 48 credits of preparatory "Core/Foundations" coursework, followed by 52 credits of "Advanced" graduate-level coursework. Graduate Core Studio 2 is the second of a foundational sequence of four design studio courses.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Discover context as a body of knowledge and a source for architectural ideas.
2. Refine architectural language: spatial systems, frameworks and/or skeletons, and envelope.
3. Use program (design brief) as a generator for design in plan and section.
4. Iterate methodologically to develop intentional design outcomes.
5. Engage in research and analysis that informs the development of architectural projects.
6. Operate with the associated instruments of investigation and representation of the discipline of architecture.
7. Conduct interdependent physical and digital modeling and drawings.
8. Establish a comprehensive link between visual analysis and architecture through constructive analytical activity.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Required Textbooks and Software

Adobe Illustrator

Adobe InDesign

Adobe Photoshop

Trimble SketchUp Pro

Rhinoceros

Autodesk AutoCAD

Climate Consultant

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week	Topic	Assignment
Week 1	Project 1	Periodic Assignments 1
Week 2	Project 1	Periodic Assignments 2
Week 3	Project 1	Periodic Assignments 3
Week 4	Project 1	Periodic Assignments 4
Week 5	Project 1	Periodic Assignments 5
Week 6	Project 1	Periodic Assignments 6
Week 7	Project 1	Periodic Assignments 7
Week 8	Project 1	Periodic Assignments 8
Week 9	Project 1	Project 1 Review

Week 10	Project 2	Periodic Assignments 9
Week 11	Project 2	Periodic Assignments 10
Week 12	Project 2	Periodic Assignments 11
Week 13	Project 2	Periodic Assignments 12
Week 14	Project 2	Periodic Assignments 13
Week 15	Project 2	Review Preparation
Week 16	Project 2	Project 2 Review

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Methodology

Learning objectives are reinforced through periodic assignments, scaffolded using problems defined by projects. To be successful in this course and curriculum, students must develop a creative iterative design process by direct experience of design evolution: ideation, prototyping, and testing, without fearing periodic failures. Each iteration is a small experiment in which the full range of outcomes, even mistakes, are considered productive knowledge gaining opportunities.

- Periodic Assignments - Model and drawing assignments are made each class meeting and are due at the beginning of the next class unless stated otherwise. Students are expected to engage in self-assessment, and peer assessment as a discourse to seek problems and propose answers. Final assessment is by the instructor.
- Projects - Periodic assignments increase in knowledge and complexity to scaffold projects which are designed to cause students to demonstrate ability to perform learning objectives into a synthetic whole. Minimum of two projects, additional projects may be added at the discretion of the instructor. Assessed by the instructor and a panel of faculty.

Assignment	Total Points	Percentage of Final Grade
Periodic assignments (25)	100	50
Projects (2 or more)	100	50
Total	200	100

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accomodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Graduate Core Studio 2

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

[Email Address](#)

Office Phone Number

Office Hours: Days of week, hours available, office location

Course Description

Project-based continuation of fundamental design issues, including scale, measure, movement, edges, boundaries, and materiality. Analysis of context, cultural history, mapping, architectural language, and issues of representation are applied by students in a constructed synthesis of program, space, tectonics, and occupation. Hybrid digital/analog prototyping methods of fabrication and modeling. 6 credit hours.

Course Pre-Requisites / Co-Requisites

department permission

Course Objectives

1. Discover context as a body of knowledge and a source for architectural ideas.
2. Refine architectural language: spatial systems, frameworks and/or skeletons, and envelope.
3. Use program (design brief) as a generator for design in plan and section.
4. Iterate methodologically to develop intentional design outcomes.
5. Engage in research and analysis that informs the development of architectural projects.
6. Operate with the associated instruments of investigation and representation of the discipline of architecture.
7. Conduct interdependent physical and digital modeling and drawings.
8. Establish a comprehensive link between visual analysis and architecture through constructive analytical activity.

Materials and Supply Fees

No fees

Required Textbooks and Software

Instructor will select software from:

UF|SOA Student Computing Requirements

UF|SOA Software Requirements

Course Schedule

Week	Topic	Assignment
Week 1	Project 1	Periodic Assignments 1
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Week 16	Project 2	Project 2 Review

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

Learning objectives are reinforced through periodic assignments, scaffolded using problems defined by projects. To be successful in this course and curriculum, students must develop a creative iterative design process by direct experience of design evolution: ideation, prototyping, and testing, without fearing periodic failures. Each iteration is a small experiment in which the full range of outcomes, even mistakes, are considered productive knowledge gaining opportunities.

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Assignment	Total Points	Percentage of Final Grade
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Total	200	100

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF's COVID related Policies

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Minimum Cumulative GPA

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Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a

complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University’s policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else’s is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)
- design, planning, and management projects or portions of projects
- class reports and papers (again, both written and graphic information)
- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else’s work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of “borrowing” ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the “real world” may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20025

Info

Request: ARC 5XXX IPAL Seminar 1

Description of request: UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice.

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/15/2024 1:14:53 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

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Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
IPAL Seminar 1

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
IPAL Seminar 1

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is *currently* *planned* to be delivered.

Response:
On-Campus, Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

1

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

1

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Architects and their Collaborators – IPAL (Integrated Path to Architecture Licensure) 1 is an introduction to professional practice. Students visit architecture firms, engineering consultants, and integrated product suppliers (lighting, furnishing, similar). Firm leaders give a brief presentation, to show types of work, philosophy, office organization, hierarchy, operation - and engage in open discussion. Students tour the offices are introduced to staff. 1 credit hour.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

The UF Graduate School of Architecture CityLabs are proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. We run four seminar courses that introduce students to aspects of practice during their time at CityLab. IPAL 1 is an introduction to practice.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Students are introduced to laws and regulations in the United States that affect architectural practice and initiate their NCARB Record.
2. Students observe approaches to ethical issues involved in the exercise of professional judgment in architectural design and practice.
3. Students observe approaches to business management by exposure to the concepts, standards, and practices related to different forms of organization for architectural practice including financial management, risk management, office management, office organization, customer service, marketing, and professional conduct.
4. Students observe approaches to project management and leadership and collaboration by exposure to activities involved in a typical architectural design project including methods for selecting consultants and assembling project teams, maintaining client relationships.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Required Textbooks and Software

The Architect's handbook of professional practice. David S. Haviland, American Institute of Architects. Continuously Updated Resource, English, 1988-

Littlefield, D. (2005). Architect's guide to running a practice. Elsevier ; Architectural Press.

<http://site.ebrary.com/id/10128151>

Emerging Professional's Companion. NCARB, AIA. 2013.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

The course meets 10 times during the semester.

Week Topic Assignments

Week 1 The Law and Architecture Initiate NCARB Record and create professional bio

Week 2 Practice Resources The architect's handbook of professional practice. Part 1. The profession & part 2. Firm management

Week 3 Firm Visit Learn about firm. Assemble questions for leadership.

Week 4 Firm Visit Learn about firm. Assemble questions for leadership.

Week 5 Firm Visit Learn about firm. Assemble questions for leadership.

Week 6 Firm Visit Learn about firm. Assemble questions for leadership.

Week 7 Firm Visit Learn about firm. Assemble questions for leadership.

Week 8 Firm Visit Learn about firm. Assemble questions for leadership.

Week 9 Firm Visit Learn about firm. Assemble questions for leadership.

Week 10 Firm Visit Learn about firm. Assemble questions for leadership.

Week 11 No Class
Week 12 No Class
Week 13 No Class
Week 14 No Class
Week 15 No Class
Week 16 No Class

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:
Evaluation of Grades
Methodology

- Periodic Assignments: based on assigned reading - assessed by instructor.
- Discussion events: Students will submit questions before firm visits and discussions led by architecture professionals - assessed by instructor.
- Participation/ Attendance: Along with attendance, each student will be required to participate in class discussion.

Assignment	Total Points	Percentage of Final Grade
Periodic Assignments (2)	10 each =20	20%
Discussion events (10)	5 each = 50	50%
Participation/ Attendance	30	30%
	100%	

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:
to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy. A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:
Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:
Yes

IPAL Seminar 1

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

Email Address

Office Phone Number

Office Hours: Days of week, hours available, office location

Course Description

Architects and their Collaborators – IPAL (Integrated Path to Architecture Licensure) 1 is an introduction to professional practice. Students visit architecture firms, engineering consultants, and integrated product suppliers (lighting, furnishing, similar). Firm leaders give a brief presentation, to show types of work, philosophy, office organization, hierarchy, operation - and engage in open discussion. Students tour the offices are introduced to staff. 1 credit hour.

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice. IPAL 1 is an introduction to practice.

Course Pre-Requisites / Co-Requisites

Department permission

Course Objectives

1. Students are introduced to laws and regulations in the United States that affect architectural practice and initiate their NCARB Record.
2. Students observe approaches to ethical issues involved in the exercise of professional judgment in architectural design and practice.
3. Students observe approaches to business management by exposure to the concepts, standards, and practices related to different forms of organization for architectural practice including financial management, risk management, office management, office organization, customer service, marketing, and professional conduct.
4. Students observe approaches to project management and leadership and collaboration by exposure to activities involved in a typical architectural design project including methods for selecting consultants and assembling project teams, maintaining client relationships.

Materials and Supply Fees

None.

Required Textbooks and Software

The Architect's handbook of professional practice. David S. Haviland, American Institute of Architects.

Continuously Updated Resource, English, 1988-

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Emerging Professional's Companion. NCARB, AIA. 2013.

Recommended Materials

- Title
- Author

Course Title, Prefix, and Number

Course Instructor and Academic Term

Page 1

- Publication date and edition
- ISBN number

Course Schedule

Week	Topic	Assignments
Week 1	The Law and Architecture	Initiate NCARB Record and create professional bio
Week 2	Practice Resources	The architect's handbook of professional practice. Part 1. The profession & part 2. Firm management
Week 3	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 4	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 5	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 6	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 7	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 8	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 9	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 10	Firm Visit	Learn about firm. Assemble questions for leadership.
Week 11	No Class	
Week 12	No Class	
Week 13	No Class	
Week 14	No Class	
Week 15	No Class	
Week 16	No Class	

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

- Periodic Assignments: based on assigned reading - assessed by instructor.
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UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF's COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems
	E	0. - 60.9	0.0	Inadequate work

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Students Requiring Accommodations

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Course Evaluation

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Course Title, Prefix, and Number
Course Instructor and Academic Term

sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)

- design, planning, and management projects or portions of projects

- class reports and papers (again, both written and graphic information)

- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

Course Title, Prefix, and Number
Course Instructor and Academic Term

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20026

Info

Request: ARC 5XXX IPAL Seminar 2

Description of request: IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice.

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/15/2024 1:10:04 PM

Form version: 1

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice. IPAL 2 is an introduction to construction administration.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
IPAL Seminar 2

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
IPAL Seminar 2

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *currently* *planned* to be delivered.*

Response:
On-Campus, Off-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

1

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

1

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

The Construction Site – IPAL (Integrated Path to Architecture Licensure) 2 is an introduction to the Construction Administration role of the architect. Students visit construction sites with project team members present; owner, architect, building contractor, and subcontractors. Students learn Division 1 – General Conditions of Construction, jobsite safety, construction observation, leadership and collaboration during construction. 1 credit hour.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice. IPAL 2 is an introduction to construction administration.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Students observe project technical documentation including specifications, and mock-ups illustrating and identifying the assembly of materials, systems, and components for a building design.
2. Students observe project management from the point of view of diverse project team members; owner, architect, building contractor, and subcontractors. Teams share safety plans, work plans, project schedules, time requirements, and project delivery methods. , client relationships, leadership and collaboration,
3. Students observe the Construction Administration role of the architect including record-intensive tasks such as facilitating project communication (communications protocol), maintaining project records, quality control/quality review, reviewing and certifying amounts due contractors, and preparing change orders.
4. Students observe multiparty processes including bidding and negotiation, cost control value engineering, and building code impacts.
5. Students observe the architect's construction phase legal and licensure responsibilities, professional liability, risk management, and rules of professional conduct.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

The Architect's handbook of professional practice. David S. Haviland, American Institute of Architects. Continuously Updated Resource, English, 1988-
Littlefield, D. (2005). Architect's guide to running a practice. Elsevier ; Architectural Press.
<http://site.ebrary.com/id/10128151>
Emerging Professional's Companion. NCARB, AIA. 2013.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

This course meets 11 times during the semester.

Week	Topic	Assignments
Week 1	Introduction, Job Site Safety + Field Report Template	Initiate NCARB Record and create professional bio
Week 2	Construction Site Visit	Learn about the project. Assemble questions.
Week 3	Construction Site Visit	Learn about the project. Assemble questions.
Week 4	Construction Site Visit	Learn about the project. Assemble questions.
Week 5	Construction Site Visit	Learn about the project. Assemble questions.
Week 6	Construction Site Visit	Learn about the project. Assemble questions.
Week 7	Construction Site Visit	Learn about the project. Assemble questions.

Week 8	Construction Site Visit	Learn about the project. Assemble questions.
Week 9	Construction Site Visit	Learn about the project. Assemble questions.
Week 10	Construction Site Visit	Learn about the project. Assemble questions.
Week 11	Construction Site Visit	Learn about the project. Assemble questions.
Week 12	No Class	
Week 13	No Class	
Week 14	No Class	
Week 15	No Class	
Week 16	No Class	

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Evaluation of Grades

Methodology

- Periodic Assignments: based on assigned reading - assessed by instructor.
- Discussion events: Students will submit questions before site visits and discussions led by architecture professionals - assessed by instructor.
- Participation/ Attendance: Along with attendance, each student will be required to participate in class discussion.

Assignment	Total Points	Percentage of Final Grade
Periodic Assignments (2)	10 each =20	20%
Discussion events (10)	5 each = 50	50%
Participation/ Attendance	30	30%
	100%	

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- *Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.*

Response:

Yes

IPAL Seminar 2

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

Email Address

Office Phone Number

Office Hours: Days of week, hours available, office location

Course Description

The Construction Site – IPAL (Integrated Path to Architecture Licensure) 2 is an introduction to the Construction Administration role of the architect. Students visit construction sites with project team members present; owner, architect, building contractor, and subcontractors. Students learn Division 1 – General Conditions of Construction, jobsite safety, construction observation, leadership and collaboration during construction. 1 credit hour.

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice. IPAL 2 is an introduction to construction administration.

Course Pre-Requisites / Co-Requisites

Department permission

Course Objectives

1. Students observe project technical documentation including specifications, and mock-ups illustrating and identifying the assembly of materials, systems, and components for a building design.
2. Students observe project management from the point of view of diverse project team members; owner, architect, building contractor, and subcontractors. Teams share safety plans, work plans, project schedules, time requirements, and project delivery methods. , client relationships, leadership and collaboration,
3. Students observe the Construction Administration role of the architect including record-intensive tasks such as facilitating project communication (communications protocol), maintaining project records, quality control/quality review, reviewing and certifying amounts due contractors, and preparing change orders.
4. Students observe multiparty processes including bidding and negotiation, cost control value engineering, and building code impacts.
5. Students observe the architect's construction phase legal and licensure responsibilities, professional liability, risk management, and rules of professional conduct.

Materials and Supply Fees

None.

Required Textbooks and Software

The Architect's handbook of professional practice. David S. Haviland, American Institute of Architects.

Continuously Updated Resource, English, 1988-

Littlefield, D. (2005). Architect's guide to running a practice. Elsevier ; Architectural Press.

<http://site.ebrary.com/id/10128151>

Emerging Professional's Companion. NCARB, AIA. 2013.

Recommended Materials

- Title
- Author

Course Title, Prefix, and Number

Course Instructor and Academic Term

Page 1

- Publication date and edition
- ISBN number

Course Schedule

Week	Topic	Assignments
Week 1	Introduction, Job Site Safety + Field Report Template	Initiate NCARB Record and create professional bio
Week 2	Construction Site Visit	Learn about the project. Assemble questions.
Week 3	Construction Site Visit	Learn about the project. Assemble questions.
Week 4	Construction Site Visit	Learn about the project. Assemble questions.
Week 5	Construction Site Visit	Learn about the project. Assemble questions.
Week 6	Construction Site Visit	Learn about the project. Assemble questions.
Week 7	Construction Site Visit	Learn about the project. Assemble questions.
Week 8	Construction Site Visit	Learn about the project. Assemble questions.
Week 9	Construction Site Visit	Learn about the project. Assemble questions.
Week 10	Construction Site Visit	Learn about the project. Assemble questions.
Week 11	Construction Site Visit	Learn about the project. Assemble questions.
Week 12	No Class	
Week 13	No Class	
Week 14	No Class	
Week 15	No Class	
Week 16	No Class	

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

- Periodic Assignments: based on assigned reading - assessed by instructor.
- Discussion events: Students will submit questions before site visits and discussions led by architecture professionals - assessed by instructor.
- Participation/ Attendance: Along with attendance, each student will be required to participate in class discussion.

Assignment	Total Points	Percentage of Final Grade
Periodic Assignments (2)	10 each =20	20%
Discussion events (10)	5 each = 50	50%
Participation/ Attendance	30	30%
		100%

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF's COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems
	E	0. - 60.9	0.0	Inadequate work

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)

[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner.](#) Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluer.com/ufl/. [Summaries of course evaluation results are available to students here.](#)

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be

Course Title, Prefix, and Number

Course Instructor and Academic Term

sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation

There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)

- design, planning, and management projects or portions of projects

- class reports and papers (again, both written and graphic information)

- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

Multiple submissions of the same or similar work without prior approval

If the instructors understand that you are doing a paper associated with your thesis or senior project topic, then doing similar work for two different classes is acceptable—if the instructors agree to it. If a single paper is submitted for one class, then later is submitted for another, and the instructors expect original work, then the multiple submission is inappropriate.

2. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

Course Title, Prefix, and Number
Course Instructor and Academic Term

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus, Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints, View the [Distance Learning Student Complaint Process](#)

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 20027

Info

Request: ARC 5XXX IPAL Seminar 3

Description of request: IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice.

Submitter: Stephen Bender sbender@ufl.edu

Created: 5/15/2024 1:20:38 PM

Form version: 1

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

ARC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice. IPAIL 3 introduces the Architecture Registration Exam (ARE), and Architectural Experience Program (AXP)

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
IPAL Seminar 3

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
IPAL Seminar 3

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is *currently* *planned* to be delivered.

Response:
Off-Campus, Online, On-Campus

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

1

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

1

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Preparing for Licensure– IPAL (Integrated Path to Architecture Licensure) 3 introduces the Architecture Registration Exam (ARE), and Architectural Experience Program (AXP) strategy, tools, study group formation. 1 credit hour.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite. Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

1. Students are introduced to laws and regulations in the United States that affect architectural practice and initiate their NCARB Record.
2. Gain strategies to take the Architect Registration Exam (ARE) 5.0.
- 3.

Breakdown (ARE) 5.0 division.

4. Gain resources and references to prepare for the exams.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

NCARB Architect Registration Examination (ARE) 5.0 Guidelines (Issued July 2023)
NCARB Architectural Experience Program (AXP) Guidelines (Issued May 2020)
2017 AIA Sample Contracts (Available for download from AIA website link below)
<https://www.aiacontracts.org/resources/6150803-list-of-all-current-aia-contract-documents>.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week	Topic
Week 1	Introduction, PcM - Practice Management (ARE Division 1)
Week 2	PcM - Practice Management continued (ARE Division 1)
Week 3	PjM - Project Management (ARE Division 2)
Week 4	PA - Programming & Analysis (ARE Division 3)
Week 5	PPD - Project Planning & Design (ARE Division 4)
Week 6	PDD – Project Development & Documentation (ARE Division 5)
Week 7	CE – Construction & Evaluation (ARE Division 6)
Week 8	(ARE) 5.0 Divisions Review

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

- Periodic Assignments: based on assigned reading - assessed by instructor.
- Participation/ Attendance: Along with attendance, each student will be required to participate in class discussion.

Assignment	Total Points	Percentage of Final Grade
Periodic Assignments (8)	20 each =100	90%
Participation/ Attendance	10	10%
	100%	

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:
to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:
Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• *<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>*

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

IPAL Seminar 3

ARC 5XXX Section:

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Fall 202X

Instructor:

Name

Email Address

Office Phone Number

Office Hours: Days of week, hours available, office location

Course Description

Preparing for Licensure– IPAL (Integrated Path to Architecture Licensure) 3 introduces the Architecture Registration Exam (ARE), and Architectural Experience Program (AXP) strategy, tools, study group formation. 1 credit hour.

UF Graduate School of Architecture is proud to be a NCARB IPAL School. IPAL (Integrated Path to Architecture Licensure) is a NCARB program that among other things allows students to take the ARE simultaneously with getting their professional degree and AXP. IPAL Seminar sequence introduces students to aspects of licensure and practice.

Course Pre-Requisites / Co-Requisites

Department permission

Course Objectives

1. Students are introduced to laws and regulations in the United States that affect architectural practice and initiate their NCARB Record.
2. Gain strategies to take the Architect Registration Exam (ARE) 5.0.
3. Breakdown (ARE) 5.0 division.
4. Gain resources and references to prepare for the exams.

Materials and Supply Fees

None.

Recommended Materials

NCARB Architect Registration Examination (ARE) 5.0 Guidelines (Issued July 2023)

NCARB Architectural Experience Program (AXP) Guidelines (Issued May 2020)

2017 AIA Sample Contracts (Available for download from AIA website link below)

<https://www.aiacontracts.org/resources/6150803-list-of-all-current-aia-contract-documents>.

Course Schedule

<u>Week</u>	<u>Topic</u>
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Week 7	CE – Construction & Evaluation (ARE Division 6)

Course Title, Prefix, and Number

Course Instructor and Academic Term

Page 1

Attendance Policy, Class Expectations, and Make-Up Policy

State whether attendance is required and if so, how will it be monitored? What are the penalties for absence, tardiness, cell phone policy, laptop policy, etc. What are the arrangements for missed homework, missed quizzes, and missed exams? This statement is required: Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Methodology

- Periodic Assignments: based on assigned reading - assessed by instructor.
- Participation/ Attendance: Along with attendance, each student will be required to participate in class discussion.

Assignment	Total Points	Percentage of Final Grade
Periodic Assignments (8)	20 each =100	90%
Participation/ Attendance	10	10%
		100%

UF Coronavirus Policies and Campus Operations

Visit <https://coronavirus.ufl.edu/health-guidance/> to stay up to date on UF’s COVID related Policies

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Three or more unexcused absences may result in an administrative drop from the course. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Grading Policy

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	93 - 100	4.0	Outstanding work only
	A-	90 – 92.9	3.67	Close to outstanding
	B+	87 - 89.9	3.33	Very good work
	B	84 – 86.9	3.0	Good work
	B-	80 – 83.9	2.67	Good work with some problems
	C+	77 - 79.9	2.33	Slightly above average work
	C	74 – 76.9	2.0	Average work
FAILING GRADES	C-	70 - 73.9	1.67	Average work with some problems
	D+	67 - 69.9	1.33	Poor work with some effort
	D	64 - 66.9	1.0	Poor work
	D-	61 - 63.9	0.67	Poor work with some problems

	E	0. - 60.9	0.0	Inadequate work
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More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Distance Learning Privacy Policy

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, and exams), field trips, and private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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Examples of inappropriate activities include:

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All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575 for information on crisis services as well as non-crisis services; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

[E-learning technical support](#), 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

[Career Resource Center](#), Reitz Union, 392-1601. Career assistance and counseling.

[Library Support](#), Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#), Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

[Writing Studio](#), 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

[Student Complaints Campus](#), Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

Orlando Resources

Police / Fire / Medical Emergency – 911

Orlando Police Department Non-Emergency Number: 321.235.5300

Consult CityLab-Orlando Student Resources for Emergency contact information.

Course|New for request 19998

Info

Request: CAI 5XXX AI Design Studio I

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:14:30 PM

Form version: 3

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

Yes

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

This is an introductory experiential seminar course designed to give students hand on experience with biomedical AI applications. This is meant to be taken the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine. With instructor approval, advanced undergraduates with the relevant background and interest can also take this course .

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

xxx

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
AI Design Studio I

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
AI Design Studio I

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

1

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

1

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

This experiential seminar course will feature numerous faculty experts from diverse backgrounds who will guide students through more than a dozen unique real-world examples of machine learning for healthcare applications. Students will gain valuable experience in designing, developing, and deploying AI systems using contemporary tools, models, and platforms.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not required: Fundamentals of AI in Medicine I (course request 19996)

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

A working familiarity and at least some hands-on experience with Python is strongly recommended

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

- This course is intended to be taken by incoming AIBHS graduate students during their first semester. Any other students must obtain instructor approval before registration.
- The curriculum is designed to provide a broad survey of the multifaceted clinical AI landscape and to equip students with the practical tools and experience necessary to develop their individual and self-directed AI projects in AI Design Studio II.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

After completing this course, students will be able to:

- Create, manage, and install custom Python packages inside Anaconda environments.
- Demonstrate the process for requesting and utilizing HiPerGator computing resources using the Open on Demand interface.
- Run Python code in the browser by connecting to a locally hosted Jupyter notebook server, a remote computing cluster (HiPerGator), or cloud platforms (Google Colab).
- Load, analyze, manipulate, visualize, process, and glean insights from biomedical datasets using pandas and NumPy.
- Identify contemporary software tools, libraries, models, platforms, and applications for developing AI models with diverse forms of patient data.
- Develop and evaluate machine learning and deep learning algorithms for augmenting clinical practice using real-world patient data of multiple modalities and temporal resolutions.
- Explain the ethical challenges and implications surrounding AI for health, and leverage fairness libraries to detect and remedy biased models.
- Explain cutting edge AI topics and techniques, and demonstrate in code how they can be applied for healthcare applications.
- Create and share an instructional Jupyter notebook that guides users through an example of AI applied to healthcare data.
- Explain their clinical AI interests and tentative plan for individual research in AI Design Studio II.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

None

- This course operates as an experiential clinical AI seminar with rotating featured topics.
- Each week, a relevant clinical AI faculty expert will guide students through the completion of a unique Jupyter notebook that uses AI to solve a real-world clinical problem.
- After class, students will have one week to complete an at-home assignment based on the material presented in class by the domain expert.
- Throughout the semester, students will develop their own Jupyter notebook to demonstrate another unique application of clinical AI centered around a topic, dataset, and computational technique of each student's choosing.
- During the final two weeks of class, each student will guide the rest of the class through their custom Jupyter notebook.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week	Topic(s)	Tools, Libraries, and Models
	Software, Platforms, and Infrastructure	
1	Python Environments, Jupyter Notebooks, GitHub: Anaconda, Linux command line, git	
2	HiPerGator, Google Colab, Remote Server: HiPerGator + JupyterLab, Google Colab, ssh	
	Fundamentals of AI for Health with Structured Patient Data	
3	Data Manipulation, Analysis, and Transformation: Pandas, NumPy, Matplotlib, Seaborn	
4	Machine Learning for Patient Risk Estimation: Scikit-Learn, Logistic Regression, XGBoost	
5	Deep Learning with Clinical Time Series :PyTorch, MLP, RNN	
	Deep Learning with Unstructured Patient Data	
6	Information Extraction from Clinical Notes: Hugging Face, Transformer	
7	Medical Image Analysis: Tensorflow, Keras, 3D Slicer, MONAI, CNN	
8	Temporal Models for Physiological Waveforms: WFDB, SciPy, Fourier transform	
9	Precision Health and Multiomics: Parabricks, GATK, K-means clustering	
10	Digital Pathology and Spatial Transcriptomics HistomicsTK, HistoCloud, HistoLens	
	Emerging Topics in AI for Health	
11	Ethical AI: Fairlearn, AIF360, SHAP, Captum	
12	Causal AI: DoWhy, EconML, Causal-Learn	
13	Generative AI GPT-4, Gemini Pro, LLaMA 3, 3rd party APIs	
	Final Project	
14	Final Project Preview + Q&A	
15	Notebook Showcase + Peer Feedback	
16	Notebook Showcase + Peer Feedback	

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

In-Class Notebooks (25%)

- Each week, a guided in-class Jupyter notebook will be distributed to the in-person attendees at the start of class. Students will be guided through the notebook in real-time by an AI expert.
- In-class notebooks will not be graded for accuracy. Instead, in-class notebooks will serve primarily to evaluate in-class participation.
- Students must submit their in-class notebooks on Canvas before the end of class to receive attendance credit for that week.

At-Home Coding Assignments (25%)

- Following each week's class in a particular clinical AI domain, students will be assigned an additional Jupyter notebook to complete at home.
- At-home notebooks will contain prompts and instructions to develop AI code and will be less guided and more self-paced than in-class tutorials.
- At-home assignments will be due by the start of class the following week (students will have one week to complete each assignment).
- At-home assignments will be evaluated for correctness and appropriateness (for example, code must run without errors).

Final Project (50%)

- Throughout the semester, each student will independently develop their own Jupyter notebook that guides their peers through the development and evaluation of a machine learning model to address a particular clinical task using a publicly available dataset of the student's choosing.
- Beginning in Week 8, several brief assignments will ensure that students remain on track to successfully develop their notebooks (see final project milestones table below.)

- During the final 2 class meetings, each student will guide their peers through their notebooks.

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Wei Shao - Department of Medicine, College of Medicine

Ben Shickel - Department of Medicine, College of Medicine

Tezcan Baslanti - Department of Medicine, College of Medicine

to be determined

Ben Shickel - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- *<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>*

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

CAI YYYY: AI Design Studio I

Semester: Fall 202X

Location: DSIT 2400

Zoom: <https://ufl.zoom.us>

Class Meetings: Friday 1:55 – 2:45 pm

Credit Hours: 1

Instructor

Benjamin Shickel, PhD

shickelb@ufl.edu

352-273-9958

DSIT 2400

Teaching Assistant

TA Name

taemail@ufl.edu

352-XXX-XXXX

DSIT 2400

Office Hours

- Hybrid office hours will be held every Thursday from 4-5pm over Zoom and in-person at Malachowsky Hall Room 2400 (DSIT 2400).
 - **Office hours Zoom link:** <https://ufl.zoom.us>
- Students may also reach out by email to schedule individual appointments at any other time.

Course Website

<https://elearning.ufl.edu>

Course Communications

E-mail is the preferred method of communication.

Required Textbook

None.

Required Computing Resources

- Access to a computer capable of running Python code (specifically, a Jupyter notebook server) is required.
- During class meetings, students may either use their personal laptops or the in-room desktops.
- Outside of class, students who do not have access to a personal laptop or desktop to complete their at-home assignments have multiple options:
 - Complete assignments on HiPerGator using the course's allocated resources (free, requires an internet connection, VPN if off-campus, and an internet browser.)
 - Completing assignments on Google Colab (requires an internet browser and a Google account)
 - Using one of the many shared [UF computer labs](#) to either run code locally or connect to one of the aforementioned remote options.

Materials and Supplies Fees

None.

Course Description

- This experiential seminar course will feature numerous faculty experts from diverse backgrounds who will guide students through more than a dozen unique real-world examples of machine learning for healthcare applications.
- Students will gain valuable experience in designing, developing, and deploying AI systems using contemporary tools, models, and platforms.
- Through a series of interactive and open-ended vignettes, rotating panels of AI and physician-scientists will guide students through the design and application of end-to-end ML systems.
- Faculty on the cutting-edge of medical AI research will foster an environment of innovation, creativity, and nonlinear thinking via project-based experiential learning.

Prerequisite Knowledge and Skills

- A working familiarity and at least some hands-on experience with Python is strongly recommended.
- While the curriculum has been designed for early-stage coders, **this course is not intended to teach Python fundamentals** such as basic syntax, terminology, or basic principles of object-oriented programming (instead, this course will focus on specific data science and machine learning libraries that build on top of Python foundations).

All students are expected to understand basic aspects of the following Python topics prior to the first class:

- Writing and executing Python code
- Variables (assignments and basic calculations)
- Data types (integer, float, string)
- Built-in data structures (list, dictionary)
- Functions (arguments, return values, and defining vs. calling them)
- Libraries (modules, import statements, and using imported functions)
- Conditionals (if, else if, else)
- Loops (for, while)

Additional Resources

Students wishing to gain more experience with Python prior to taking this course can take advantage of widely available free online courses, including:

- Live Python/AI bootcamps and other AI for Health training offered throughout the year by the UF College of Medicine and Office of Research.
- Self-paced and/or in-person Python training workshops developed by UF's [Practicum AI](#) (e.g., "[A Brief Introduction to Python](#)")
- [Python for Everybody](#), a popular and accessible introductory Coursera course series covering fundamental programming and Python topics.

Course Objectives

After completing this course, students will be able to:

- Create, manage, and install custom Python packages inside Anaconda environments.
- Demonstrate the process for requesting and utilizing HiPerGator computing resources using the Open on Demand interface.
- Run Python code in the browser by connecting to a locally hosted Jupyter notebook server, a remote computing cluster (HiPerGator), or cloud platforms (Google Colab).
- Load, analyze, manipulate, visualize, process, and glean insights from biomedical datasets using pandas and NumPy.
- Identify contemporary software tools, libraries, models, platforms, and applications for developing AI models with diverse forms of patient data.

- Develop and evaluate machine learning and deep learning algorithms for augmenting clinical practice using real-world patient data of multiple modalities and temporal resolutions.
- Explain the ethical challenges and implications surrounding AI for health, and leverage fairness libraries to detect and remedy biased models.
- Explain cutting edge AI topics and techniques, and demonstrate in code how they can be applied for healthcare applications.
- Create and share an instructional Jupyter notebook that guides users through an example of AI applied to healthcare data.
- Explain their clinical AI interests and tentative plan for individual research in AI Design Studio II.

Relation to Program Outcomes

- This course is intended to be taken by incoming AIBHS graduate students during their first semester. Any other students must obtain instructor approval before registration.
- The curriculum is designed to provide a broad survey of the multifaceted clinical AI landscape and to equip students with the practical tools and experience necessary to develop their individual and self-directed AI projects in AI Design Studio II.

Instructional Methods

- This course operates as an experiential clinical AI seminar with rotating featured topics.
- Each week, a relevant clinical AI faculty expert will guide students through the completion of a unique Jupyter notebook that uses AI to solve a real-world clinical problem.
- After class, students will have one week to complete an at-home assignment based on the material presented in class by the domain expert.
- Throughout the semester, students will develop their own Jupyter notebook to demonstrate another unique application of clinical AI centered around a topic, dataset, and computational technique of each student's choosing.
- During the final two weeks of class, each student will guide the rest of the class through their custom Jupyter notebook.

Course Outline

The following is a tentative schedule of course topics:

Week	Topic(s)	Tools, Libraries, and Models
Software, Platforms, and Infrastructure		
1	Python Environments, Jupyter Notebooks, GitHub	Anaconda, Linux command line, git
2	HiPerGator, Google Colab, Remote Servers	HiPerGator + JupyterLab, Google Colab, ssh
Fundamentals of AI for Health with Structured Patient Data		
3	Data Manipulation, Analysis, and Transformation	Pandas, NumPy, Matplotlib, Seaborn
4	Machine Learning for Patient Risk Estimation	Scikit-Learn, Logistic Regression, XGBoost
5	Deep Learning with Clinical Time Series	PyTorch, MLP, RNN
Deep Learning with Unstructured Patient Data		
6	Information Extraction from Clinical Notes	Hugging Face, Transformer
7	Medical Image Analysis	Tensorflow, Keras, 3D Slicer, MONAI, CNN
8	Temporal Models for Physiological Waveforms	WFDB, SciPy, Fourier transform
9	Precision Health and Multiomics	Parabricks, GATK, K-means clustering
10	Digital Pathology and Spatial Transcriptomics	HistomicsTK, HistoCloud, HistoLens
Emerging Topics in AI for Health		
11	Ethical AI	Fairlearn, AIF360, SHAP, Captum
12	Causal AI	DoWhy, EconML, Causal-Learn
13	Generative AI	GPT-4, Gemini Pro, LLaMA 3, 3rd party APIs
Final Project		
14	Final Project Preview + Q&A	

15	Notebook Showcase + Peer Feedback
16	Notebook Showcase + Peer Feedback

GRADING

Final grades will be determined based on the following percentages:

Requirement	Percentage of Final Grade
In-class notebook assignments (13)	25%
At-home coding assignments (13)	25%
Final project (see milestones table below)	50%

In-Class Notebooks (25%)

- Each week, a guided in-class Jupyter notebook will be distributed to the in-person attendees at the start of class. Students will be guided through the notebook in real-time by an AI expert.
- In-class notebooks will not be graded for accuracy. Instead, in-class notebooks will serve primarily to evaluate in-class participation.
- Students must submit their in-class notebooks on Canvas before the end of class to receive attendance credit for that week.

At-Home Coding Assignments (25%)

- Following each week's class in a particular clinical AI domain, students will be assigned an additional Jupyter notebook to complete at home.
- At-home notebooks will contain prompts and instructions to develop AI code and will be less guided and more self-paced than in-class tutorials.
- At-home assignments will be due by the start of class the following week (students will have one week to complete each assignment).
- At-home assignments will be evaluated for correctness and appropriateness (for example, code must run without errors).

Final Project (50%)

- Throughout the semester, each student will independently develop their own Jupyter notebook that guides their peers through the development and evaluation of a machine learning model to address a particular clinical task using a publicly available dataset of the student's choosing.
- Beginning in Week 8, several brief assignments will ensure that students remain on track to successfully develop their notebooks (see final project milestones table below.)
- During the final 2 class meetings, each student will guide their peers through their notebooks.

A timeline and description of final project milestones is shown below:

Project Milestone	Deadline	% of Project Grade
Selection and characterization of a publicly available biomedical dataset to be used in the final project notebook, including: <ul style="list-style-type: none"> • Name • URL link • Associated reference/publication, if applicable • Description of data elements • Number of patients 	Week 8 (X/X/202X)	10%

<ul style="list-style-type: none"> • Sample size (if different from number of patients) • Any potential challenges or sources of bias 		
<p>Identification and description of:</p> <ul style="list-style-type: none"> • The clinical prediction target(s), and the extraction process using the given dataset. • The inputs/features used to predict this outcome, and the process for obtaining them from the given dataset. • A list of 4-5 domain and/or technical topics that will be presented in the notebook as instructional material (text) 	Week 9 (X/X/202X)	15%
<p>Description of model training and testing procedure, including:</p> <ul style="list-style-type: none"> • Which machine learning model(s) will be trained. • Whether any pretrained models will be fine-tuned. • Evaluation procedure (e.g., fixed train-test split, k-fold cross-validation) • Estimated computational requirements to train and/or evaluate the model. • Which metrics will be used to evaluate the model performance. 	Week 10 (X/X/202X)	15%
<p>Preliminary results completing and analyzing the previously outlined task, including:</p> <ul style="list-style-type: none"> • Each student will perform the task outlined over the previous 3 submissions and report values of the evaluation metrics they have identified. • A 1-paragraph discussion of results, including whether they were expected, what might be changed based on results, and any challenges faced. 	Week 12 (X/X/202X)	15%
<p>Lightning presentation (~5 slides/5 minutes) at the Final Project Preview, including:</p> <ul style="list-style-type: none"> • Introduction and significance of the clinical problem • How AI can address the problem. • A summary of the evolution of the project, including all submitted information. • Description of all challenges faced and solutions to overcome them. • Reporting of initial pilot results, and a description of any changes made to the original plan (and why). 	Week 14 (X/X/202X)	25%
Participation and submission of in-class peer notebooks (Round 1)	Week 15 (X/X/202X)	10%
Participation and submission of in-class peer notebooks (Round 2)	Week 16 (X/X/202X)	10%

COURSE POLICIES

Attendance

- Attendance is required and lectures will not be recorded.
- Requirements for class attendance are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Quizzes and Exams

- There are no quizzes or exams in this course.

Make-Up Policy

- Course policies for make-up assignments are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Assignment Policy

- Each week, students will be assigned a self-directed, at-home Jupyter notebook to complete before the start of the next class.

Course Technology

- In-class activities and at-home assignments will be delivered as Jupyter notebooks (Python).
- Students may use their own laptops or desktop lab computers during class.
- After class, students are required to complete Python notebook assignments using their preferred method (e.g., local machine, HiPerGator, Google Colab, etc.) unless otherwise noted.

Course Evaluation

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals.
- Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>.
- Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>.
- Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UNIVERSITY POLICIES

University Policy on Accommodating Students with Disabilities

- “Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.”

University Policy on Academic Conduct

- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Demeanor and Etiquette

- All members of the class are expected to follow rules of common courtesy in all email messages, in-person interactions, and online threaded discussions and chats.

CAMPUS RESOURCES

Health and Wellness

- **U Matter, We Care:** If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care](#) to refer or report a concern and a team member will reach out to the student in distress.
- **Counseling and Wellness Center:** Visit the [Counseling and Wellness Center](#) website or call 352-392-1575 for information on crisis services as well as non-crisis services.

- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need or visit the [Student Health Care Center](#) website.
- **University Police Department:** Visit the [UF Police Department](#) website or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center](#) website.
- **GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell](#) website or call 352-273-4450.

Academic Resources

- **E-learning technical support:** Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- **Career Connections Center:** Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources.
- **Teaching Center:** Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- **Writing Studio:** 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- **Student Complaints On-Campus:** Visit the [Student Honor Code and Student Conduct Code](#) webpage for more information.
- **On-Line Students Complaints:** View the [Distance Learning Student Complaint Process](#)

Course|New for request 19999

Info

Request: CAI 5XXX AI Design Studio II

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:19:05 PM

Form version: 3

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
5

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:
Each student will propose a self-directed clinical AI research project that addresses a real-world healthcare challenge and spend the full semester building and testing their AI system. Students will be supervised by an AI faculty member as they organize, develop, evaluate, and refine their approach. This course follows the guided experiential learning and high-level overview of the clinical AI landscape presented in AI Design Studio I (new course request 19998) and is meant to be taken in the second semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine..

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
AI Design Studio II

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
AI Design Studio II

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Directed Individual Studies

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

AI Design Studio II is an experiential applied research course in which each student will propose a self-directed clinical AI research project that addresses a real-world healthcare challenge and spend the full semester building and testing their AI system. Students will be supervised by an AI faculty member as they organize, develop, evaluate, and refine their approach. This course follows the guided experiential learning and high-level overview of the clinical AI landscape presented in AI Desi

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not required: Fundamentals of AI in Medicine II (course request19997)

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Fundamentals of AI in Medicine I (course request 19996)[C] & AI Design Studio I (course request 19998)[C]

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not used commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

- This course is intended to be taken by AIBHS graduate students during their second semester. Any other students must obtain instructor approval before registration.
- This course is designed to provide deeper technical AI experience in a specific clinical domain under the mentorship of a technical clinical AI expert using existing datasets. The goal is to focus

and strengthen AI skills among AIBHS students before clinical rotations in AI Clinical Design Studio I. (new course request)

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

After completing this course, students will be able to:

- Build an execute a complete machine learning pipeline for healthcare applications, from data acquisition to model evaluation and deployment.
- Develop, evaluate, and document innovative technical AI approaches for addressing real-world clinical challenges.
- Critically appraise published AI research studies, including strengths, limitations, and implicit future research opportunities.
- Organize and write effective systematic, scoping, and narrative reviews in a specific area of clinical AI.
- Identify broad limitations or gaps in knowledge among published literature in a specific healthcare AI domain.
- Write a compelling clinical AI research project proposal.
- Participate in the academic peer review process and provide constructive criticism.
- Effectively disseminate research through oral presentations and written scientific manuscripts.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

None

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Effective Mentorship and Constructive Peer Review in Biomedical AI

How to Read a Clinical AI Research Paper: Common Patterns and Strategies for Staying Current
Initial Project Brainstorm (5+ ideas) Due

Synthesizing Knowledge: Scoping, Narrative, and Systematic Reviews of AI for Health Research
Mentors match and reach out to students individually based on shared interests.

Identifying Gaps and Opportunities in Clinical AI Research + How to Write an Effective NIH-Style
AI Research Proposal Summary of Mentor-Mentee Discussions #1 Due

Effective Scientific Communication Final Project Idea Due

Project Lightning Presentation #1: Project Overview + Peer Feedback (In-Class)

Fundamentals of Scientific Rigor and Reproducibility Literature Review Due (2 Pages
Minimum)

FAIR Biomedical Data (Findable, Accessible, Interoperable, Reproducible), + Secure and Ethical
Use of Biomedical Data Project Proposal Due (2 Pages Maximum)

Project Lightning Presentation #2: Progress, Challenges, Insights + Peer Feedback (In-Class)

AI Reproducibility and Generalizability Summary of Mentor-Mentee Discussions #2 Due

Fundamental Principles of Ethical AI and Ethical Use of Generative AI for Scientific Writing and

Review

Project Lightning Presentation #3: Progress, Challenges, Insights + Peer Feedback (In-Class)

Project Demos

Project Demos Summary of Mentor-Mentee Discussions #3 Due

Final Project Presentations Final Report Due (4 pages)

Final Project Presentations Final Project Peer Review Due

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Project Brainstorm 5%

Final Project Idea 5%

Literature Review 10%

Project Proposal 20%

Lightning Presentations (3) 15%

Mentor-Mentee Summaries (3) 5%

Project Demo 10%

Project Presentation 10%

Project Report 15%

Project Peer Review 5%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Ben Shickel - Department of Medicine, College of Medicine

Yuanfang Ren - Department of Medicine, College of Medicine

Masoud Rouhizadeh - Department of Pharmaceutical Outcomes and Policy, College of Pharmacy

To be determined

Ben Shickel - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:
Yes

CAI YYYY: AI Design Studio II

Semester: Fall 202X

Location: DSIT 2400

Zoom: <https://ufl.zoom.us>

Class Meetings: Friday 3:00 – 3:50 pm

Credit Hours: 3

Instructor

Benjamin Shickel, PhD

shickelb@ufl.edu

352-273-9958

DSIT 2400

Teaching Assistant

TA Name

taemail@ufl.edu

352-XXX-XXXX

DSIT 2400

Office Hours

- Hybrid office hours will be held every Thursday from 3-4pm over Zoom and in-person at Malachowsky Hall Room 2400 (DSIT 2400).
 - **Office hours Zoom link:** <https://ufl.zoom.us>
- Students may also reach out by email to schedule individual appointments at any other time.

Course Website

<https://elearning.ufl.edu>

Course Communications

E-mail is the preferred method of communication.

Required Textbook

None.

Required Computing Resources

- Access to a computer capable of developing and executing code is required.
- During class meetings, students may either use their personal laptops or the in-room desktops.
- Outside of class, students who do not have access to a personal laptop or desktop to complete their at-home assignments have multiple options:
 - Complete assignments on HiPerGator using the course's allocated resources (free, requires an internet connection, VPN if off-campus, and an internet browser.)
 - Completing assignments on Google Colab (requires an internet browser and a Google account)
 - Using one of the many shared [UF computer labs](#) to either run code locally or connect to one of the aforementioned remote options.

Materials and Supplies Fees

None.

Course Description

AI Design Studio II is an experiential applied research course in which each student will propose a self-directed clinical AI research project that addresses a real-world healthcare challenge and spend the full semester building and testing their AI system. Students will be supervised by an AI faculty member as they organize, develop, evaluate, and refine their approach. This course follows the guided experiential learning and high-level overview of the clinical AI landscape presented in AI Design Studio I. Students will be paired with a technical AI faculty member whose research aligns with the student's proposed project. AI Design Studio II is focused on refining technical methods on retrospective datasets and will prepare students for prospective and immersive aspects of Clinical AI Design Studio I rotations.

Prerequisite Knowledge and Skills

Students are required to have previously completed AI Design Studio I.

Additional Resources

Students wishing to gain additional proficiency in coding and/or AI prior to taking this course can take advantage of widely available free online courses, including:

- Live Python/AI bootcamps and other AI for Health training offered throughout the year by the UF College of Medicine and Office of Research.
- Self-paced and/or in-person training workshops developed by UF's [Practicum AI](#)
- A wide collection of free training courses on [Coursera](#).

Course Objectives

After completing this course, students will be able to:

- Build an execute a complete machine learning pipeline for healthcare applications, from data acquisition to model evaluation and deployment.
- Develop, evaluate, and document innovative technical AI approaches for addressing real-world clinical challenges.
- Critically appraise published AI research studies, including strengths, limitations, and implicit future research opportunities.
- Organize and write effective systematic, scoping, and narrative reviews in a specific area of clinical AI.
- Identify broad limitations or gaps in knowledge among published literature in a specific healthcare AI domain.
- Write a compelling clinical AI research project proposal.
- Participate in the academic peer review process and provide constructive criticism.
- Effectively disseminate research through oral presentations and written scientific manuscripts.

Relation to Program Outcomes

- This course is intended to be taken by AIBHS graduate students during their second semester. Any other students must obtain instructor approval before registration.
- This course is designed to provide deeper technical AI experience in a specific clinical domain under the mentorship of a technical clinical AI expert using existing datasets. The goal is to focus and strengthen AI skills among AIBHS students before clinical rotations in AI Clinical Design Studio I.

Instructional Methods

- Each student will be paired with a technical AI faculty mentor and will spend most of their course time proposing and completing an individual clinical AI project.
- The class will meet as a group once per week to discuss relevant topics in clinical AI research.

- In the second half of the course, students will present their project updates during full-class sessions and will provide feedback to their peers.
- The final 4 weeks of the course will consist of interactive project demos and final project presentations.

Course Outline

The following is a tentative schedule of course topics:

Week	Topic	Project Milestone
1	Effective Mentorship and Constructive Peer Review in Biomedical AI	
2	How to Read a Clinical AI Research Paper: Common Patterns and Strategies for Staying Current	Initial Project Brainstorm (5+ ideas) Due
3	Synthesizing Knowledge: Scoping, Narrative, and Systematic Reviews of AI for Health Research	Mentors match and reach out to students individually based on shared interests.
4	Identifying Gaps and Opportunities in Clinical AI Research + How to Write an Effective NIH-Style AI Research Proposal	Summary of Mentor-Mentee Discussions #1 Due
5	Effective Scientific Communication	Final Project Idea Due
6	Project Lightning Presentation #1: Project Overview + Peer Feedback (In-Class)	
7	Fundamentals of Scientific Rigor and Reproducibility	Literature Review Due (2 Pages Minimum)
8	FAIR Biomedical Data (Findable, Accessible, Interoperable, Reproducible), + Secure and Ethical Use of Biomedical Data	Project Proposal Due (2 Pages Maximum)
9	Project Lightning Presentation #2: Progress, Challenges, Insights + Peer Feedback (In-Class)	
10	AI Reproducibility and Generalizability	Summary of Mentor-Mentee Discussions #2 Due
11	Fundamental Principles of Ethical AI and Ethical Use of Generative AI for Scientific Writing and Review	
12	Project Lightning Presentation #3: Progress, Challenges, Insights + Peer Feedback (In-Class)	
13	Project Demos	
14	Project Demos	Summary of Mentor-Mentee Discussions #3 Due
15	Final Project Presentations	Final Report Due (4 pages)
16	Final Project Presentations	Final Project Peer Review Due

GRADING

Final grades will be determined based on the following percentages:

Category	Percentage of Final Grade
Project Brainstorm	5%
Final Project Idea	5%
Literature Review	10%
Project Proposal	20%
Lightning Presentations (3)	15%
Mentor-Mentee Summaries (3)	5%
Project Demo	10%
Project Presentation	10%
Project Report	15%

COURSE POLICIES

Attendance

- Attendance is required and lectures will not be recorded.
- Requirements for class attendance are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Quizzes and Exams

- There are no quizzes or exams in this course.

Make-Up Policy

- Course policies for make-up assignments are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Course Evaluation

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals.
- Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>.
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- “Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.”

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- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Demeanor and Etiquette

- All members of the class are expected to follow rules of common courtesy in all email messages, in-person interactions, and online threaded discussions and chats.

CAMPUS RESOURCES

Health and Wellness

- **U Matter, We Care:** If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care](#) to refer or report a concern and a team member will reach out to the student in distress.
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- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need or visit the [Student Health Care Center](#) website.
- **University Police Department:** Visit the [UF Police Department](#) website or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center](#) website.
- **GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell](#) website or call 352-273-4450.

Academic Resources

- **E-learning technical support:** Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- **Career Connections Center:** Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources.
- **Teaching Center:** Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.
- **Writing Studio:** 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- **Student Complaints On-Campus:** Visit the [Student Honor Code and Student Conduct Code](#) webpage for more information.
- **On-Line Students Complaints:** View the [Distance Learning Student Complaint Process](#)

Course|New for request 20020

Info

Request: CAI 5XXX AI for Clinical Decision Support

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:31:38 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

This course is a suitable elective for students to take in the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
AI for Clinical Decision Support

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
AI for Clinicl Decision Support

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Fall

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Students will explore the current landscape of clinical artificial intelligence (AI) for augmenting patient care, including real-world deployments, promising cutting-edge research, and ethical and societal implications of current clinical AI progress. A hybrid flipped classroom/journal club structure which emphasizes peer engagement will empower students to join the ongoing conversation and become versed in the contemporary clinical AI topics that are currently shaping the field.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Survey of the 80+ real-world randomized controlled trials of clinical AI

Overcoming barriers to implementation and adoption of clinical AI Technological barriers: interoperability, standards, AI-ready infrastructure

 Ethical and regulatory barriers: trust, privacy, fairness, autonomy

 Workforce barriers: AI skills gap, aligning AI with existing workflows

How does AI work? AI taxonomy: AI, ML, DL

 Overfitting, generalizability, and the importance of data scale and diversity

 From linear regression to artificial deep neural networks

AI for Health vs. Conventional Biostatistics Generalizable predictions vs. hypothesis testing

 Learning optimal features from raw multimodal inputs vs. hand-selected factors

 When do conventional statistical methods make more sense than AI?

Limitations of clinical AI models Lack of interpretability, trust for potentially critical health decisions

 Potential for reinforcing implicit real-world healthcare biases

 Inadequate datasets (scope & scale) and institutional sharing

Common misconceptions of AI for health Will AI replace clinicians?

 "Data-driven" AI, objectivity, and bias

 AI experts are not all you need: AI-equipped domain specialists are equally as important as technical developers

WHO's 6 core principles for ethical AI for health How to protect autonomy & promote human well-being, safety, and the public interest

 How to ensure transparency, explainability, and intelligibility & foster responsibility and accountability

 How to promote inclusiveness and equity & promote AI that is responsive and sustainable

Potential for bias and ensuring fair AI for health Sources of biased data (sampling bias, allocation bias, attrition bias, publication bias, measurement bias) and algorithms

 Recognizing bias with quantitative fairness metrics (demographic parity, equalized odds, equal opportunity)

 How to mitigate bias (resampling, reweighting, post-processing)

Facilitating clinician trust with explainable AI (XAI) Overview of black box models and XAI methods

 Navigating proprietary closed-source API endpoints (e.g., ChatGPT) for critical healthcare applications

 Explainability/performance trade-off largely depends on goals, stakes, nature of the clinical AI system

Promoting open and ethical datasets Patient privacy, informed consent, deidentification, data ownership

 Health data standardization (OMOP/PCOR CDM) and FAIR data principles (findable, accessible, interoperable, reproducible)

 Increasing data diversity and reducing potential bias through data sharing and privacy-preserving AI methods (FL)

Clinical AI Research Patterns Data acquisition and transformation, model development, internal validation

 External validation, prospective validation, explainability analysis, model calibration

 Bias and fairness audit, reproducibility, identification of failure modes, clinical trials

Scientific rigor and reproducibility of AI for health research AI-based study design (statistical power, sample size, defining inclusion/exclusion criteria)

 Preventing data leakage in clinical AI models

 Open-source models and objective selection of model hyperparameters

Multidisciplinary nature of AI for health research Principles of team science in the context of medical AI

 Data-centric AI and the importance of domain experts

 AI literacy requirements for collaborative clinical AI projects

Participating in the broader AI for health research community Responsible authorship and peer review

 Mentorship and fostering safe research environments

 Peer review and guidance for providing feedback

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Quizzes (16) 50%
Attendance and Participation (16) 40%
Journal Article Presentation (1) 10%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Ben Shickel - Department of Medicine, College of Medicine
To be determined
Ben Shickel - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

AIH YYYY: AI for Clinical Decision Support

Semester: Fall 202X

Location: DSIT 2400

Zoom: <https://ufl.zoom.us>

Class Meetings: Friday 4:05-4:55 pm

Credit Hours: 3

Instructor

Benjamin Shickel, PhD

shickelb@ufl.edu

352-273-9958

DSIT 2400

Teaching Assistant

TA Name

taemail@ufl.edu

352-XXX-XXXX

DSIT 2400

Office Hours

- Hybrid office hours will be held every Thursday from 2-3pm over Zoom and in-person at Malachowsky Hall Room 2400 (DSIT 2400).
 - **Office hours Zoom link:** <https://ufl.zoom.us>
- Students may also reach out by email to schedule individual appointments at any other time.

Course Website

<https://elearning.ufl.edu>

Course Communications

E-mail is the preferred method of communication.

Required Textbook

None.

Materials and Supplies Fees

None.

Course Description

In this course, students will explore the current landscape of clinical artificial intelligence (AI) for augmenting patient care, including real-world deployments, promising cutting-edge research, and ethical and societal implications of current clinical AI progress. A hybrid flipped classroom/journal club structure which emphasizes peer engagement will empower students to join the ongoing conversation and become versed in the contemporary clinical AI topics that are currently shaping the field.

Prerequisite Knowledge and Skills

None.

Course Objectives

After completing this course, students will be able to:

- Explain federal regulations and categorizations of clinical AI systems.
- Identify and characterize current state-of-the-art clinical AI research.
- Explain how machine learning and AI differ from conventional statistics and more traditional clinical decision support systems (CDSS).
- Identify the current ethical challenges for clinical AI deployment and explain the necessary steps to address them.

Relation to Program Outcomes

- This course is intended to be taken by incoming AIBHS graduate students during their first semester.
- The curriculum is designed to provide an introduction to the current state of AI for clinical decision support, providing a foundation for future experiential immersion courses (e.g., Clinical AI Design Studio I/II).

Instructional Methods

- This course combines elements of a flipped classroom and a traditional journal club.
- At the start of each week, a new module will open on Canvas related to a unique topic involving AI for clinical decision support.
- Each module will provide students with 3-5 recorded micro-lectures that students may watch according to their own schedule.
- Each module will also contain 2-3 journal articles that explore the given topic.
- Synchronous discussion sessions (required) will be held once per week to explore the material in greater depth.
- Each module will contain 1 quiz related to the core topics and assigned readings.
- Each student will present 1 journal article during the synchronous meetings.

Course Outline

The following is a tentative schedule of course topics:

Week	Topic	Details
1	Taxonomy of real-world AI-based medical services and procedures	Assistive vs. Augmentative vs. Autonomous (AMA)
		Level I-II-III autonomous interventions (AMA)
		Real-world applications: radiology, administrative tasks (LLMs), new CPT code categories (digital pathology, personalized pharmacotherapy)
2	Clinical AI as a medical device	AI software as a medical device (SaMD) risk categorization: I-II-III-IV
		The benefits and challenges of clinical AI's unique ability to learn and adapt from real-world feedback
		Real-world clinical AI lifecycle and the importance of transparent performance monitoring
3	State-of-the-art clinical AI research	Diagnosis and clinical decision support
		Streamlining healthcare administration with large language models
		Survey of the 80+ real-world randomized controlled trials of clinical AI
4	Overcoming barriers to implementation and adoption of clinical AI	Technological barriers: interoperability, standards, AI-ready infrastructure
		Ethical and regulatory barriers: trust, privacy, fairness, autonomy

		Workforce barriers: AI skills gap, aligning AI with existing workflows
5	How does AI work?	AI taxonomy: AI, ML, DL
		Overfitting, generalizability, and the importance of data scale and diversity
		From linear regression to artificial deep neural networks
6	AI for Health vs. Conventional Biostatistics	Generalizable predictions vs. hypothesis testing
		Learning optimal features from raw multimodal inputs vs. hand-selected factors
		When do conventional statistical methods make more sense than AI?
7	Limitations of clinical AI models	Lack of interpretability, trust for potentially critical health decisions
		Potential for reinforcing implicit real-world healthcare biases
		Inadequate datasets (scope & scale) and institutional sharing
8	Common misconceptions of AI for health	Will AI replace clinicians?
		"Data-driven" AI, objectivity, and bias
		AI experts are not all you need: AI-equipped domain specialists are equally as important as technical developers
9	WHO's 6 core principles for ethical AI for health	How to protect autonomy & promote human well-being, safety, and the public interest
		How to ensure transparency, explainability, and intelligibility & foster responsibility and accountability
		How to promote inclusiveness and equity & promote AI that is responsive and sustainable
10	Potential for bias and ensuring fair AI for health	Sources of biased data (sampling bias, allocation bias, attrition bias, publication bias, measurement bias) and algorithms
		Recognizing bias with quantitative fairness metrics (demographic parity, equalized odds, equal opportunity)
		How to mitigate bias (resampling, reweighting, post-processing)
11	Facilitating clinician trust with explainable AI (XAI)	Overview of black box models and XAI methods
		Navigating proprietary closed-source API endpoints (e.g., ChatGPT) for critical healthcare applications
		Explainability/performance trade-off largely depends on goals, stakes, nature of the clinical AI system
12	Promoting open and ethical datasets	Patient privacy, informed consent, deidentification, data ownership
		Health data standardization (OMOP/PCOR CDM) and FAIR data principles (findable, accessible, interoperable, reproducible)
		Increasing data diversity and reducing potential bias through data sharing and privacy-preserving AI methods (FL)
13	Clinical AI Research Patterns	Data acquisition and transformation, model development, internal validation
		External validation, prospective validation, explainability analysis, model calibration
		Bias and fairness audit, reproducibility, identification of failure modes, clinical trials
14	Scientific rigor and reproducibility of AI for health research	AI-based study design (statistical power, sample size, defining inclusion/exclusion criteria)
		Preventing data leakage in clinical AI models

		Open-source models and objective selection of model hyperparameters
15	Multidisciplinary nature of AI for health research	Principles of team science in the context of medical AI
		Data-centric AI and the importance of domain experts
		AI literacy requirements for collaborative clinical AI projects
16	Participating in the broader AI for health research community	Responsible authorship and peer review
		Mentorship and fostering safe research environments
		Peer review and guidance for providing feedback

GRADING

Final grades will be determined based on the following percentages:

Requirement	Percentage of Final Grade
Quizzes (16)	50%
Attendance and Participation (16)	40%
Journal Article Presentation (1)	10%

COURSE POLICIES

Attendance

- Attendance is required and lectures will not be recorded.
- Requirements for class attendance are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Quizzes and Exams

- Quizzes will be based on the assigned readings and will be administered through Canvas.
- Students will have 1 week to complete each quiz and will have unlimited submission attempts until the posted deadline.

Make-Up Policy

- Course policies for make-up assignments are consistent with university policies that can be found at <https://gradcatalog.ufl.edu/graduate/regulations/>.

Assignment Policy

- Each week, students will be assigned a self-directed, at-home Jupyter notebook to complete before the start of the next class.

Course Technology

- In-class activities and at-home assignments will be delivered as Jupyter notebooks (Python).
- Students may use their own laptops or desktop lab computers during class.
- After class, students are required to complete Python notebook assignments using their preferred method (e.g., local machine, HiPerGator, Google Colab, etc.) unless otherwise noted.

Course Evaluation

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals.

- Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>.
- Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>.
- Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UNIVERSITY POLICIES

University Policy on Accommodating Students with Disabilities

- “Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.”

University Policy on Academic Conduct

- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Demeanor and Etiquette

- All members of the class are expected to follow rules of common courtesy in all email messages, in-person interactions, and online threaded discussions and chats.

CAMPUS RESOURCES

Health and Wellness

- **U Matter, We Care:** If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care](#) to refer or report a concern and a team member will reach out to the student in distress.
- **Counseling and Wellness Center:** Visit the [Counseling and Wellness Center](#) website or call 352-392-1575 for information on crisis services as well as non-crisis services.
- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need or visit the [Student Health Care Center](#) website.
- **University Police Department:** Visit the [UF Police Department](#) website or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center](#) website.
- **GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell](#) website or call 352-273-4450.

Academic Resources

- **E-learning technical support:** Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- **Career Connections Center:** Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources.
- **Teaching Center:** Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- **Writing Studio:** 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- **Student Complaints On-Campus:** Visit the [Student Honor Code and Student Conduct Code](#) webpage for more information.
- **On-Line Students Complaints:** View the [Distance Learning Student Complaint Process](#)

Course|New for request 20018

Info

Request: CAI 5XXX AI in Medical Image Analysis

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:29:25 PM

Form version: 4

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:
No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:
This is an elective suitable to be taken in the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine. Students will take this along with other introductory courses, and it will form the foundation for more advanced courses later.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:

None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:

AI in Medical Image Analysis

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

AI in Medical Image Analysis

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Medical imaging, technologies that visualize the interior of the human body, has become an increasingly important tool for the early diagnosis, prognosis, and treatment of various diseases. This course will focus on recent advances in artificial intelligence for medical image analysis, including: Basics of medical imaging, Image visualization, Convolutional neural networks, Image classification, Image segmentation, Transformer networks, Image registration, Generative adversarial networks.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended: Fundamentals of AI in Medicine I (course request 19996)[C] & AI Design Studio I (course request 19998)[C]

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This is an elective suitable to be taken in the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine. Students will take this along with other introductory courses, and it will form the foundation for more advanced courses later.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement deep learning methods for real-world medical image analysis problems. Through this course, students will be well-prepared to become proficient deep learning imaging scientists. Detailed learning objectives will be stated below.

Learning Objectives

- 1 Understand physical coordinate system, and the DICOM and NIFTI image formats.
- 2 Be able to use the 3D Slicer software to visualize medical images and perform manual and semi-automated image segmentation tasks.
- 3 Be able to use SimpleITK to read and write images, apply transforms to deform images, extract image information such as type and physical coordinate system, perform image thresholding, carry out binary morphology operations, execute image segmentation, and conduct image registration.
- 4 Understand convolutional neural networks (CNN) and can implement CNN in TensorFlow.
- 5 Use CNN, transformer networks, and transfer learning for image classification.
- 6 Implement 2D and 3D U-Nets for single-class and multi-class medical image segmentation.
- 7 Apply CNNGeometric Network for 2D affine and deformable image registration.
- 8 Apply Voxelmorph for 3D deformable image registration.
- 9 Apply the pix2pix and the Cycle-GAN for paired and unpaired image-to-image translation tasks.
- 10 Understand and can describe generative adversarial networks, self-attention mechanisms, vision transformer, and variational diffusion models.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

No textbook is required, the course notes are developed by the instructor. The following software tools will be used in this course.

Google Colab: Google Colab is a free cloud service hosted by Google to encourage machine learning and artificial intelligence research. It provides an environment for writing and executing Python code, and is particularly well-suited for deep learning applications, as it offers free access to powerful hardware like GPUs and TPUs. For more information: <https://colab.research.google.com>.

HiPerGator: HiPerGator is the University of Florida's supercomputer. The students will develop and train their deep learning models on HiPerGator. For more information: <https://www.rc.ufl.edu/about/hipergator/>.

PyTorch: PyTorch is an open-source machine learning library developed by Facebook's AI Research lab. It is known for its flexibility and ease of use in developing and training deep learning models. For more information: <https://pytorch.org>.

3D Slicer: 3D Slicer is a free and open-source software package for image analysis and scientific visualization. For more information: <https://www.slicer.org>.

SimpleITK: SimpleITK is a simplified, open-source interface to the Insight Segmentation and Registration Toolkit. The SimpleITK image analysis library is available in multiple programming languages including Python. For more information: <https://simpleitk.org>.

Jupyter Notebook: Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined, document-centric experience. For more information: <https://jupyter.org>.

Recommended Materials

1. Shen, Dinggang, Guorong Wu, and Heung-Il Suk. "Deep learning in medical image analysis." Annual review of biomedical engineering 19 (2017): 221.
2. Litjens, Geert, et al. "A survey on deep learning in medical image analysis." Medical image analysis 42 (2017): 60-88.
3. Ronneberger, Olaf, Philipp Fischer, and Thomas Brox. "U-net: Convolutional networks for biomedical image segmentation." International Conference on Medical image computing and computer-assisted intervention. Springer, Cham, 2015.
4. Dosovitskiy, Alexey, et al. "An image is worth 16x16 words: Transformers for image recognition at scale." arXiv preprint arXiv:2010.11929 (2020).
5. Chen, Jieneng, et al. "Transunet: Transformers make strong encoders for medical image segmentation." arXiv preprint arXiv:2102.04306 (2021).
6. Balakrishnan, Guha, et al. "VoxelMorph: a learning framework for deformable medical image registration." IEEE transactions on medical imaging 38.8 (2019): 1788-1800.
7. Rocco, Ignacio, Relja Arandjelovic, and Josef Sivic. "Convolutional neural network architecture for geometric matching." Proceedings of the IEEE conference on computer vision and pattern recognition. 2017.
8. Goodfellow, Ian, et al. "Generative adversarial networks." Communications of the ACM 63.11 (2020): 139-144.
9. Isola, Phillip, et al. "Image-to-image translation with conditional adversarial networks." Proceedings of the IEEE conference on computer vision and pattern recognition. 2017.
10. Fu, Huan, et al. "Geometry-consistent generative adversarial networks for one-sided unsupervised domain mapping." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. 2019.
11. Mahapatra, Dwarikanath, Behzad Bozorgtabar, and Rahil Garnavi. "Image super-resolution using progressive generative adversarial networks for medical image analysis." Computerized Medical Imaging and Graphics 71 (2019): 30-39.
12. Ho, Jonathan, Ajay Jain, and Pieter Abbeel. "Denoising diffusion probabilistic models." Advances in neural information processing systems 33 (2020): 6840-6851.
13. Luo, Calvin. "Understanding diffusion models: A unified perspective." arXiv preprint arXiv:2208.11970 (2022).

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 Medical Imaging Basics

- Differences between medical images and natural images
- Images as functions
- Different imaging modalities, e.g., MRI, CT, ultrasound, PET/SPECT, histopathology
- Concept of physical coordinate system
- Image visualization in the 3D Slicer software
- Introduction to the HiPerGator computing system

Week 2 SimpleITK Tutorial

- Install SimpleITK using pip
- Read and write medical images using SimpleITK
- Get and set physical information of images, including image dimension, image size, image origin, image spacing, and the direction matrix
- Create basic image transformations, including translation, rotation, scaling, and flipping

- Apply transformations to deform images via image resampler
 - Create and apply the dilation and erosion morphological operations
- Week 3 Deep Neural Networks and Convolutional Neural Networks (CNN)
- Artificial neurons and activation functions
 - Fully connected layers
 - Motivation of using CNN, e.g., spatial correlation between pixels, shared kernel weights, etc.
 - Convolutional layer, kernel size, stride, number of kernels.
 - Padding options, e.g., valid padding, same padding, zero padding
 - Pooling layers, e.g., Max pooling, average pooling, global average pooling
 - Sigmoid and Softmax activation functions
 - 2D vs 3D convolutions.
 - Optimizers, e.g., gradient descent, adaptive moment estimation (Adam) Homework 1 Due (SimpleITK, 10%)
- Week 4 Image Classification using TensorFlow
- TensorFlow tutorial
 - Medical applications of image classification
 - Cross entropy loss
 - VGG-16
 - ResNet-101
 - Image classification with transfer learning In-Class Quiz 1 (5%)
- Week 5 Challenges in Applying Deep Learning to Medical Imaging
- Overfitting
 - Small dataset
 - Class imbalance
- Possible Solutions
- Data augmentation, e.g., flipping, rotation, cropping, padding, color manipulation, add noise
 - Redesign the loss function
 - Generate synthetic data
- Week 6 Introduction to Image Segmentation
- Medical applications of image segmentation
 - Challenges in medical image segmentation
 - Manual and semi-automated image segmentation using 3D Slicer
 - Traditional segmentation methods Homework 2 Due (Image Classification, 10%)
- Week 7 Deep Learning Based Image Segmentation
- Transposed convolution
 - Categorical cross entropy loss vs Dice loss
 - Fully convolutional networks
 - U-Net In-Class Quiz 2 (5%)
- Week 8 Attention Mechanism
- Query, key, value
 - Attention function
 - Dot-product attention and Additive attention
- Transformer Networks
- Self-attention
 - Multi-head attention
 - Position encoding
- Week 9 Transformer Networks for Image Classification and Image Segmentation
- Vision transformer
 - Transformer U-Net
 - Swin-Transformer Homework 3 Due (Image Segmentation, 10%)
- Week 10 Introduction to Image registration
- Clinical applications of image registration
 - Linear transforms: rigid, affine
 - Non-linear transforms: thin-plate spline, B-spline, diffeomorphic
 - Pushforward vs pullback
 - Interpolators: nearest neighbor, linear, bilinear
 - Similarity metrics: sum of squared differences, cross correlation, mutual information, SSIM
 - Challenges in image registration
- Week 11 2D Image Registration
- Multi-resolution image registration
 - Traditional affine and deformable registration using SimpleITK

- Image registration based on the CNN Geometric Network
 - Mono-modal and multi-modal image registration In-Class Quiz 3 (5%)
- Week 12 3D Image Registration
- Deformable registration based on the VoxelMorph model
 - Transformer networks for image registration Homework 4 Due (Image Registration, 10%)
- Week 13 Generative Adversarial Network (GAN)
- Generator
 - Discriminator
 - Adversarial loss
 - Generate images from noise vectors
 - Image super-resolution based on GAN
- Week 14 Image-to-image Translation
- Paired vs Unpaired image-to-image translation
 - Pix2Pix
 - Cycle-GAN
 - Geometry-consistent GAN
 - Medical applications of image-to-image translation In-Class Quiz 4 (5%)
- Week 15 Diffusion Models
- KL-Divergence
 - Variational lower bound
 - Denoising diffusion models Final Project Presentation and Project Report (40%)

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Homework - 4 homeworks - 10% each - 40% total
 In-class Quiz - 4 quizzes - 5% each - 20% total
 Final Project - Presentation and Report - 40%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Wei Shao - Department of Medicine, College of Medicine

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy. A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accomodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Artificial Intelligence in Medical Image Analysis

AIH ##### Section ###

Class Periods: ###

Location: ###

Academic Term: Spring 2026

Instructor:

Name: Wei Shao, PhD

Email Address: weishao@ufl.edu

Office Phone Number: (352) 273-5354

Office Hours: Friday, 11 AM -12 PM, Malachowsky Hall 6403

Course Description

Graduate level course, 3 Credit Hours

Medical imaging refers to technologies that visualize the interior of the human body. Over the last decades, medical imaging has become an increasingly important tool for the early diagnosis, prognosis, and treatment of various diseases. This course will focus on recent advances in artificial intelligence for medical image analysis. Topics covered in this course include (1) Basics of medical imaging, (2) Image visualization, (3) Convolutional neural networks, (4) Image classification, (5) Image segmentation, (6) Transformer networks, (7) Image registration, (8) Generative adversarial networks, (9) Image-to-image translation, (10) Image super-resolution, (11) Diffusion Models.

Course Pre-Requisites / Co-Requisites

Fundamentals of Artificial Intelligence in Medicine I

Course Objectives

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement deep learning methods for real-world medical image analysis problems. Through this course, students will be well-prepared to become proficient deep learning imaging scientists. Detailed learning objectives will be stated below.

	Learning Objectives
1	Understand physical coordinate system, and the DICOM and NIFTI image formats.
2	Be able to use the 3D Slicer software to visualize medical images and perform manual and semi-automated image segmentation tasks.
3	Be able to use SimpleITK to read and write images, apply transforms to deform images, extract image information such as type and physical coordinate system, perform image thresholding, carry out binary morphology operations, execute image segmentation, and conduct image registration.
4	Understand convolutional neural networks (CNN) and can implement CNN in TensorFlow.
5	Use CNN, transformer networks, and transfer learning for image classification.
6	Implement 2D and 3D U-Nets for single-class and multi-class medical image segmentation.
7	Apply CNNGeometric Network for 2D affine and deformable image registration.
8	Apply Voxelmorph for 3D deformable image registration.
9	Apply the pix2pix and the Cycle-GAN for paired and unpaired image-to-image translation tasks.
10	Understand and can describe generative adversarial networks, self-attention mechanisms, vision transformer, and variational diffusion models.

Materials and Supply Fees

N/A

Required Textbooks and Software

Artificial Intelligence in Medical Image Analysis, AIH #####
Wei Shao, Spring 2026

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No textbook is required, the course notes are developed by the instructor. The following software tools will be used in this course.

Google Colab: Google Colab is a free cloud service hosted by Google to encourage machine learning and artificial intelligence research. It provides an environment for writing and executing Python code, and is particularly well-suited for deep learning applications, as it offers free access to powerful hardware like GPUs and TPUs. For more information: <https://colab.research.google.com>.

HiPerGator: HiPerGator is the University of Florida's supercomputer. The students will develop and train their deep learning models on HiPerGator. For more information: <https://www.rc.ufl.edu/about/hipergator/>.

PyTorch: PyTorch is an open-source machine learning library developed by Facebook's AI Research lab. It is known for its flexibility and ease of use in developing and training deep learning models. For more information: <https://pytorch.org>.

3D Slicer: 3D Slicer is a free and open-source software package for image analysis and scientific visualization. For more information: <https://www.slicer.org>.

SimpleITK: SimpleITK is a simplified, open-source interface to the Insight Segmentation and Registration Toolkit. The SimpleITK image analysis library is available in multiple programming languages including Python. For more information: <https://simpleitk.org>.

Jupyter Notebook: Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined, document-centric experience. For more information: <https://jupyter.org>.

Recommended Materials

1. Shen, Dinggang, Guorong Wu, and Heung-Il Suk. "Deep learning in medical image analysis." Annual review of biomedical engineering 19 (2017): 221.
2. Litjens, Geert, et al. "A survey on deep learning in medical image analysis." Medical image analysis 42 (2017): 60-88.
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4. Dosovitskiy, Alexey, et al. "An image is worth 16x16 words: Transformers for image recognition at scale." arXiv preprint arXiv:2010.11929 (2020).
5. Chen, Jieneng, et al. "Transunet: Transformers make strong encoders for medical image segmentation." arXiv preprint arXiv:2102.04306 (2021).
6. Balakrishnan, Guha, et al. "VoxelMorph: a learning framework for deformable medical image registration." IEEE transactions on medical imaging 38.8 (2019): 1788-1800.
7. Rocco, Ignacio, Relja Arandjelovic, and Josef Sivic. "Convolutional neural network architecture for geometric matching." Proceedings of the IEEE conference on computer vision and pattern recognition. 2017.
8. Goodfellow, Ian, et al. "Generative adversarial networks." Communications of the ACM 63.11 (2020): 139-144.
9. Isola, Phillip, et al. "Image-to-image translation with conditional adversarial networks." Proceedings of the IEEE conference on computer vision and pattern recognition. 2017.
10. Fu, Huan, et al. "Geometry-consistent generative adversarial networks for one-sided unsupervised domain mapping." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. 2019.
11. Mahapatra, Dwarikanath, Behzad Bozorgtabar, and Rahil Garnavi. "Image super-resolution using progressive generative adversarial networks for medical image analysis." Computerized Medical Imaging and Graphics 71 (2019): 30-39.
12. Ho, Jonathan, Ajay Jain, and Pieter Abbeel. "Denoising diffusion probabilistic models." Advances in neural information processing systems 33 (2020): 6840-6851.

13. Luo, Calvin. "Understanding diffusion models: A unified perspective." arXiv preprint arXiv:2208.11970 (2022).

Course Schedule

Week	Topic	Assignment
Week 1	<p>Medical Imaging Basics</p> <ul style="list-style-type: none"> Differences between medical images and natural images Images as functions Different imaging modalities, e.g., MRI, CT, ultrasound, PET/SPECT, histopathology Concept of physical coordinate system Image visualization in the 3D Slicer software Introduction to the HiPerGator computing system 	
Week 2	<p>SimpleITK Tutorial</p> <ul style="list-style-type: none"> Install SimpleITK using pip Read and write medical images using SimpleITK Get and set physical information of images, including image dimension, image size, image origin, image spacing, and the direction matrix Create basic image transformations, including translation, rotation, scaling, and flipping Apply transformations to deform images via image resampler Create and apply the dilation and erosion morphological operations 	
Week 3	<p>Deep Neural Networks and Convolutional Neural Networks (CNN)</p> <ul style="list-style-type: none"> Artificial neurons and activation functions Fully connected layers Motivation of using CNN, e.g., spatial correlation between pixels, shared kernel weights, etc. Convolutional layer, kernel size, stride, number of kernels. Padding options, e.g., valid padding, same padding, zero padding Pooling layers, e.g., Max pooling, average pooling, global average pooling Sigmoid and Softmax activation functions 2D vs 3D convolutions. Optimizers, e.g., gradient descent, adaptive moment estimation (Adam) 	Homework 1 Due (SimpleITK, 10%)
Week 4	<p>Image Classification using TensorFlow</p> <ul style="list-style-type: none"> TensorFlow tutorial Medical applications of image classification Cross entropy loss VGG-16 ResNet-101 Image classification with transfer learning 	In-Class Quiz 1 (5%)
Week 5	<p>Challenges in Applying Deep Learning to Medical Imaging</p> <ul style="list-style-type: none"> Overfitting Small dataset Class imbalance <p>Possible Solutions</p> <ul style="list-style-type: none"> Data augmentation, e.g., flipping, rotation, cropping, padding, color manipulation, add noise Redesign the loss function Generate synthetic data 	

Week 6	<p>Introduction to Image Segmentation</p> <ul style="list-style-type: none"> • Medical applications of image segmentation • Challenges in medical image segmentation • Manual and semi-automated image segmentation using 3D Slicer • Traditional segmentation methods 	Homework 2 Due (Image Classification, 10%)
Week 7	<p>Deep Learning Based Image Segmentation</p> <ul style="list-style-type: none"> • Transposed convolution • Categorical cross entropy loss vs Dice loss • Fully convolutional networks • U-Net 	In-Class Quiz 2 (5%)
Week 8	<p>Attention Mechanism</p> <ul style="list-style-type: none"> • Query, key, value • Attention function • Dot-product attention and Additive attention <p>Transformer Networks</p> <ul style="list-style-type: none"> • Self-attention • Multi-head attention • Position encoding 	
Week 9	<p>Transformer Networks for Image Classification and Image Segmentation</p> <ul style="list-style-type: none"> • Vision transformer • Transformer U-Net • Swin-Transformer 	Homework 3 Due (Image Segmentation, 10%)
Week 10	<p>Introduction to Image registration</p> <ul style="list-style-type: none"> • Clinical applications of image registration • Linear transforms: rigid, affine • Non-linear transforms: thin-plate spline, B-spline, diffeomorphic • Pushforward vs pullback • Interpolators: nearest neighbor, linear, bilinear • Similarity metrics: sum of squared differences, cross correlation, mutual information, SSIM • Challenges in image registration 	
Week 11	<p>2D Image Registration</p> <ul style="list-style-type: none"> • Multi-resolution image registration • Traditional affine and deformable registration using SimpleITK • Image registration based on the CNN Geometric Network • Mono-modal and multi-modal image registration 	In-Class Quiz 3 (5%)
Week 12	<p>3D Image Registration</p> <ul style="list-style-type: none"> • Deformable registration based on the VoxelMorph model • Transformer networks for image registration 	Homework 4 Due (Image Registration, 10%)
Week 13	<p>Generative Adversarial Network (GAN)</p> <ul style="list-style-type: none"> • Generator • Discriminator • Adversarial loss • Generate images from noise vectors • Image super-resolution based on GAN 	
Week 14	<p>Image-to-image Translation</p> <ul style="list-style-type: none"> • Paired vs Unpaired image-to-image translation • Pix2Pix • Cycle-GAN • Geometry-consistent GAN • Medical applications of image-to-image translation 	In-Class Quiz 4 (5%)

Week 15	Diffusion Models <ul style="list-style-type: none"> • KL-Divergence • Variational lower bound • Denoising diffusion models 	Final Project Presentation and Project Report (40%)
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Attendance Policy, Class Expectations, and Make-Up Policy

Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations>) and require appropriate documentation. Additional information can be found here: <https://gradcatalog.ufl.edu/graduate/regulations/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Quizzes (4)	25 each	20%
Homework Sets (4)	25 each	40%
Final Project	100	40%
		100%

All students will propose and work on their own AI imaging project independently from week 8 to week 15. Each student will be evaluated based on the project report and the oral presentation. The distribution of points is as follows.

Project Report	Problem Statement (10 points)	Rigor of Approach (30 points)	Writing Quality (10 points)
Oral Presentation	Problem Statement (10 pints)	Rigor of Approach (30 points)	Presentation Skills (10 points)

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

[UF Graduate Catalog Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.a.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.a.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>;<https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint>.

Course|New for request 20022

Info

Request: CAI 5XXX AI-Powered Drug Discovery

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:33:39 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:
No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:
This is a suitable elective to take in the second semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
AI-Powered Drug Discovery

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
AI-Powered Drug Discovery

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Spring

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2026

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

AI-Powered Drug Discovery explores the cutting-edge application of Artificial Intelligence (AI) in discovering novel compounds to be used as therapeutics. We will delve into the fundamental principles of machine learning and deep learning techniques used for virtual screening, lead optimization, and de novo molecule design. The course will also address the integration of biological data with AI models and explore the practical challenges and limitations of this approach.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not required: Fundamentals of AI in Medicine II (course request 19997)

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Fundamentals of AI in Medicine I (course request 19996)[C] & AI Design Studio I (course request 19998)

Strong foundation in chemistry, including organic chemistry, medicinal chemistry, and chemical biology.

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course presumes facility but not mastery of AI concepts. It will serve as a strong foundation for students as they enter the Clinical AI Design courses and begin to work in biomedical and clinical settings.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

- Gain a comprehensive understanding of AI methodologies for small molecule discovery.
- Explore machine learning and deep learning techniques for virtual screening and lead optimization.
- Analyze the application of generative models for de novo molecule design.
- Integrate biological data (genomics, proteomics) with AI models for drug discovery pipelines.
- Critically evaluate the strengths and limitations of AI-powered small molecule discovery.
- Develop skills for designing and implementing AI-based workflows for drug discovery.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

- Deep Learning for the Life Sciences by Philipp Jäschke (<https://www.amazon.com/Learning-Biology-Medicine-Davide-Bacciu/dp/1800610939>)
- (Optional) Molecular Modeling in Drug Discovery by Alexander D. MacKerell (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6539951/>)

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1

Introduction to AI for Drug Discovery: Overview and Challenges Chapter 1 (Jäschke)

Literature Review: Current AI Applications in Drug Discovery

Week 2

Machine Learning for Virtual Screening: Similarity-based & Classification Models

Chapter 2 (Jäschke) Implement a kNN-based Virtual Screening Model

Week 3

Deep Learning for Virtual Screening: Convolutional Neural Networks (CNNs)

Chapter 3 (Jäschke) Build a CNN Model for Virtual Screening using a public dataset

Week 4

Integrating Biological Data with AI Models: Genomics & Proteomics - Analyze gene expression data and incorporate it into your virtual screening model (Optional)

Week 5

Lead Optimization with AI: Property Prediction and ADMET Analysis Chapter 4 (Jäschke)

Develop a Machine Learning Model for Predicting ADMET Properties

Week 6

De Novo Molecule Design with Generative Models: Variational Autoencoders (VAEs)

Chapter 5 (Jäschke) Explore VAEs for de novo molecule generation (Project Proposal Due)

Week 7

Midterm Exam

Week 8

Case Studies: Successful Applications of AI in Drug Discovery Research papers provided
Analyze a research paper on successful AI-driven drug discovery

Week 9

Practical Considerations & Challenges: Explainability, Bias, and Reproducibility
- Discuss ethical considerations and limitations of AI in drug discovery

Week 10

Future Directions: Advancements in AI & Integration with other Technologies
- Research and present on a future trend in AI-powered drug discovery

Week 11-14

Final Project Presentations - Present your final project findings and methodology

Week 15

Final Project Papers Due - Submit a comprehensive report summarizing your final project

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

- Assignments (30%): Regular problem sets involving data analysis, model implementation, and interpretation of results.
- Midterm Exam (25%): Exam covering core concepts and techniques related to AI and small molecule discovery.
- Final Project (45%): Individual project requiring the application of AI techniques to discover novel small molecules for a specific target or disease.

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

May Khanna - Department of Pharmacology and Therapeutics

To be determined

Dan Wesson - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- *Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.*

* *

Response:
Yes

AI-Powered Drug Discovery

Course Description:

This course explores the cutting-edge application of Artificial Intelligence (AI) in discovering novel compounds to be used as therapeutics. We will delve into the fundamental principles of machine learning and deep learning techniques used for virtual screening, lead optimization, and de novo molecule design. The course will also address the integration of biological data with AI models and explore the practical challenges and limitations of this approach.

Learning Objectives:

- Gain a comprehensive understanding of AI methodologies for small molecule discovery.
- Explore machine learning and deep learning techniques for virtual screening and lead optimization.
- Analyze the application of generative models for de novo molecule design.
- Integrate biological data (genomics, proteomics) with AI models for drug discovery pipelines.
- Critically evaluate the strengths and limitations of AI-powered small molecule discovery.
- Develop skills for designing and implementing AI-based workflows for drug discovery.

Prerequisites:

- Strong foundation in chemistry, including organic chemistry, medicinal chemistry, and chemical biology.
- Background in machine learning concepts (recommended: completion of an introductory AI course).
- Programming experience in Python (familiarity with scientific libraries like Scikit-learn and TensorFlow is a plus).

Required Textbooks:

- Deep Learning for the Life Sciences by Philipp Jäschke (<https://www.amazon.com/Learning-Biology-Medicine-Davide-Bacciu/dp/1800610939>)
- (Optional) Molecular Modeling in Drug Discovery by Alexander D. MacKerell (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6539951/>)

Grading:

- Assignments (30%): Regular problem sets involving data analysis, model implementation, and interpretation of results.
- □ Midterm Exam (25%): Exam covering core concepts and techniques related to AI and small molecule discovery.
- □ Final Project (45%): Individual project requiring the application of AI techniques to discover novel small molecules for a specific target or disease.

•

Late Policy:

Late assignments will be penalized 10% per day.

Academic Integrity:

The university's policy on academic integrity will be strictly enforced. Cheating and plagiarism will not be tolerated.

Course Schedule (Subject to Change):

1	Introduction to AI for Drug Discovery: Chapter Overview and Challenges (Jäschke)	1	Literature Review: Current AI Applications in Drug Discovery
2	Machine Learning for Virtual Screening: Similarity-based & Classification Models (Jäschke)	2	Implement a kNN-based Virtual Screening Model
3	Deep Learning for Virtual Screening: Convolutional Neural Networks (CNNs) (Jäschke)	3	Build a CNN Model for Virtual Screening using a public dataset
4	Integrating Biological Data with AI Models: Genomics & Proteomics -		Analyze gene expression data and incorporate it into your virtual screening model (Optional)
5	Lead Optimization with AI: Property Prediction and ADMET Analysis (Jäschke)	4	Develop a Machine Learning Model for Predicting ADMET Properties
6	De Novo Molecule Design with Generative Models: Variational Autoencoders (VAEs) (Jäschke)	5	Explore VAEs for de novo molecule generation (Project Proposal Due)
7	Midterm Exam -	-	-
8	Case Studies: Successful Applications of AI in Drug Discovery Research papers provided		Analyze a research paper on successful AI-driven drug discovery
9	Practical Considerations & Challenges: Explainability, Bias, and Reproducibility -		Discuss ethical considerations and limitations of AI in drug discovery
10	Future Directions: Advancements in AI & Integration with other Technologies -		Research and present on a future trend in AI-powered drug discovery
11	Final Project Presentations -		Present your final project findings and methodology

12 Final Project Papers Due

-

Submit a comprehensive report summarizing your final project

Additional Resources:

- DeepChem: <https://deepchem.io/>: Open-source toolkit for applying machine learning to chemistry problems.
- Kaggle Drug Discovery Challenges: <https://www.kaggle.com/datasets/divyansh22/drug-discovery-data>
- MoleculeNet: [invalid URL removed]: Benchmark datasets for machine learning in drug discovery.

Course|New for request 20019

Info

Request: CAI 5XXX Biostatistics for AI

Description of request:

This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:30:26 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

This is an introductory graduate level course about using biostatistics in health-related AI. It forms the foundation that students will build upon in more advanced classes.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
Biostatistics for AI

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Biostatistics for AI

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Fall

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

2

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

2

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Biostatistics for AI highlights the crucial role of biostatistics in AI-driven medical applications. Students will master foundational biostatistical methods, design effective medical experiments, and navigate the intricacies of large biomedical datasets. Emphasizing the union of traditional biostatistics with contemporary AI techniques, the course ensures proficiency in data analysis, AI model validation, and addressing ethical challenges in medical data use.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not mandatory: Fundamentals of AI in Medicine I (course request 19996)[C] & AI Design Studio I (course request 19998)[C]

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Prior coding experience is helpful but not mandatory

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course is suitable to be taken the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine. Students will build on this knowledge in more advanced program courses

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement statistical methods for real-world problems in medicine. Detailed learning objectives are listed below.

- Understand foundational biostatistical concepts and methods.
- Design and conduct effective experiments in medical settings.
- Analyze biomedical datasets using appropriate statistical and AI techniques.
- Learn approaches to evaluate models for medical applications.
- Critically evaluate and address ethical challenges in medical data usage.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Course notes and assigned readings are derived from various published sources and professional records of the course instructor. These materials will be distributed through the course website on Canvas.

R: R is a free open source statistical programming language. It is useful for data cleaning, analysis, and visualization. It complements workflows that require the use of other software. You can read more about the language and find documentation on The R Project for Statistical Computing. You can download R from <http://www.r-project.org/>. Rstudio is a recommended interface for the R software. It is also free and can be downloaded from <http://www.rstudio.org>.

HiPerGator: HiPerGator is the University of Florida's supercomputer. The students can utilize HiPerGator, if needed. For more information: <https://www.rc.ufl.edu/about/hipergator/>.

Recommended Materials

The following are useful reference texts and websites:

Book Chapters:

"An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani;

Linear Models with R (2004), by Julian J. Faraway. Chapman & Hall, Boca Raton, Florida. ISBN: 1-58488-425-8.

"Artificial Intelligence in Healthcare" by Adam Bohr and Kaveh Memarzadeh; Chapter 2. The rise of artificial intelligence in healthcare applications

Articles:

Jepsen P, Johnsen SP, Gillman MW, Sørensen HT. Interpretation of observational studies. *Heart*. 2004 Aug;90(8):956-60. doi: 10.1136/hrt.2003.017269. PMID: 15253985; PMCID: PMC1768356.

Sakpal TV. Sample size estimation in clinical trial. *Perspect Clin Res*. 2010 Apr;1(2):67-9. PMID: 21829786; PMCID: PMC3148614.

Mehrabi, Ninareh, Fred Morstatter, Nripsuta Saxena, Kristina Lerman, and Aram Galstyan. "A survey on bias and fairness in machine learning." *ACM computing surveys (CSUR)* 54, no. 6 (2021): 1-35.

Maseme, Mantombi. "Ethical Considerations for Health Research Data Governance." In *Data Integrity and Data Governance*. IntechOpen, 2022.

Collins, G.S., Reitsma, J.B., Altman, D.G. et al. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): the TRIPOD Statement. *BMC Med* 13, 1 (2015). <https://doi.org/10.1186/s12916-014-0241-z>

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 Introduction to Biostatistics for Artificial Intelligence in Medicine

- Introduction to the course, syllabus, and objectives.
- Statistical Learning
- Significance of biostatistics in AI-driven medical applications
- Basic biostatistical concepts and terminologies

Week 2 Study Designs

- Types of study designs
- Characteristics of experimental study design and common designs
- Randomization, stratification, blinding, and control groups
- Observational study design types and characteristics
- Discussion of strengths and weaknesses of observational designs compared to experimental designs

Week 3 Navigating Large Biomedical Datasets Data in Medicine

- Types of data in medicine
- Understanding data from electronic health records and other sources
- Challenges of large medical datasets
- Data preprocessing needs
- Real-world data examples and applications Quiz 1 (5%)

Week 4 Data Processing and Quality

- Exploratory analysis and data visualization techniques
- Missing data mechanisms
- Imputations methods and assumptions
- Preprocessing of biomedical data
- Data quality

Week 5 Descriptive Statistics

- Types of data in medical research
- Measures of central tendency and variability
- Concepts related to probability
- Probability distributions and sampling distributions
- Hands-on exercises using common biomedical datasets Homework 1 Due (10%)

Week 6 Inferential Statistics

- Point estimation and confidence intervals
- Hypothesis testing, p-values, and statistical significance
- One-sample and two-sample hypothesis tests

Week 7 Statistical Analysis Methods

- Analysis of variance (ANOVA), t-test, Fisher's exact test, Chi-square test
- Non-parametric methods for analyzing skewed or non-normally distributed data
- Multiple testing Homework 2 Due (10%)

Week 8 Linear Regression Models

- Simple and multiple linear regression
- Assumptions, model diagnostics, model fit/evaluation, interpretation, model selection
- Hands-on exercises using common biomedical datasets Quiz 2 (5%)

Week 9 Logistic Regression Models

- Measures of association and their interpretation
 - Binary and multinomial logistic regression
 - Maximum Likelihood Estimation
 - Assumptions, diagnostics, model evaluation, and interpretation
 - Hands-on exercises using common biomedical datasets
- Week 10 Survival Analysis
- Kaplan-Meier Curves and log-rank test
 - Cox proportional hazards model and assumptions
 - Measures of association and their interpretation Homework 3 Due (10%)
- Week 11 Other Statistical Analysis Methods
- Generalized linear models
 - Propensity score regression
 - Discriminate analysis
 - Tree-based models
 - Mixed-effects models Quiz 3 (5%)
- Week 12 Machine Learning Fundamentals
- Introduction to machine learning
 - Supervised and unsupervised learning algorithms Homework 4 Due (10%)
- Week 13 Model Validation and Evaluation
- Cross-validation techniques
 - Bootstrapping
 - Model performance, calibration, and evaluation metrics for medical AI models Quiz 4 (5%)
- Week 14 Ethical Considerations in Health Data Research
- Privacy and security issues
 - Data ownership, use, and transparency
 - Reporting bias and fairness in AI-driven medicine
 - Reproducibility and transparency
 - Data privacy protection, governance, and sharing
- Week 15 Case Studies in AI-driven Medicine
- Power and sample size calculations
 - Reporting Guidelines and Checklists
 - Real-world applications of AI and biostatistics in medicine Project (10%)

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Assignments & Projects

In this course, there are four individual homework assignments, four quizzes, and one project.

Each individual homework assignment will be released two weeks ahead of its actual due date.

- For each of the four individual assignments: These assignments will help you review concepts and methods covered.
- Project: You will use what you learned during the semester and submit a project report.

Assignments (%15 x 4)	60%
Quiz (%5 x 4)	20%
Project	10%
Attendance and Participation	10%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Tezcan Baslanti - Department of Medicine, College of Medicine
to be determined
Tezcan Baslanti - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.*

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is required to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- *Students are expected to provide professional and respectful feedback on the*

quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Biostatistics for Artificial Intelligence in Medicine

AIH ##### Section ###

Class Periods: ###

Location: ###

Academic Term: Fall 2025

Instructor:

Name: Tezcan Ozrazgat Baslanti, PhD

Email Address: tezcan.ozrazgatbaslanti@medicine.ufl.edu

Office Phone Number: (352) 273-6668

Office: Malachowsky Hall Room 6404

Office Hours: W 3-5 by Appointment

TA: TBD

Course Description

Graduate level course, 2 Credit Hours

This course highlights the crucial role of biostatistics in AI-driven medical applications. Students will master foundational biostatistical methods, design effective medical experiments, and navigate the intricacies of large biomedical datasets. Emphasizing the union of traditional biostatistics with contemporary AI techniques, the course ensures proficiency in data analysis, AI model validation, and addressing ethical challenges in medical data use. Through lectures, labs, and case studies, participants will be adept at bridging the gap between AI, medicine, and biostatistical principles.

Course Pre-Requisites / Co-Requisites

Prior coding experience is helpful but not mandatory, ensuring the course is accessible and beneficial for students keen to navigate and contribute to the evolving landscape of medical AI.

Course Objectives

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement statistical methods for real-world problems in medicine. Detailed learning objectives are listed below.

- Understand foundational biostatistical concepts and methods.
- Design and conduct effective experiments in medical settings.
- Analyze biomedical datasets using appropriate statistical and AI techniques.
- Learn approaches to evaluate models for medical applications.
- Critically evaluate and address ethical challenges in medical data usage.

Materials and Supply Fees

N/A

Required Textbooks and Software

Course notes and assigned readings are derived from various published sources and professional records of the course instructor. These materials will be distributed through the course website on Canvas.

R: R is a free open source statistical programming language. It is useful for data cleaning, analysis, and visualization. It complements workflows that require the use of other software. You can read more about the language and find documentation on [The R Project for Statistical Computing](http://www.r-project.org/). You can download R from <http://www.r-project.org/>. Rstudio is a recommended interface for the R software. It is also free and can be downloaded from <http://www.rstudio.org>.

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Articles:

Jepsen P, Johnsen SP, Gillman MW, Sørensen HT. Interpretation of observational studies. Heart. 2004 Aug;90(8):956-60. doi: 10.1136/hrt.2003.017269. PMID: 15253985; PMCID: PMC1768356.

Sakpal TV. Sample size estimation in clinical trial. Perspect Clin Res. 2010 Apr;1(2):67-9. PMID: 21829786; PMCID: PMC3148614.

Mehrabi, Ninareh, Fred Morstatter, Nripsuta Saxena, Kristina Lerman, and Aram Galstyan. "A survey on bias and fairness in machine learning." ACM computing surveys (CSUR) 54, no. 6 (2021): 1-35.

Maseme, Mantombi. "Ethical Considerations for Health Research Data Governance." In Data Integrity and Data Governance. IntechOpen, 2022.

Collins, G.S., Reitsma, J.B., Altman, D.G. et al. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): the TRIPOD Statement. BMC Med 13, 1 (2015). <https://doi.org/10.1186/s12916-014-0241-z>

Course Schedule

Week	Topic	Assignment
Week 1	Introduction to Biostatistics for Artificial Intelligence in Medicine <ul style="list-style-type: none"> • Introduction to the course, syllabus, and objectives. • Statistical Learning • Significance of biostatistics in AI-driven medical applications • Basic biostatistical concepts and terminologies 	
Week 2	Study Designs <ul style="list-style-type: none"> • Types of study designs • Characteristics of experimental study design and common designs • Randomization, stratification, blinding, and control groups • Observational study design types and characteristics • Discussion of strengths and weaknesses of observational designs compared to experimental designs 	
Week 3	Navigating Large Biomedical Datasets Data in Medicine <ul style="list-style-type: none"> • Types of data in medicine • Understanding data from electronic health records and other sources • Challenges of large medical datasets • Data preprocessing needs 	Quiz 1 (5%)

	<ul style="list-style-type: none"> Real-world data examples and applications 	
Week 4	<p>Data Processing and Quality</p> <ul style="list-style-type: none"> Exploratory analysis and data visualization techniques Missing data mechanisms Imputations methods and assumptions Preprocessing of biomedical data Data quality 	
Week 5	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> Types of data in medical research Measures of central tendency and variability Concepts related to probability Probability distributions and sampling distributions Hands-on exercises using common biomedical datasets 	Homework 1 Due (10%)
Week 6	<p>Inferential Statistics</p> <ul style="list-style-type: none"> Point estimation and confidence intervals Hypothesis testing, p-values, and statistical significance One-sample and two-sample hypothesis tests 	
Week 7	<p>Statistical Analysis Methods</p> <ul style="list-style-type: none"> Analysis of variance (ANOVA), t-test, Fisher's exact test, Chi-square test Non-parametric methods for analyzing skewed or non-normally distributed data Multiple testing 	Homework 2 Due (10%)
Week 8	<p>Linear Regression Models</p> <ul style="list-style-type: none"> Simple and multiple linear regression Assumptions, model diagnostics, model fit/evaluation, interpretation, model selection Hands-on exercises using common biomedical datasets 	Quiz 2 (5%)
Week 9	<p>Logistic Regression Models</p> <ul style="list-style-type: none"> Measures of association and their interpretation Binary and multinomial logistic regression Maximum Likelihood Estimation Assumptions, diagnostics, model evaluation, and interpretation Hands-on exercises using common biomedical datasets 	
Week 10	<p>Survival Analysis</p> <ul style="list-style-type: none"> Kaplan-Meier Curves and log-rank test Cox proportional hazards model and assumptions Measures of association and their interpretation 	Homework 3 Due (10%)
Week 11	<p>Other Statistical Analysis Methods</p> <ul style="list-style-type: none"> Generalized linear models Propensity score regression Discriminate analysis Tree-based models Mixed-effects models 	Quiz 3 (5%)
Week 12	<p>Machine Learning Fundamentals</p> <ul style="list-style-type: none"> Introduction to machine learning Supervised and unsupervised learning algorithms 	Homework 4 Due (10%)
Week 13	<p>Model Validation and Evaluation</p> <ul style="list-style-type: none"> Cross-validation techniques Bootstrapping Model performance, calibration, and evaluation metrics for medical AI models 	Quiz 4 (5%)
Week 14	Ethical Considerations in Health Data Research	

	<ul style="list-style-type: none"> • Privacy and security issues • Data ownership, use, and transparency • Reporting bias and fairness in AI-driven medicine • Reproducibility and transparency • Data privacy protection, governance, and sharing 	
Week 15	Case Studies in AI-driven Medicine <ul style="list-style-type: none"> • Power and sample size calculations • Reporting Guidelines and Checklists • Real-world applications of AI and biostatistics in medicine 	Project (10%)

Assignments & Projects

In this course, there are four individual homework assignments, four quizzes, and one project. Each individual homework assignment will be released two weeks ahead of its actual due date.

- **For each of the four individual assignments:** These assignments will help you review concepts and methods covered.
- **Project:** You will use what you learned during the semester and submit a project report.

Late Assignments

Late assignments will not be accepted. You will receive a grade of zero on an assignment if it is not received on or before the due date. However, at the beginning of the semester, you will be issued one “slip day,” which can only be applied to one assignment. When applied, one slip day provides one 24-hour extension on an assignment with no grade penalty. No explanation is required regarding the reason for using the slip day, but you need to notify the instructor in advance **before** the initial deadline. Requests for using slip days after the initial deadline will not be accepted.

Evaluation of Grades*:

	Percentage of Final Grade
Assignments (%15 x 4)	60%
Quiz (%5 x 4)	20%
Project	10%
Attendance and Participation	10%

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00

60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

Attendance Policy, Class Expectations, and Make-Up Policy

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Attendance Policy, Class Expectations, and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint>.

Course|New for request 19995

Info

Request: CAI 5XXX Economic, Social, Legal, and Ethical Implications of AI in Medicine

Description of request: We request this new course for our recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/9/2024 1:18:47 PM

Form version: 4

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

This is an introduction to economic, social, legal, and ethical implications in AI for Medicine. It does not assume any prior background in AI alignment issues, but it will be taught at a level that assumes that students have graduate level abilities to understand and communicate complex ideas. The target audience is 1st or second year MS students in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine..

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Economic, Social, Legal, and Ethical Implications of AI in Medicine

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
AI: Ethics and Alignment

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is *currently* *planned* to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

This graduate-level course provides an in-depth exploration of the intersection between Artificial Intelligence (AI) and society, with a focus on alignment, ethics, economic implications, and legal policy. Students will: analyze the ethical dilemmas arising from AI technologies; analyze potential economic disruptions and identify strategies for inclusive growth and equitable distribution of AI-generated benefits; consider legal frameworks for aligning AI

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course is meant to be taken in the first or second year of an MS program. It is an introductory course that will ensure that students understand the ethical landscape of medical AI innovations and have the ability to bring to mind and think through relevant considerations when developing or implementing these tools. Ensuring that students have such substantive understanding is necessary for ensuring that AI aligns with human values and interests.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The overall objective of this course is to familiarize students with how AI is and will impact our lives, with an emphasis on acquiring the ability to understand and navigate these issues in a way that aligns with our values. Through a variety of interdisciplinary readings, discussions, student presentations, exams, and a paper, students will demonstrate comprehensive understanding of some key economic, social, legal, and ethical issues concerning the design, development, and implementation of AI in biomedical and clinical settings. They will also refine their critical and communicative skills as they critically evaluate the claims being made and offer their own informed and well-supported positions on the issues at hand.

In short, at the end of the course, students will be able to:

- Identify, describe, and explain some major economic, social, legal, and ethical issues arising from the design, development, and use of AI in biomedicine and clinical science
- Analyze, evaluate, construct, and present persuasive positions on the relevant topics
- Marshal relevant considerations to align AI with human values when developing or implementing AI tools
- Think critically about difficult and complex topics

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

Various instructor supplied articles on Canvas. For example:

Drabiek et al "AI and Machine Learning Ethics, Law, Diversity, and Global Impact"

Hendrycks et al "Aligning AI with Shared Human Values"

Mittelstadt et al "The unfairness of Fair Machine Learning: Levelling down and strict Egalitarianism by Default"

Lancet "Explainability and Artificial Intelligence in Medicine"

Kwameleh "Against Explainability in Healthcare"

Huq "A Right to Human Decision"

London "Artificial Intelligence and Black-box Medical Decisions: Accuracy vs Explainability"

Judith Jarvis Thomson "Right to Privacy"

Reimen "Privacy, Intimacy, Personhood"

Bak et al "Balancing Privacy and AI Data Use"

Price "AI and Health Privacy"

Eloundou et al – "GPTs are GPTs: an early look at the labor market impacts of LLMs"

Cazzaniga et al – "Gen-AI: Artificial Intelligence and the Future of Work" (IMF)

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 - Introduction

Weeks 2-3 – Framing Ethics

Week 2:

Stanford Encyclopedia of Philosophy's, "Moral Theory" sections 1, 1.1, 2.1, 2.2, 3

<https://plato.stanford.edu/entries/moral-theory/>

SEP, "Theory and Bioethics", section 4

<https://plato.stanford.edu/entries/theory-bioethics/>

Week 3:

Drabiek et al "AI and Machine Learning Ethics, Law, Diversity, and Global Impact"

Hendrycks et al "Aligning AI with Shared Human Values"

Weeks 4-6 – Fairness

Week 4:

Obermeyer et al "Dissecting Racial Bias in an Algorithm used to Manage the Health of Populations"

Corbett-Davies et al "The Measure and Mismeasure of Fairness"

Week 5:

Mittelstadt et al "The unfairness of Fair Machine Learning: Levelling down and strict Egalitarianism by Default"

Week 6:

Catch up

Weeks 7-9 – Explainability, Transparency, and Interpretability

Week 7:

Lancet "Explainability and Artificial Intelligence in Medicine"

Kwameleh "Against Explainability in Healthcare"

Week 8:

Huq "A Right to Human Decision"

Take Home Midterm Due

Week 9:

London "Artificial Intelligence and Black-box Medical Decisions: Accuracy vs Explainability"

Week 10-11 – Responsibility and Accountability

TBD

Week 12-13 – Privacy

Week 12:

Judith Jarvis Thomson "Right to Privacy"

Reimen "Privacy, Intimacy, Personhood"

Week 13:

Bak et al "Balancing Privacy and AI Data Use"

Price "AI and Health Privacy"

Week 14:

Catch up and Guest speaker on privacy and law

Paper Due

Week 15 – Economic Effects

Eloundou et al – "GPTs are GPTs: an early look at the labor market impacts of LLMs"

Cazzaniga et al – "Gen-AI: Artificial Intelligence and the Future of Work" (IMF)

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

- 1 paper, approximately 3000-4000 words – 20% of grade

Position paper explaining a set of relevant issues and offering a critique or novel solution

- 2 presentations (10% each) – 20% of grade

Students will select an article for the relevant section to critically evaluate and explain to the class.

- Midterm – 15% of grade

- Final exam – 15% of grade

- Reading Commentaries – 15%

Approximately 1-page single space critical commentary on a reading assigned for the relevant week

- Participation – 15%.

This class will be run seminar-style, which means we will be working through much of the material via discussion, questions, and answers

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

To be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:
Yes

CAI XXXX: Economic, Social, Legal, and Ethical Implications of AI in Medicine

Instructor: Dr. Elizabeth Palmer

eanpalmer@ufl.edu

MSB N1-02C

Office hours: M 2-4

Course Description and Objectives

This graduate-level course provides an in-depth exploration of the intersection between Artificial Intelligence (AI) and society, with a focus on alignment, ethics, economic implications, and legal policy. Students will: analyze the ethical dilemmas arising from AI technologies, including biases, fairness, transparency, accountability, and privacy; analyze potential economic disruptions and identify strategies for inclusive growth and equitable distribution of AI-generated benefits; examine existing and emerging legal and regulatory frameworks governing AI technologies, including data protection, intellectual property, liability, and accountability; and study policy approaches and initiatives at the national and international levels aimed at fostering responsible AI development and deployment.

The overall objective of this course is to familiarize students with how AI is and will impact our lives, with an emphasis on acquiring the ability to understand and navigate these issues in a way that aligns with our values. Through a variety of interdisciplinary readings, discussions, student presentations, exams, and a paper, students will demonstrate comprehensive understanding of some key economic, social, legal, and ethical issues concerning the design, development, and implementation of AI in biomedical and clinical settings. They will also refine their critical and communicative skills as they critically evaluate the claims being made and offer their own informed and well-supported positions on the issues at hand.

In short, at the end of the course, students will be able to:

- Identify, describe, and explain some major economic, social, legal, and ethical issues arising from the design, development, and use of AI in biomedicine and clinical science
- Analyze, evaluate, construct, and present persuasive positions on the relevant topics
- Marshal relevant considerations to align AI with human values when developing or implementing AI tools
- Think critically about difficult and complex topics

Required Texts

Various articles on Canvas, accessible in the 'Readings' folder, located in the 'Files' folder. Websites where some of these can be found also appear in the syllabus, under the 'Meetings and Readings' section. *I highly recommend that you print these out and bring them to class, as I refer to them frequently and expect you to answer specific questions about the texts.*

Recommended texts and resources

On writing well generally:

Strunk, William and E.B. White. *The Elements of Style*, 4th edition. (Pearson, 1999).

The full text can be found here:

<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbncicmVhdG9uc2V3YzR1fGd4OjQ1MmU3OWFiNzAzTk2M2M>

Evaluation

- 1 paper, approximately 3000-4000 words – 20% of grade
Position paper explaining a set of relevant issues and offering a critique or novel solution
- 2 presentations (10% each) – 20% of grade
Students will select an article for the relevant section to explain and critically evaluate.
- Midterm – 15% of grade
- Final exam – 15% of grade
- Reading Commentaries – 15%
Approximately 1-page single space critical commentary on a reading assigned for the relevant week
- Participation – 15%.
This class will be run seminar-style, which means we will be working through much of the material via discussion, questions, and answers. *It's crucial that you come to class prepared to participate in these discussions.*

Grade Scale	Grade Value
100-93 = A	A = 4.0
92-90 = A-	A- = 3.67
89-86 = B+	B+ = 3.33
85-82 = B	B = 3.00
81-79 = B-	B- = 2.67
78-76 = C+	C+ = 2.33
75-72 = C	C = 2.00
71-69 = C-	C- = 1.67
68-66 = D+	D+ = 1.33
65-62 = D	D = 1.00
61-60 = D-	D- = 0.67
59-0 = E	E = 0.00

Course Policies

Attendance: Attendance is not required *per se*; however, not attending every day will negatively affect your grade. A failure to attend will result not only in missing discussions about the material

and the opportunity to ask questions, but also the loss of participation points and the possibility of losing opportunities to turn in assignments. I recommend in the strongest possible terms that you attend every class.

Tardiness: As a courtesy to your classmates and me, please be on time. Should you be late, you're still welcome and encouraged to attend. However, if tardiness becomes problematic or habitual, I reserve the right to not allow you to sign the attendance sheet.

Online Course Evaluation: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Academic Dishonesty

All students must conform to the policies of UF's honor code regarding cheating, plagiarism, and the use of copyrighted materials (see: <http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>). *Plagiarism or cheating on any assignment will automatically result in a 0 for the assignment and possibly a grade of "E" for the course.* Any suspected act of academic dishonesty is reported to the Dean's Office, which prevents students from dropping courses in cases of suspected academic dishonesty.

CANVAS E-learning Environment

This course is supplemented by online content in the e-Learning environment known as "Canvas." You can log in to Canvas and access the course site at <http://elearning.ufl.edu/>. If you encounter any difficulties logging in or accessing any of the course content, contact the UF Computing Help Desk at (352) 392-4537. Do not contact the course instructor regarding computer issues.

- Pdf readings are in 'Readings' folder under the 'Files' tab.
- Check the 'Assignments' tab for paper assignments and short writing assignments.
- Check the 'Announcements' tab for new course content and general information.

If you encounter any difficulties logging in or accessing any of the course content, contact the UF Computing Help Desk at (352) 392-4537. Do not contact the course instructor regarding computer issues.

Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. This class supports the needs of different learners; it is important for students to share their accommodation letter with their instructor and discuss their access needs as early as possible in the semester. Please do not hesitate to me during the semester if you have any individual concerns or issues that need to be discussed.

The Disability Resource Center (<https://disability.ufl.edu/> 352-392-8565) helps to provide an accessible learning environment for all by providing support services and facilitating accommodations, which may vary from course to course. Once registered with DRC, students will receive an accommodation letter that must be presented to the instructor as early as possible in the semester when requesting accommodations.

Counseling and Wellness Center

UF provides counseling and other kinds of help for students in distress. You can call the on-campus Counseling and Wellness Center at **352-392-1575** and see their website at <https://counseling.ufl.edu/>.

The "U Matter, We Care" program provides resources for everyone in the UF community. See the website at umatter.ufl.edu/. Students can contact umatter@ufl.edu seven days a week for assistance for students in distress. There is also a phone number for this program: **(352) 294-CARE**.

Meetings and Readings

***Read all assigned material carefully before coming to class. **Make sure to read the article for each class that it is assigned:** i.e. if an article is assigned for more than one class, read it before *each* class during which we'll be discussing it. Be prepared to bring up any questions or objections you have and to join in a general discussion.

Note: This schedule is only tentative and subject to change. We may go faster with the result that readings are moved up, but it's more likely that we'll end up moving more slowly through the material. If you have any questions about what you should be reading for the next class or on due dates, please contact me.

Week 1 – Introduction to the course

Weeks 2-3 – Framing Ethics

Week 2:

Stanford Encyclopedia of Philosophy's, "Moral Theory" sections 1, 1.1, 2.1, 2.2, 3
<https://plato.stanford.edu/entries/moral-theory/>
 SEP, "Theory and Bioethics", section 4
<https://plato.stanford.edu/entries/theory-bioethics/>

Week 3:

Drabiek et al "AI and Machine Learning Ethics, Law, Diversity, and Global Impact"
 Hendrycks et al "Aligning AI with Shared Human Values"

Weeks 4-6 – Fairness

Week 4:

Obermeyer et al "Dissecting Racial Bias in an Algorithm used to Manage the Health of Populations"
 Corbett-Davies et al "The Measure and Mismeasure of Fairness"

Week 5:

Mittelstadt et al “The unfairness of Fair Machine Learning: Levelling down and strict Egalitarianism by Default”

Week 6:

Catch up

Weeks 7-9 – Explainability, Transparency, and Interpretability

Week 7:

Lancet “Explainability and Artificial Intelligence in Medicine”

Kwameleh “Against Explainability in Healthcare”

Week 8:

Huq “A Right to Human Decision”

Take Home Midterm Due

Week 9:

London “Artificial Intelligence and Black-box Medical Decisions: Accuracy vs Explainability”

Week 10-11 – Responsibility and Accountability

TBD

Week 12-13 – Privacy

Week 12:

Judith Jarvis Thomson “Right to Privacy”

Reimen “Privacy, Intimacy, Personhood

Week 13:

Bak et al “Balancing Privacy and AI Data Use”

Price “AI and Health Privacy”

Week 14:

Catch up and Guest speaker on privacy and law

Paper Due

Week 15 – Economic Effects

Eloundou et al – “GPTs are GPTs: an early look at the labor market impacts of LLMs”

Cazzaniga et al – “Gen-AI: Artificial Intelligence and the Future of Work” (IMF)

Week 16 – Finals Week

Take Home Final Exam due

Course|New for request 19996

Info

Request: CAI 5XXX Fundamentals of Artificial Intelligence in Medicine I

Description of request: This is a new course request for our recently proposed MS program, Artificial Intelligence in Biomedical and Health Sciences.

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:11:04 PM

Form version: 4

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:

No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:

Fundamentals of AI in Medicine I introduces the fundamental concepts of Artificial Intelligence and Machine Learning (AI/ML) with a focus on applications in the medical field. Although prior Python experience is preferred, it is not required. This is meant to be taken the first semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program in the College of Medicine.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
Fundamentals of Artificial Intelligence in Medicine I

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Fund AI in Medicine I

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

This course introduces the fundamental concepts of Artificial Intelligence and Machine Learning (AI/ML) with a focus on applications in the medical field. It covers foundational AI/ML concepts, diverse medical data sources, and the complete lifecycle of AI/ML in healthcare, complemented by insights into model evaluation and ethical considerations. The course offers a mix of lectures, hands-on labs, and project work, emphasizing practical application in real-world scenarios.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not required: AI Design Studio I (new course request)

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

N/A

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course introduces the fundamental concepts of Artificial Intelligence and Machine Learning (AI/ML) with a focus on applications in the medical field. Although prior Python experience is

Week 15 - AI/ML Lifecycle Management

- "Building Machine Learning Powered Applications: Going from Idea to Product" by Emmanuel Ameisen.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 Introduction to AI in Medicine

- Introduction to the course, syllabus, and objectives.
- Overview of AI and its significance in the medical field.
- Basic AI/ML concepts and terminologies.
- Introduction to the HiPerGator computing system

Week 2 Ethics in AI and Healthcare

- Overview of AI/ML applications in medicine.
- Ethical considerations in medical AI.
- Discussion on privacy, bias, responsibility, and transparency.

Week 3 Data in Medicine

- Introduction to structured and unstructured data in medicine.
- Exploring medical imaging and genetic data.
- Understanding data from electronic health records (EHRs) and wearable devices.
- Examination of waveform and physiological data.
- Real-world examples and applications of various medical data types. Homework 1 Due (10%)

Week 4 Handling and Protecting Medical Data

- Best practices in medical data collection and formatting.
- Techniques for cleaning and preprocessing medical datasets.
- Introduction to effective data visualization in a medical context.
- Importance of privacy and security in medical data handling.
- Understanding and managing Protected Health Information (PHI).
- Strategies for data de-identification and ethical considerations in data handling.

Week 5 Basic Machine Learning Concepts

- Introduction to the concepts of supervised and unsupervised learning.
- Discussing their applications and differences in the context of medical data.
- Introduction to linear regression.
- Understanding the application of regression analysis in medical predictions and trend analysis. Homework 2 Due (10%)

Week 6 Advanced Machine Learning Concepts and Model Evaluation

- Introduction to logistic regression.
- Discussing its use in binary classification problems in medical diagnostics and decision-making.
- Understanding various metrics to evaluate machine learning models.

Week 7 Fundamentals and Preparation for Classification Algorithms

- Refreshing essential concepts of linear algebra relevant to machine learning.
- Basic concepts and importance of classification in medical AI.
- Overviews of various classification algorithms to be covered. Homework 3 Due (10%)

Week 8 Exploring Key Classification Algorithms

- Decision Trees
- Random Forest
- Support Vector Machines (SVM)
- Naïve Bayes classifier Midterm Exam (20%)

Week 9 Advanced Techniques and Clinical Applications

- Introduction to XG Boosting algorithm.
- Practical application and relevance in handling complex medical data.
- Real-world case studies showcasing the application of these algorithms in medicine. Homework 4 Due (10%)

Week 10 Clustering and Dimensionality Reduction

- K-means clustering
- Hierarchical clustering
- Principal Component Analysis (PCA)
- Clinical applications

Week 11 Introduction to Artificial Neural Networks

- Introduction to the basic concepts and architecture of neural networks.
- Understanding different types of activation functions and their roles in neural networks.
- Introduction to key loss functions: cross entropy loss, L1 loss, and L2 loss.
Homework 5 Due (10%)

Week 12 Diving Deeper into Neural Networks and Their Applications

- Exploring the structure and functionality of Multi-layer Perceptron (MLP).
- Practical applications of MLPs in classification and regression problems within medical contexts.

Week 13 Model Development Basics

- Understanding the roles and importance of training, validation, and testing datasets in model development.
- Discussing the concepts of overfitting and underfitting, and how they impact model performance.
Homework 6 Due (10%)

Week 14 Advanced Model Development and Validation Techniques

- Introduction to cross-validation techniques and their application in enhancing model reliability.
- Exploring hyper-parameter tuning techniques and their significance in optimizing model performance.

Week 15 AI/ML Lifecycle Management

- Understanding and implementing data augmentation strategies to improve model robustness.
- Overview of the AI/ML lifecycle, including stages from problem definition to model deployment and maintenance in medical applications.
Final Exam (20%)

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Midterm Exam 100 pts - 20%

Homework Sets (6) 25 pts each - 60%

Final Exam 100 pts - 20%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Zhenhong Wu, Department of Medicine, College of Medicine

Wei Shao - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are

consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:
Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy. A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:
Yes

Fundamentals of Artificial Intelligence in Medicine I

CAI ##### Section ###

Class Periods: ###

Location: ###

Academic Term: Fall 2025

Instructor:

Name: Zhenhong Hu, PhD

Email Address: zhenhong.hu@medicine.ufl.edu

Office Phone Number: (352) 273-8821

Office: Malachowsky Hall Room 2400

Office Hours: F 10-12 by Appointment

TA: TBD

Course Description

Graduate level course, 3 Credit Hours

This course introduces the fundamental concepts of Artificial Intelligence and Machine Learning (AI/ML) with a focus on applications in the medical field. It covers foundational AI/ML concepts, diverse medical data sources, and the complete lifecycle of AI/ML in healthcare, complemented by insights into model evaluation and ethical considerations. The course offers a mix of lectures, hands-on labs, and project work, emphasizing practical application in real-world scenarios.

Course Pre-Requisites / Co-Requisites

Prior Python experience is helpful but not mandatory, ensuring the course is accessible and beneficial for students keen to navigate and contribute to the evolving landscape of medical AI.

Course Objectives

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement AI/ML methods for real-world problems in medicine. Detailed learning objectives are listed below.

- Understand basic AI/ML concepts and terminologies.
- Learn foundational AI/ML algorithms and how they can be applied in the medical field.
- Understand the concept, approaches, and limitations in analyzing different modalities of biomedical data.
- Develop skills in data handling, preprocessing, and analysis of biomedical datasets.
- Explore ethical considerations and challenges of AI/ML in healthcare.

Materials and Supply Fees

N/A

Required Textbooks and Software

No textbook is required, the course materials will be developed by the instructor. The following software tools will be used in this course.

HiPerGator: HiPerGator is the University of Florida's supercomputer. The students will develop and train their deep learning models on HiPerGator. For more information: <https://www.rc.ufl.edu/about/hipergator/>.

PyTorch: PyTorch is an open-source machine learning library developed by Facebook's AI Research lab. It is known for its flexibility and ease of use in developing and training deep learning models. For more information: <https://pytorch.org>.

Google Colab: Google Colab is a free cloud service hosted by Google to encourage machine learning and artificial intelligence research. It provides an environment for writing and executing Python code, and is particularly well-

suited for deep learning applications, as it offers free access to powerful hardware like GPUs and TPUs. For more information: <https://colab.research.google.com>.

Jupyter Notebook: he Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined, document-centric experience. For more information: <https://jupyter.org>.

Course Schedule

Week	Topic	Assignment
Week 1	Introduction to AI in Medicine <ul style="list-style-type: none"> • Introduction to the course, syllabus, and objectives. • Overview of AI and its significance in the medical field. • Basic AI/ML concepts and terminologies. • Introduction to the HiPerGator computing system 	
Week 2	Ethics in AI and Healthcare <ul style="list-style-type: none"> • Overview of AI/ML applications in medicine. • Ethical considerations in medical AI. • Discussion on privacy, bias, responsibility, and transparency. 	
Week 3	Data in Medicine <ul style="list-style-type: none"> • Introduction to structured and unstructured data in medicine. • Exploring medical imaging and genetic data. • Understanding data from electronic health records (EHRs) and wearable devices. • Examination of waveform and physiological data. • Real-world examples and applications of various medical data types. 	Homework 1 Due (10%)
Week 4	Handling and Protecting Medical Data <ul style="list-style-type: none"> • Best practices in medical data collection and formatting. • Techniques for cleaning and preprocessing medical datasets. • Introduction to effective data visualization in a medical context. • Importance of privacy and security in medical data handling. • Understanding and managing Protected Health Information (PHI). • Strategies for data de-identification and ethical considerations in data handling. 	
Week 5	Basic Machine Learning Concepts <ul style="list-style-type: none"> • Introduction to the concepts of supervised and unsupervised learning. • Discussing their applications and differences in the context of medical data. • Introduction to linear regression. • Understanding the application of regression analysis in medical predictions and trend analysis. 	Homework 2 Due (10%)
Week 6	Advanced Machine Learning Concepts and Model Evaluation <ul style="list-style-type: none"> • Introduction to logistic regression. • Discussing its use in binary classification problems in medical diagnostics and decision-making. • Understanding various metrics to evaluate machine learning models. 	
Week 7	Fundamentals and Preparation for Classification Algorithms <ul style="list-style-type: none"> • Refreshing essential concepts of linear algebra relevant to machine learning. • Basic concepts and importance of classification in medical AI. • Overviews of various classification algorithms to be covered. 	Homework 3 Due (10%)

Week 8	Exploring Key Classification Algorithms <ul style="list-style-type: none"> • Decision Trees • Random Forest • Support Vector Machines (SVM) • Naïve Bayes classifier 	Midterm Exam (20%)
Week 9	Advanced Techniques and Clinical Applications <ul style="list-style-type: none"> • Introduction to XG Boosting algorithm. • Practical application and relevance in handling complex medical data. • Real-world case studies showcasing the application of these algorithms in medicine. 	Homework 4 Due (10%)
Week 10	Clustering and Dimensionality Reduction <ul style="list-style-type: none"> • K-means clustering • Hierarchical clustering • Principal Component Analysis (PCA) • Clinical applications 	
Week 11	Introduction to Artificial Neural Networks <ul style="list-style-type: none"> • Introduction to the basic concepts and architecture of neural networks. • Understanding different types of activation functions and their roles in neural networks. • Introduction to key loss functions: cross entropy loss, L1 loss, and L2 loss. 	Homework 5 Due (10%)
Week 12	Diving Deeper into Neural Networks and Their Applications <ul style="list-style-type: none"> • Exploring the structure and functionality of Multi-layer Perceptron (MLP). • Practical applications of MLPs in classification and regression problems within medical contexts. 	
Week 13	Model Development Basics <ul style="list-style-type: none"> • Understanding the roles and importance of training, validation, and testing datasets in model development. • Discussing the concepts of overfitting and underfitting, and how they impact model performance. 	Homework 6 Due (10%)
Week 14	Advanced Model Development and Validation Techniques <ul style="list-style-type: none"> • Introduction to cross-validation techniques and their application in enhancing model reliability. • Exploring hyper-parameter tuning techniques and their significance in optimizing model performance. 	
Week 15	AI/ML Lifecycle Management <ul style="list-style-type: none"> • Understanding and implementing data augmentation strategies to improve model robustness. • Overview of the AI/ML lifecycle, including stages from problem definition to model deployment and maintenance in medical applications. 	Final Exam (20%)

Meetings and Readings

Make sure to read all assigned material carefully before coming to class. If an article or book chapter is assigned for more than one class, read it before each class during which we'll be discussing it. Be prepared to bring up any questions or objections you have and to join in a general discussion.

Note: This schedule is only tentative and subject to change. We may go faster with the result that readings are moved up, but it's more likely that we'll end up moving more slowly through the material. If you have any questions about what you should be reading for the next class or on due dates, please contact me.

Week 2 - Ethics in AI and Healthcare

- "Artificial Intelligence in Healthcare" by Adam Bohr and Kaveh Memarzadeh; Chapter 12. Ethical and legal challenges of artificial intelligence-driven healthcare.
- "Ethical Machine Learning in Health Care" by Irene Y. Chen, Emma Pierson, Sherri Rose, and Shalmali Joshi, in Annual Review of Biomedical Data Science.

Week 3 & 4- Data in Medicine and Handling and Protecting Medical Data

- "Biomedical Informatics: Computer Applications in Health Care and Biomedicine" by Edward H. Shortliffe and James J. Cimino; Chapter 2. Biomedical Data: Their Acquisition, Storage, and Use.

Week 5 - Basic Machine Learning Concepts

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 3. Linear Regression.

Week 6 - Advanced Machine Learning Concepts and Model Evaluation

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 2. Statistical Learning.

Week 7 - Fundamentals and Preparation for Classification Algorithms

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 4. Classification.

Week 8 & 9 - Exploring Key Classification Algorithms and Clinical Applications

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 8. Tree-Based Methods and Chapter 9. Support Vector Machines.

Week 10 - Clustering and Dimensionality Reduction

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 12. Unsupervised Learning

Week 11 & 12 - Foundations of Neural Networks and Their Applications

- "An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani; Chapter 10. Deep Learning.

Week 13 - Model Development Basics

- "Overfitting and Underfitting With Machine Learning Algorithms" on Machine Learning Mastery by Jason Brownlee.

Week 14 - Advanced Model Development and Validation Techniques

- "Hyperparameter Tuning in Machine Learning Models" on Machine Learning Mastery by Jason Brownlee.

Week 15 - AI/ML Lifecycle Management

- "Building Machine Learning Powered Applications: Going from Idea to Product" by Emmanuel Ameisen.

Attendance Policy, Class Expectations, and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here to read the university attendance policies.](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)

[Grades and Grading Policies](#)

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Midterm Exam	100	20%
Homework Sets (6)	25/each	60%
Final Exam	100	20%
		100%

Grading Policy

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

Recommended Materials

- Bohr, A., & Memarzadeh, K. (2020). *Artificial Intelligence in Healthcare*. Academic Press.
 - This book explores the integration of AI into healthcare, discussing its potential and challenges, including ethical considerations and real-world applications.
- McKinney, W. (2017). *Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython* (2nd ed.). O'Reilly Media.
 - Ideal for beginners in Python, this text focuses on data analysis techniques using libraries like Pandas and NumPy, crucial for handling and analyzing medical data.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.
 - A seminal text in deep learning, providing a comprehensive foundation in neural networks and algorithms, essential for advanced AI/ML applications in medicine.
- Murphy, K. P. (2012). *Machine Learning: A Probabilistic Perspective*. MIT Press.
 - This book offers a detailed introduction to machine learning from a probabilistic viewpoint, including algorithms and theory important for medical data analysis.
- Stanford Encyclopedia of Philosophy. (n.d.). *Ethics of Artificial Intelligence and Robotics*. Retrieved from <https://plato.stanford.edu/entries/ethics-ai/>
 - An online resource discussing the ethical aspects of AI and robotics, providing necessary context for understanding the implications of AI in healthcare.
- Shortliffe, E. H., & Cimino, J. J. (Eds.). (2014). *Biomedical Informatics: Computer Applications in Health Care and Biomedicine* (4th ed.). Springer.
 - Covers the basics of biomedical informatics, blending AI with healthcare applications, and focusing on the analysis and handling of medical data.
- Géron, A. (2019). *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems* (2nd ed.). O'Reilly Media.
 - A practical guide emphasizing hands-on techniques for implementing machine learning using Python libraries, useful for lab sessions and project work in the course.
- Pearl, J., & Mackenzie, D. (2018). *The Book of Why: The New Science of Cause and Effect*. Basic Books.
 - This book introduces causal inference in machine learning, an increasingly important concept in medical AI for understanding relationships in data.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>;<https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint>.

Course|New for request 19997

Info

Request: CAI 5XXXX Fundamentals of Artificial Intelligence in Medicine II

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:12:48 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
5

Undergraduate students in 5000 level courses

Is this course intended for an audience including undergraduate students?

Response:
No

Rationale for 5000 level course request

Please provide the rationale for submitting this course as a 5000 level course in the space provided below. (i.e. target student audience, program, school). 5000 level courses require joint review and approval by the University Curriculum Committee and Graduate Curriculum Committee or Professional Curriculum Committee.

Response:
This course builds on foundational concepts introduced in Fundamentals of Artificial Intelligence in Medicine I (course request 19996) and assumes facility with but not mastery of relevant biomedical AI concepts. This is meant to be taken the second semester of the 1st year in the recently proposed Artificial Intelligence in Biomedical and Health Sciences (AIBHS) new MS program for UF's College of Medicine.

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:
Introductory

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)

Course Title

Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.

Response:
Fundamentals of Artificial Intelligence in Medicine II

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Fund AI in Medicine II

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

Indicate all platforms through which the course is <i>currently</i> <i>planned</i> to be delivered.

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that

credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic

Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Building on the foundational concepts introduced in Fundamentals of Artificial Intelligence in Medicine I, this course explores deeper into Artificial Intelligence (AI), with a specific focus on deep learning and its applications in the field of medicine. Students will learn more advanced deep learning architectures, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

Recommended but not required: AI Design Studio II (new course request)

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Fundamentals of AI in Medicine I (course request 19996)[C]& AI Design Studio I (new course request)[C]

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course builds on foundational concepts introduced in Fundamentals of Artificial Intelligence in Medicine I (course request 19996) and deepens their understanding AI tools and their development. This course, along with Fundamentals of AI in Medicine I and the AI Design Studios, ensure students have background to move into advanced biomedical AI courses as well as biomedical labs and clinical settings, where they will work with advisors to identify and develop relevant AI solutions.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement advanced AI/ML methods for real-world clinical problems. Detailed learning objectives are listed below.

- Gain in-depth knowledge of advanced deep learning models and architectures.
- Apply advanced AI techniques to complex medical problems.
- Understand the current trend of AI research in medicine.
- Explore innovative AI applications in diagnostics, treatment prediction, and patient care.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

No textbook is required, the course materials will be developed by the instructor.

1. Week 1 - Wainberg, M., Merico, D., Delong, A., & Frey, B. J. (2018). Deep learning in biomedicine. *Nature biotechnology*, 36(9), 829-838.
2. Week 2 - Shamshirband, S., Fathi, M., Dehzangi, A., Chronopoulos, A. T., & Alinejad-Rokny, H. (2021). A review on deep learning approaches in healthcare systems: Taxonomies, challenges, and open issues. *Journal of Biomedical Informatics*, 113, 103627.
3. Week 3 - Anwar, S. M., Majid, M., Qayyum, A., Awais, M., Alnowami, M., & Khan, M. K. (2018). Medical image analysis using convolutional neural networks: a review. *Journal of medical systems*, 42, 1-13.
4. Week 4 - Krishnapriya, S., & Karuna, Y. (2023). Pre-trained deep learning models for brain MRI image classification. *Frontiers in Human Neuroscience*, 17, 1150120.
5. Week 5: Morid, M. A., Sheng, O. R. L., & Dunbar, J. (2023). Time series prediction using deep learning methods in healthcare. *ACM Transactions on Management Information Systems*, 14(1), 1-29.
6. Week 6: Hossain, E., Rana, R., Higgins, N., Soar, J., Barua, P. D., Pisani, A. R., & Turner, K. (2023). Natural language processing in electronic health records in relation to healthcare decision-making: a systematic review. *Computers in Biology and Medicine*, 155, 106649.
7. Week 7: Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., ... & Polosukhin, I. (2017). Attention is all you need. *Advances in neural information processing systems*, 30.
8. Week 8: Thirunavukarasu, A. J., Ting, D. S. J., Elangovan, K., Gutierrez, L., Tan, T. F., & Ting, D. S. W. (2023). Large language models in medicine. *Nature medicine*, 29(8), 1930-1940.
9. Week 9: Liu, Y., Han, T., Ma, S., Zhang, J., Yang, Y., Tian, J., ... & Ge, B. (2023). Summary of chatgpt-related research and perspective towards the future of large language models. *Meta-Radiology*, 100017.
10. Week 10- Dayan, Ittai, et al. Federated learning for predicting clinical outcomes in patients with COVID-19. *Nature medicine* 27.10 (2021): 1735-1743.
Feng, Bao, et al. Robustly federated learning model for identifying high-risk patients with postoperative gastric cancer recurrence. *Nature Communications* 15.1 (2024): 742.
11. Week 11- Sheu RK, Pardeshi MS. A Survey on Medical Explainable AI (XAI): Recent Progress, Explainability Approach, Human Interaction and Scoring System. *Sensors (Basel)*.

2022 Oct 21;22(20):8068.

Molnar, Christoph. Interpretable machine learning. 2020.

12. Week 12-13 - Yi, Xin, Ekta Walia, and Paul Babyn. Generative adversarial network in medical imaging: A review. Medical image analysis 58 (2019): 101552.

Zaretsky, J., Kim, J. M., Baskharoun, S., Zhao, Y., Austrian, J., Aphinyanaphongs, Y., ... & Feldman, J. (2024). Generative Artificial Intelligence to Transform Inpatient Discharge Summaries to Patient-Friendly Language and Format. JAMA Network Open, 7(3), e240357-e240357.

van Zandvoort, D., Wiersema, L., Huibers, T., van Dulmen, S., & Brinkkemper, S. (2023). Summarization Performance through Transformer-Based Prompt Engineering. arXiv preprint arXiv:2311.13274.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 Review of neural networks

- Artificial neurons
- Activation functions
- Fully connected layers

Week 2 Types of learning and applications

- Supervised learning
- Unsupervised learning
- Self-supervised learning
- Weakly supervised learning
- Reinforcement learning

Week 3 Convolutional neural networks

- Convolutional layers, kernel size, stride, padding
- Pooling layers
- Sigmoid, Softmax
- VGG, ResNet, DenseNet Homework 1 Due (20%) - CNNs on image classification

Week 4 Deep learning in medical imaging

- X-ray, MRI, CT, Ultrasound
- Transfer learning for medical image classification
- 3D convolution
- U-Net
- Medical image segmentation

Week 5 Fundamentals of RNNs and LSTMs

- Motivation for sequence models
- Recurrence in neural networks
- Vanishing gradient
- LSTMs: input, forget, output gates, and the cell state.

Week 6 Sequential modeling tasks in medicine:

- Analyzing time-series medical data (e.g., ECG, patient monitoring data)
- Natural Language Processing (NLP) for clinical notes analysis

Week 7 Introduction to transformers

- Attention mechanism, query, key, value, dot-product attention
- Self-attention and cross-attention
- Multi-head attention, positional encoding
- BERT and its variants

Week 8 Introduction to large language models (LLM)

- Masked-language modeling
- Next-sentence prediction
- Prompting techniques Homework 2 Due (20%) - Sequence classification

Week 9 Application of LLMs in medical literature analysis and information extraction

- Group discussion and presentation
- Potential in genomics and personalized medicine Application of LLMs – Group presentation (10%)

Week 10 Federated learning

- Concept of decentralized machine learning
- Data privacy and security as driving factors
- Applications in healthcare
- Federated learning model architecture (eg., FedAvg, FedProx, SCAFFOLD)
- Differential privacy

Week 11 Introduction to explainable AI

- What is XAI and importance
- Techniques for model interpretability (LIME, SHAP, counterfactual explanation and saliency maps)
- Case study: Saliency maps in brain tumor classification Homework 3 Due (20%) - Model interpretability

Week 12 Generative AI

- Introduction to generative artificial intelligence
- GAN: Generator vs. Discriminator, Minmax game, variants of GANS
- Variational autoencoders (VAE) and its variants

Week 13 Generative AI:

- Diffusion models: progressive noise injection, denoising process, score-based generative models
- Applications of generative AI in medicine
- Ethics of generative AI in medicine Homework 4 Due (20%) - Working with LLMs

Week 14 Review paper involving deep learning and LLMs applications in medicine

Paper presentation (10%)

Week 15 Review paper involving deep learning and LLMs applications in medicine

Final Exam (20%)

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

In this course, there are four individual homework assignments and two paper reviews and presentations. Each individual homework assignment will be released three weeks ahead of its actual due date.

- For each of the four individual coding assignments: These coding assignments are not designed to challenge you but to ensure you have basic practical coding knowledge of popular deep learning architectures as well as their biomedical application scenarios.
- For each of the two paper review & presentation: you are expected to review paper involving deep learning applications in medicine.

Coding Assignment	Assignment 1	20%
	Assignment 2	20%
	Assignment 3	20%
	Assignment 4	20%
Paper Review & Presentation	Presentation	10%
Class Participation	Group Discussion	10%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Yuanfang Ren - Department of Medicine, College of Medicine
to be determined
Wei Shao - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is required to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Fundamentals of Artificial Intelligence in Medicine II

CAI ##### Section ###

Class Periods: ###

Location: ###

Academic Term: Spring 2026

Instructor:

Name: Yuanfang Ren, PhD and Yingbo Ma, PhD

Email Address: yuanfang.ren@medicine.ufl.edu and yingbo.ma@medicine.ufl.edu

Office Phone Number: (352) 273-8821, (352) 328-1110

Office: Malachowsky Hall Room 2400

Office Hours: Friday, 1-3pm

Course Description

Graduate level course, 3 Credit Hours

Building on the foundational concepts introduced in Fundamentals of Artificial Intelligence in Medicine I, this course explores deeper into Artificial Intelligence (AI), with a specific focus on deep learning and its applications in the field of medicine. Students will learn more advanced deep learning architectures, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers. The curriculum emphasizes practical applications, using these technologies to analyze medical imaging, interpret clinical notes, and mine electronic health records.

Course Pre-Requisites / Co-Requisites

Fundamentals of Artificial Intelligence in Medicine I

AI Design Studio I

Course Objectives

The overall objective of this course is to equip students with the theoretical and practical fundamentals necessary to design and implement advanced AI/ML methods for real-world clinical problems. Detailed learning objectives are listed below.

- Gain in-depth knowledge of advanced deep learning models and architectures.
- Apply advanced AI techniques to complex medical problems.
- Understand the current trend of AI research in medicine.
- Explore innovative AI applications in diagnostics, treatment prediction, and patient care.

Materials and Supply Fees

N/A

Required Textbooks and Recommended Software

No textbook is required, the course materials will be developed by the instructor. The following software tools will be used in this course.

Google Colab: Google Colab is a free cloud service hosted by Google to encourage machine learning and artificial intelligence research. It provides an environment for writing and executing Python code, and is particularly well-suited for deep learning applications, as it offers free access to powerful hardware like GPUs and TPUs. For more information: <https://colab.research.google.com>.

PyTorch: PyTorch is an open-source machine learning library developed by Facebook's AI Research lab. It is known for its flexibility and ease of use in developing and training deep learning models. For more information: <https://pytorch.org>.

Jupyter Notebook: The Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined, document-centric experience. For more information: <https://jupyter.org>.

HiPerGator: HiPerGator is the University of Florida's supercomputer. The students will develop and train their deep learning models on HiPerGator. For more information: <https://www.rc.ufl.edu/about/hipergator/>.

Recommended Weekly Reading Materials

1. Week 1 - Wainberg, M., Merico, D., DeLong, A., & Frey, B. J. (2018). [Deep learning in biomedicine](#). Nature biotechnology, 36(9), 829-838.
2. Week 2 - Shamshirband, S., Fathi, M., Dehzangi, A., Chronopoulos, A. T., & Alinejad-Rokny, H. (2021). [A review on deep learning approaches in healthcare systems: Taxonomies, challenges, and open issues](#). Journal of Biomedical Informatics, 113, 103627.
3. Week 3 - Anwar, S. M., Majid, M., Qayyum, A., Awais, M., Alnowami, M., & Khan, M. K. (2018). [Medical image analysis using convolutional neural networks: a review](#). Journal of medical systems, 42, 1-13.
4. Week 4 - Krishnapriya, S., & Karuna, Y. (2023). [Pre-trained deep learning models for brain MRI image classification](#). Frontiers in Human Neuroscience, 17, 1150120.
5. Week 5: Morid, M. A., Sheng, O. R. L., & Dunbar, J. (2023). [Time series prediction using deep learning methods in healthcare](#). ACM Transactions on Management Information Systems, 14(1), 1-29.
6. Week 6: Hossain, E., Rana, R., Higgins, N., Soar, J., Barua, P. D., Pisani, A. R., & Turner, K. (2023). [Natural language processing in electronic health records in relation to healthcare decision-making: a systematic review](#). Computers in Biology and Medicine, 155, 106649.
7. Week 7: Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., ... & Polosukhin, I. (2017). [Attention is all you need](#). Advances in neural information processing systems, 30.
8. Week 8: Thirunavukarasu, A. J., Ting, D. S. J., Elangovan, K., Gutierrez, L., Tan, T. F., & Ting, D. S. W. (2023). [Large language models in medicine](#). Nature medicine, 29(8), 1930-1940.
9. Week 9: Liu, Y., Han, T., Ma, S., Zhang, J., Yang, Y., Tian, J., ... & Ge, B. (2023). [Summary of chatgpt-related research and perspective towards the future of large language models](#). Meta-Radiology, 100017.
10. Week 10- Dayan, Ittai, et al. [Federated learning for predicting clinical outcomes in patients with COVID-19](#). Nature medicine 27.10 (2021): 1735-1743.
Feng, Bao, et al. [Robustly federated learning model for identifying high-risk patients with postoperative gastric cancer recurrence](#). Nature Communications 15.1 (2024): 742.
11. Week 11- Sheu RK, Pardeshi MS. [A Survey on Medical Explainable AI \(XAI\): Recent Progress, Explainability Approach, Human Interaction and Scoring System](#). Sensors (Basel). 2022 Oct 21;22(20):8068.
Molnar, Christoph. [Interpretable machine learning](#). 2020.
12. Week 12-13 - Yi, Xin, Ekta Walia, and Paul Babyn. [Generative adversarial network in medical imaging: A review](#). Medical image analysis 58 (2019): 101552.
Zaretsky, J., Kim, J. M., Baskharoun, S., Zhao, Y., Austrian, J., Aphinyanaphongs, Y., ... & Feldman, J. (2024). [Generative Artificial Intelligence to Transform Inpatient Discharge Summaries to Patient-Friendly Language and Format](#). JAMA Network Open, 7(3), e240357-e240357.
van Zandvoort, D., Wiersema, L., Huibers, T., van Dulmen, S., & Brinkkemper, S. (2023). [Summarization Performance through Transformer-Based Prompt Engineering](#). arXiv preprint arXiv:2311.13274.

Course Schedule

Week	Topic	Assignment
Week 1	Review of neural networks <ul style="list-style-type: none"> • Artificial neurons 	

	<ul style="list-style-type: none"> • Activation functions • Fully connected layers 	
Week 2	<p>Types of learning and applications</p> <ul style="list-style-type: none"> • Supervised learning • Unsupervised learning • Self-supervised learning • Weakly supervised learning • Reinforcement learning 	
Week 3	<p>Convolutional neural networks</p> <ul style="list-style-type: none"> • Convolutional layers, kernel size, stride, padding • Pooling layers • Sigmoid, Softmax • VGG, ResNet, DenseNet 	Homework 1 Due (20%) - CNNs on image classification
Week 4	<p>Deep learning in medical imaging</p> <ul style="list-style-type: none"> • X-ray, MRI, CT, Ultrasound • Transfer learning for medical image classification • 3D convolution • U-Net • Medical image segmentation 	
Week 5	<p>Fundamentals of RNNs and LSTMs</p> <ul style="list-style-type: none"> • Motivation for sequence models • Recurrence in neural networks • Vanishing gradient • LSTMs: input, forget, output gates, and the cell state. 	
Week 6	<p>Sequential modeling tasks in medicine:</p> <ul style="list-style-type: none"> • Analyzing time-series medical data (e.g., ECG, patient monitoring data) • Natural Language Processing (NLP) for clinical notes analysis 	
Week 7	<p>Introduction to transformers</p> <ul style="list-style-type: none"> • Attention mechanism, query, key, value, dot-product attention • Self-attention and cross-attention • Multi-head attention, positional encoding • BERT and its variants 	
Week 8	<p>Introduction to large language models (LLM)</p> <ul style="list-style-type: none"> • Masked-language modeling • Next-sentence prediction • Prompting techniques 	Homework 2 Due (20%) - Sequence classification
Week 9	<p>Application of LLMs in medical literature analysis and information extraction</p> <ul style="list-style-type: none"> • Group discussion and presentation • Potential in genomics and personalized medicine 	Application of LLMs – Group presentation (10%)
Week 10	<p>Federated learning</p> <ul style="list-style-type: none"> • Concept of decentralized machine learning • Data privacy and security as driving factors • Applications in healthcare • Federated learning model architecture (eg., FedAvg, FedProx, SCAFFOLD) • Differential privacy 	
Week 11	<p>Introduction to explainable AI</p> <ul style="list-style-type: none"> • What is XAI and importance • Techniques for model interpretability (LIME, SHAP, counterfactual explanation and saliency maps) • Case study: Saliency maps in brain tumor classification 	Homework 3 Due (20%) - Model interpretability
Week 12	<p>Generative AI</p> <ul style="list-style-type: none"> • Introduction to generative artificial intelligence • GAN: Generator vs. Discriminator, Minmax game, variants of GANS • Variational autoencoders (VAE) and its variants 	

Week 13	Generative AI: <ul style="list-style-type: none"> Diffusion models: progressive noise injection, denoising process, score-based generative models Applications of generative AI in medicine Ethics of generative AI in medicine 	Homework 4 Due (20%) - Working with LLMs
Week 14	Review paper involving deep learning and LLMs applications in medicine	Paper presentation (10%)
Week 15	Review paper involving deep learning and LLMs applications in medicine	

Assignments & Projects

In this course, there are four individual homework assignments and two paper reviews and presentations. Each individual homework assignment will be released three weeks ahead of its actual due date.

- For each of the four individual coding assignments:** These coding assignments are not designed to challenge you but to ensure you have basic practical coding knowledge of popular deep learning architectures as well as their biomedical application scenarios.
- For each of the two paper review & presentation:** you are expected to review paper involving deep learning applications in medicine.

Late Assignments

Late assignments will not be accepted. You will receive a grade of zero on an assignment if it is not received on or before the due date. However, at the beginning of the semester, you will be issued one “slip day,” which can only be applied to individual coding assignments. When applied, one slip day provides one 24-hour extension on an assignment with no grade penalty. No explanation is required regarding the reason for using the slip day, but you need to notify the teaching staff in advance **before** the initial deadline. Requests for using slip days after the initial deadline will not be accepted.

Evaluation of Grades*:

		Percentage of Final Grade
Coding Assignment	Assignment 1	20%
	Assignment 2	20%
	Assignment 3	20%
	Assignment 4	20%
Paper Review & Presentation	Presentation	10%
Class Participation	Group Discussion	10%

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00

70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or

implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint>.

Course|New for request 20023

Info

Request: CAI 6XXX Applied Generative AI in Medicine

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:34:38 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Applied Generative AI in Medicine

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Applied Gen AI in Medicine

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:

On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:

No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Spring

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2026

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
This course provides a comprehensive overview of generative artificial intelligence (AI) and its applications in healthcare. Students will learn the fundamentals of generative models, including Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models.

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

*Undergraduate courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.*

Response:

Fundamentals of AI in Medicine I (course request 19996)[B] & AI Design Studio I (course request 19998)[B]

Students taking this course should understand and be able to use Python and Machine Learning

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, “MAC 2311(B)” indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

**

- *Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.*
- *Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).*

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This is an advanced graduate course that requires technical facility.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

By the end of this course, students will be able to:

- Understand the key differences between generative and discriminative models and their respective applications in healthcare.
- Explain the core concepts and architectures of Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models.
- Apply prompt engineering techniques to optimize the performance of large language models for medical applications.
- Utilize retrieval augmented generation to enhance AI responses with relevant medical literature and data.
- Develop generative models for clinical text, such as EHR note summarization, medical dialogue summarization, and open-ended medical question answering.
- Understand the role of generative AI in clinical decision support systems, including diagnosis, treatment planning, and risk stratification.
- Apply generative models to drug discovery tasks, such as de novo molecular design and protein structure generation.
- Leverage generative AI for precision medicine applications, including patient data imputation, counterfactual treatment effect estimation, and clinical trial simulation.
- Identify and address the challenges associated with deploying generative AI in healthcare,

- Adversarial loss functions
- Conditional GANs

Readings:

- * Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., ... & Bengio, Y. (2014). Generative adversarial nets. *Advances in Neural Information Processing Systems*, 27. https://papers.nips.cc/paper_files/paper/2014/file/5ca3e9b122f61f8f06494c97b1afccf3-Paper.pdf (Required)
- * Mirza, M., & Osindero, S. (2014). Conditional generative adversarial nets. *arXiv preprint arXiv:1411.1784*.

Week 3: Variational Autoencoders (VAEs)

- Encoder and decoder networks
- Latent space representations
- Generative process using VAEs

Readings:

- * Kingma, D. P., & Welling, M. (2013). Auto-encoding variational bayes. *arXiv preprint arXiv:1312.6114*. (Recommended)
- * Doersch, C. (2016). Tutorial on variational autoencoders. *arXiv preprint arXiv:1606.05908*. (Recommended)

Week 4: Diffusion Models

- Denoising diffusion probabilistic models
- Latent diffusion models
- Guided generation with classifier-free guidance

Readings:

- * Ho, J., Jain, A., & Abbeel, P. (2020). Denoising diffusion probabilistic models. *Advances in Neural Information Processing Systems*, 33, 6840-6851. (Recommended)
- * Ho, J., Carlini, N., Kumar, A., Liu, S., Kang, M., Kim, J., ... & Liang, P. (2024). An overview of diffusion models: Applications, guided generation, statistical rates and optimization. *arXiv preprint arXiv:2404.07771*. (Recommended)

Week 5: Prompt Engineering - Part 1

- In-context learning and few-shot prompting
- Chain-of-thought prompting
- Prompt tuning and optimization

Readings:

- * Sahoo, P., Mishra, S., Agarwal, S., & Mohanty, M. N. (2024). A systematic survey of prompt engineering in large language models: Techniques and applications. *arXiv preprint arXiv:2402.07927*. (Required)
- * Brown, T., Mann, B., Ryder, N., Subbiah, M., Kaplan, J. D., Dhariwal, P., ... & Amodei, D. (2020). Language models are few-shot learners. *Advances in Neural Information Processing Systems*, 33, 1877-1901. (Recommended)
- * Wei, J., Tay, Y., Bommasani, R., Raffel, C., Zoph, B., Borgeaud, S., ... & Kaplan, J. (2022). Chain of thought prompting elicits reasoning in large language models. *arXiv preprint arXiv:2201.11903*. (Recommended)

Week 6: Prompt Engineering - Part 2

- Knowledge grounded generation
- Instruction tuning and constitutional AI
- Prompt decomposition and iterative refinement
- Evaluation metrics for prompt-based models

Readings:

- * Liu, X., Zheng, Y., Du, Z., Ding, M., Qian, Y., Yang, Z., & Tang, J. (2022). Instruction tuning with

GPT-4. arXiv preprint arXiv:2304.03277. (Recommended)

* Komeili, M., Shuster, K., & Weston, J. (2022). Internet-augmented dialogue generation. arXiv preprint arXiv:2107.07566. (Recommended)

Week 7: Retrieval Augmented Generation

- Enhancing AI responses with retrieval techniques
- Applications in medical literature and data
- Semantic search and information retrieval for medicine
- Integrating knowledge bases and structured data

Readings:

* Zhao, P., Gao, L., & Zhang, Z. (2024). Retrieval-augmented generation for AI-generated content: A survey. arXiv preprint arXiv:2402.19473. (Required)

* Lewis, P., Perez, E., Piktus, A., Petroni, F., Karpukhin, V., Goyal, N., ... & Kiela, D. (2020). Retrieval-augmented generation for knowledge-intensive nlp tasks. *Advances in Neural Information Processing Systems*, 33, 9459-9474. (Recommended)

* Karpukhin, V., Oguz, B., Min, S., Lewis, P., Wu, L., Edunov, S., ... & Yih, W. T. (2020). Dense passage retrieval for open-domain question answering. arXiv preprint arXiv:2004.04906. (Recommended)

Week 8: Generative Models for Clinical Text - Part 1

- EHR note summarization
- Medical dialogue summarization
- Ambient clinical intelligence

Readings:

* Zhang, Y., Ding, N., & Soricut, R. (2020). Optimizing the factual correctness of a summary: A study of summarizing radiology reports. arXiv preprint arXiv:1911.02541. (Required)

* Krishna, K., Khosla, S., Bigham, J. P., & Lipton, Z. C. (2021). Generating medical reports from patient-doctor conversations using sequence-to-sequence models. arXiv preprint arXiv:2109.12174. (Recommended)

Week 9: Generative Models for Clinical Text - Part 2

- Open-ended medical question answering
- Closed-book vs. open-book QA
- Multi-document summarization for evidence synthesis
- Generative models for clinical reasoning and explanation

Readings:

* Yang, Z., Zhang, J., Zhang, Y., & Yu, B. (2024). ClinicalMamba: A generative clinical language model on longitudinal clinical notes. arXiv preprint arXiv:2403.05795. (Required)

* Pho, K., Yabukoshi, A., Huang, S. C., Jiang, S., Liu, J., & Callahan, A. (2022). Clinically-grounded evidence synthesis with health knowledge bases. arXiv preprint arXiv:2210.14554. (Recommended)

* Shwartz-Ziv, R., & Tishby, N. (2017). Opening the black box of deep neural networks via information. arXiv preprint arXiv:1703.00810. (Recommended)

Week 10: Clinical Decision Support Systems

- AI applications in diagnosis and treatment planning
- Real-world examples and case studies
- Clinical triage and risk stratification
- Human-AI collaboration in clinical workflows

Readings:

* Yim, D., Khuntia, J., Parameswaran, V., & Meyers, A. (2024). Preliminary evidence of the use of generative AI in health care clinical services: Systematic narrative review. *JMIR Medical Informatics*, 12, e52073. (Required)

* Rajkomar, A., Dean, J., & Kohane, I. (2019). Machine learning in medicine. *New England*

Journal of Medicine, 380(14), 1347-1358. (Required)

Week 11: Generative Models for Drug Discovery

- De novo molecular design
- Scaffold-based drug design
- Protein structure generation

Readings:

- * Ghebrehiwet, I., Zaki, N., Damseh, R., Sammouda, R., & El-Hajj, M. (2024). Revolutionizing personalized medicine with generative AI: A systematic review. *Artificial Intelligence Review*, 57, 128. <https://doi.org/10.1007/s10462-024-10768-5> (Required)
- * García-Alcaraz, J. L., Sánchez-Ramírez, C., Díaz-Reza, J. R., Avelar-Sosa, L., & Puig-i-Vidal, R. (2023). Trends on decision support systems: A bibliometric review. In J. A. Zapata-Cortes, C. Sánchez-Ramírez, G. Alor-Hernández, & J. L. García-Alcaraz (Eds.), *Handbook on Decision Making* (pp. 143-167). Springer, Cham. https://doi.org/10.1007/978-3-031-08246-7_8

Week 12: Generative Models for Precision Medicine

- Patient data imputation and augmentation
- Counterfactual treatment effect estimation
- Clinical trial simulation

Readings:

- * Allen, B. (2024). The promise of explainable AI in digital health for precision medicine: A systematic review. *Journal of Personalized Medicine*, 14(3), 277. <https://doi.org/10.3390/jpm14030277>
- * Yoon, J., Jordon, J., & van der Schaar, M. (2018). GAIN: Missing data imputation using generative adversarial nets. In *International Conference on Machine Learning* (pp. 5689-5698). PMLR. (Recommended)

Week 13: Deploying Generative AI in Healthcare - Part 1

- Data privacy and de-identification
- Synthetic data generation
- Model robustness and domain shift

Readings:

- * Guan, J., Li, R., Yu, S., & Zhang, X. (2021). Generation and evaluation of artificial patient data. *npj Digital Medicine*, 4(1), 1-10. (Required)
- * Kiyasseh, D., Tadesse, M. M., Lu, G., Gao, T., & Clifton, D. A. (2022). PriMIA: A platform for deploying securely trained AI systems in hospitals. *Nature Machine Intelligence*, 1-11.

Week 14: Deploying Generative AI in Healthcare - Part 2

- Human-AI interaction and trust
- Model interpretability and explanations
- Regulatory and ethical considerations

Readings:

- * Tonekaboni, S., Joshi, S., McCradden, M. D., & Goldenberg, A. (2019). What clinicians want: Contextualizing explainable machine learning for clinical end use. In *Machine Learning for Healthcare Conference* (pp. 359-380). PMLR. (Required)
- * London, A. J. (2019). Artificial intelligence and black-box medical decisions: Accuracy versus explainability. *Hastings Center Report*, 49(1), 15-21.

Week 15: Future Directions and Challenges

- Open problems and research directions
- Composing generative models for complex tasks
- Sociotechnical implications of generative AI in medicine

Readings:

* Mantas, J., Hasman, A., Gallos, P., & Kolokathi, A. (2022). Bioethical challenges of generative AI in healthcare. In IFIP International Conference on Artificial Intelligence Applications and Innovations (pp. 61-71). Springer, Cham. (Required)

* Chen, M., Agarwal, S., Langlotz, C. P., & Zou, J. (2023). Generative AI in healthcare: Opportunities, challenges, and clinical implications. arXiv preprint arXiv:2305.04265.

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Quizzes (4)	25 each	20%
Homework Sets (4)	25 each	40%
Final Project	100	40%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Masoud Rouhizadeh - Department of Pharmaceutical Outcomes and Policy, College of Pharmacy

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Applied Generative AI in Medicine

AIH ##### Section ###

Class Periods: ###

Location: ###

Academic Term: Spring 2026

Instructor:

Name: [Masoud Rouhizadeh, Ph.D., M.Sc., M.A.](#)

Email Address: mrouhizadeh@ufl.edu

Office: Malachowsky Hall Room 6012

Office Phone Number: (352) 273-9397

Office Hours: TBD

TA: TBD

Course Description

Graduate level course, 3 Credit Hours

This course provides a comprehensive overview of generative artificial intelligence (AI) and its applications in healthcare. Students will learn the fundamentals of generative models, including Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models. The course will also cover advanced topics such as prompt engineering, retrieval augmented generation, and the deployment of generative AI in clinical settings. Through a combination of lectures, readings, and hands-on projects, students will gain a deep understanding of how generative AI can be leveraged to improve patient care, streamline clinical workflows, and advance medical research. The course will emphasize practical applications and use cases that do not require advanced coding or mathematical expertise.

Course Pre-Requisites:

Python and Machine Learning (from first semester. Please enter the detailed descriptions here)

Learning Objectives:

By the end of this course, students will be able to:

- Understand the key differences between generative and discriminative models and their respective applications in healthcare.
- Explain the core concepts and architectures of Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models.
- Apply prompt engineering techniques to optimize the performance of large language models for medical applications.
- Utilize retrieval augmented generation to enhance AI responses with relevant medical literature and data.
- Develop generative models for clinical text, such as EHR note summarization, medical dialogue summarization, and open-ended medical question answering.
- Understand the role of generative AI in clinical decision support systems, including diagnosis, treatment planning, and risk stratification.

- Apply generative models to drug discovery tasks, such as de novo molecular design and protein structure generation.
- Leverage generative AI for precision medicine applications, including patient data imputation, counterfactual treatment effect estimation, and clinical trial simulation.
- Identify and address the challenges associated with deploying generative AI in healthcare, such as data privacy, model robustness, and ethical considerations.
- Evaluate the potential future directions and open problems in generative AI for healthcare and contribute to the ongoing research in this field

Materials and Supply Fees

N/A

Required Textbooks

No textbook is required, as the course notes are developed by the instructor. However, the following article is required throughout the course:

Shokrollahi, Y., Yarmohammadtoosky, S., Nikahd, M. M., Dong, P., Li, X., & Gu, L. (2023). A comprehensive review of generative AI in healthcare. arXiv preprint arXiv:2310.00795.

Required Software

The following software environment and tools will be used in this course:

HiPerGator: HiPerGator is the University of Florida's supercomputer. Students will develop and train their deep learning models on HiPerGator. For more information:

<https://www.rc.ufl.edu/about/hipergator/>.

TensorFlow: TensorFlow is an open-source software library developed by Google for training and inference of deep neural networks. For more information: <https://www.tensorflow.org>.

PyTorch: PyTorch is an open-source machine learning library based on Torch, used for applications such as computer vision and natural language processing, primarily developed by Facebook's AI Research lab. It provides a platform for building and training deep neural networks with GPU acceleration. For more information: <https://pytorch.org>.

scikit-learn: scikit-learn is a free software machine learning library for the Python programming language. It features various classification, regression, and clustering algorithms, including support vector machines, random forests, gradient boosting, k-means, and DBSCAN, and is designed to interoperate with the Python numerical and scientific libraries NumPy and SciPy. For more information: <https://scikit-learn.org>.

Weekly Schedule

Week 1: Introduction to Generative AI

- Generative vs. discriminative models

- Overview of major generative modeling approaches
- Applications of generative AI in medicine

Readings:

- * Goodfellow, I. (2016). NIPS 2016 tutorial: Generative adversarial networks. arXiv preprint arXiv:1701.00160. (Required)
 - * Foster, D. (2019). Generative deep learning: Teaching machines to paint, write, compose, and play. O'Reilly Media, Inc. (Chapters 1-2)
 - * Kalota, F. (2024). A primer on generative artificial intelligence. Education Sciences, 14(2), 172. <https://doi.org/10.3390/educsci14020172>
-

Week 2: Fundamentals of Generative Adversarial Networks (GANs)

- Generator and discriminator networks
- Adversarial loss functions
- Conditional GANs

Readings:

- * Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., ... & Bengio, Y. (2014). Generative adversarial nets. Advances in Neural Information Processing Systems, 27. https://papers.nips.cc/paper_files/paper/2014/file/5ca3e9b122f61f8f06494c97b1afccf3-Paper.pdf (Required)
 - * Mirza, M., & Osindero, S. (2014). Conditional generative adversarial nets. arXiv preprint arXiv:1411.1784.
-

Week 3: Variational Autoencoders (VAEs)

- Encoder and decoder networks
- Latent space representations
- Generative process using VAEs

Readings:

- * Kingma, D. P., & Welling, M. (2013). Auto-encoding variational bayes. arXiv preprint arXiv:1312.6114. (Recommended)
 - * Doersch, C. (2016). Tutorial on variational autoencoders. arXiv preprint arXiv:1606.05908. (Recommended)
-

Week 4: Diffusion Models

- Denoising diffusion probabilistic models
- Latent diffusion models
- Guided generation with classifier-free guidance

Readings:

- * Ho, J., Jain, A., & Abbeel, P. (2020). Denoising diffusion probabilistic models. Advances in Neural Information Processing Systems, 33, 6840-6851. (Recommended)

* Ho, J., Carlini, N., Kumar, A., Liu, S., Kang, M., Kim, J., ... & Liang, P. (2024). An overview of diffusion models: Applications, guided generation, statistical rates and optimization. arXiv preprint arXiv:2404.07771. (Recommended)

Week 5: Prompt Engineering - Part 1

- In-context learning and few-shot prompting
- Chain-of-thought prompting
- Prompt tuning and optimization

Readings:

* Sahoo, P., Mishra, S., Agarwal, S., & Mohanty, M. N. (2024). A systematic survey of prompt engineering in large language models: Techniques and applications. arXiv preprint arXiv:2402.07927. (Required)

* Brown, T., Mann, B., Ryder, N., Subbiah, M., Kaplan, J. D., Dhariwal, P., ... & Amodei, D. (2020). Language models are few-shot learners. *Advances in Neural Information Processing Systems*, 33, 1877-1901. (Recommended)

* Wei, J., Tay, Y., Bommasani, R., Raffel, C., Zoph, B., Borgeaud, S., ... & Kaplan, J. (2022). Chain of thought prompting elicits reasoning in large language models. arXiv preprint arXiv:2201.11903. (Recommended)

Week 6: Prompt Engineering - Part 2

- Knowledge grounded generation
- Instruction tuning and constitutional AI
- Prompt decomposition and iterative refinement
- Evaluation metrics for prompt-based models

Readings:

* Liu, X., Zheng, Y., Du, Z., Ding, M., Qian, Y., Yang, Z., & Tang, J. (2022). Instruction tuning with GPT-4. arXiv preprint arXiv:2304.03277. (Recommended)

* Komeili, M., Shuster, K., & Weston, J. (2022). Internet-augmented dialogue generation. arXiv preprint arXiv:2107.07566. (Recommended)

Week 7: Retrieval Augmented Generation

- Enhancing AI responses with retrieval techniques
- Applications in medical literature and data
- Semantic search and information retrieval for medicine
- Integrating knowledge bases and structured data

Readings:

* Zhao, P., Gao, L., & Zhang, Z. (2024). Retrieval-augmented generation for AI-generated content: A survey. arXiv preprint arXiv:2402.19473. (Required)

* Lewis, P., Perez, E., Piktus, A., Petroni, F., Karpukhin, V., Goyal, N., ... & Kiela, D. (2020). Retrieval-augmented generation for knowledge-intensive nlp tasks. *Advances in Neural Information Processing Systems*, 33, 9459-9474. (Recommended)

* Karpukhin, V., Oguz, B., Min, S., Lewis, P., Wu, L., Edunov, S., ... & Yih, W. T. (2020). Dense passage retrieval for open-domain question answering. *arXiv preprint arXiv:2004.04906*. (Recommended)

Week 8: Generative Models for Clinical Text - Part 1

- EHR note summarization
- Medical dialogue summarization
- Ambient clinical intelligence

Readings:

* Zhang, Y., Ding, N., & Soricut, R. (2020). Optimizing the factual correctness of a summary: A study of summarizing radiology reports. *arXiv preprint arXiv:1911.02541*. (Required)

* Krishna, K., Khosla, S., Bigham, J. P., & Lipton, Z. C. (2021). Generating medical reports from patient-doctor conversations using sequence-to-sequence models. *arXiv preprint arXiv:2109.12174*. (Recommended)

Week 9: Generative Models for Clinical Text - Part 2

- Open-ended medical question answering
- Closed-book vs. open-book QA
- Multi-document summarization for evidence synthesis
- Generative models for clinical reasoning and explanation

Readings:

* Yang, Z., Zhang, J., Zhang, Y., & Yu, B. (2024). ClinicalMamba: A generative clinical language model on longitudinal clinical notes. *arXiv preprint arXiv:2403.05795*. (Required)

* Pho, K., Yabukoshi, A., Huang, S. C., Jiang, S., Liu, J., & Callahan, A. (2022). Clinically-grounded evidence synthesis with health knowledge bases. *arXiv preprint arXiv:2210.14554*. (Recommended)

* Shwartz-Ziv, R., & Tishby, N. (2017). Opening the black box of deep neural networks via information. *arXiv preprint arXiv:1703.00810*. (Recommended)

Week 10: Clinical Decision Support Systems

- AI applications in diagnosis and treatment planning
- Real-world examples and case studies
- Clinical triage and risk stratification
- Human-AI collaboration in clinical workflows

Readings:

* Yim, D., Khuntia, J., Parameswaran, V., & Meyers, A. (2024). Preliminary evidence of the use of generative AI in health care clinical services: Systematic narrative review. *JMIR Medical Informatics*, 12, e52073. (Required)

* Rajkomar, A., Dean, J., & Kohane, I. (2019). Machine learning in medicine. *New England Journal of Medicine*, 380(14), 1347-1358. (Required)

Week 11: Generative Models for Drug Discovery

- De novo molecular design
- Scaffold-based drug design
- Protein structure generation

Readings:

* Ghebrehiwet, I., Zaki, N., Damseh, R., Sammouda, R., & El-Hajj, M. (2024). Revolutionizing personalized medicine with generative AI: A systematic review. *Artificial Intelligence Review*, 57, 128. <https://doi.org/10.1007/s10462-024-10768-5> (Required)

* García-Alcaraz, J. L., Sánchez-Ramírez, C., Díaz-Reza, J. R., Avelar-Sosa, L., & Puig-i-Vidal, R. (2023). Trends on decision support systems: A bibliometric review. In J. A. Zapata-Cortes, C. Sánchez-Ramírez, G. Alor-Hernández, & J. L. García-Alcaraz (Eds.), *Handbook on Decision Making* (pp. 143-167). Springer, Cham. https://doi.org/10.1007/978-3-031-08246-7_8

Week 12: Generative Models for Precision Medicine

- Patient data imputation and augmentation
- Counterfactual treatment effect estimation
- Clinical trial simulation

Readings:

* Allen, B. (2024). The promise of explainable AI in digital health for precision medicine: A systematic review. *Journal of Personalized Medicine*, 14(3), 277. <https://doi.org/10.3390/jpm14030277>

* Yoon, J., Jordon, J., & van der Schaar, M. (2018). GAIN: Missing data imputation using generative adversarial nets. In *International Conference on Machine Learning* (pp. 5689-5698). PMLR. (Recommended)

Week 13: Deploying Generative AI in Healthcare - Part 1

- Data privacy and de-identification
- Synthetic data generation
- Model robustness and domain shift

Readings:

* Guan, J., Li, R., Yu, S., & Zhang, X. (2021). Generation and evaluation of artificial patient data. *npj Digital Medicine*, 4(1), 1-10. (Required)

* Kiyasseh, D., Tadesse, M. M., Lu, G., Gao, T., & Clifton, D. A. (2022). PriMIA: A platform for deploying securely trained AI systems in hospitals. *Nature Machine Intelligence*, 1-11.

Week 14: Deploying Generative AI in Healthcare - Part 2

- Human-AI interaction and trust
- Model interpretability and explanations
- Regulatory and ethical considerations

Readings:

- * Tonekaboni, S., Joshi, S., McCradden, M. D., & Goldenberg, A. (2019). What clinicians want: Contextualizing explainable machine learning for clinical end use. In Machine Learning for Healthcare Conference (pp. 359-380). PMLR. (Required)
 - * London, A. J. (2019). Artificial intelligence and black-box medical decisions: Accuracy versus explainability. Hastings Center Report, 49(1), 15-21.
-

Week 15: Future Directions and Challenges

- Open problems and research directions
- Composing generative models for complex tasks
- Sociotechnical implications of generative AI in medicine

Readings:

- * Mantas, J., Hasman, A., Gallos, P., & Kolokathi, A. (2022). Bioethical challenges of generative AI in healthcare. In IFIP International Conference on Artificial Intelligence Applications and Innovations (pp. 61-71). Springer, Cham. (Required)
 - * Chen, M., Agarwal, S., Langlotz, C. P., & Zou, J. (2023). Generative AI in healthcare: Opportunities, challenges, and clinical implications. arXiv preprint arXiv:2305.04265.
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Attendance Policy, Class Expectations, and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies. <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Quizzes (4)	25 each	20%
Homework Sets (4)	25 each	40%
Final Project	100	40%
		100%

All students will propose and work on their own project independently from week 8 to week 15. Each student will be evaluated based on the project report and the oral presentation. The distribution of points is as follows.

Project Report	Problem Statement (10 points)	Rigor of Approach (30 points)	Writing Quality (10 points)
Oral Presentation	Problem Statement (10 pints)	Rigor of Approach (30 points)	Presentation Skills (10 points)

Grading Policy

Grade Scale	Grade Value
100-93 = A	A = 4.0
92-90 = A-	A- = 3.67
89-86 = B+	B+ = 3.33
85-82 = B	B = 3.00
81-79 = B-	B- = 2.67
78-76 = C+	C+ = 2.33
75-72 = C	C = 2.00
71-69 = C-	C- = 1.67
68-66 = D+	D+ = 1.33
65-62 = D	D = 1.00
61-60 = D-	D- = 0.67
59-0 = E	E = 0.00

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)

[Grades and Grading Policies](#)

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator

- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.htm>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352-392-1575 so that a team member can reach out to the student.

- Counseling and Wellness Center: <https://counseling.ufl.edu> and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
- Sexual Assault Recovery Services (SARS)
- Student Health Care Center, 392-1161.
- University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>

Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu>
- Library Support, <http://cms.uflib.ufl.edu/ask> Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help with brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>

Student Complaints:

On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

On-Line Students: <https://distance.ufl.edu/state-authorization-status/#student-complaint>

Course|New for request 20000

Info

Request: CAI 6XXXX Clinical AI Design Studio I

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:25:59 PM

Form version: 8

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:

None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Clinical AI Design Studio I

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Clinical AI Design Studio I

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i> <i>planned</i> to be delivered.**

Response:

On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:

No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Summer

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
Yes

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Supervision of Student Interns

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Independent Study

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week <i>on average </i>throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
Clinical AI Design Studio I offers an immersive learning experience for students interested in the intersection of artificial intelligence (AI) and clinical practice. Throughout the semester, students will participate in rotations, spending time working in various faculty members' labs or clinical domains.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:
N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Fundamentals of AI in Medicine I (course request 19996)[C] & Fundamentals of AI in Medicine II (course request 19997)[C] & AI Design Studio I (course request 19998)[C] & AI Design Studio II (course request 19999)[C]

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, “MAC 2311(B)” indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Throughout the semester, students will participate in rotations, spending time working in various faculty members' labs or clinical domains. These rotations provide a unique opportunity to delve into various research domains and acquire valuable insights into ongoing clinical AI initiatives. Additionally, they provide hands-on experience and real-world exposure, informing and inspiring the implementation of AI innovations within clinical settings. Students will not only observe but may actively contribute to the work happening in these labs, acquiring practical skills related to AI development, data analysis, and clinical problem-solving. As such, this is an intermediate course that requires students to have the relevant facility with AI tools. At the end of the course, students will decide who they want as their clinical advisor, informed by their experiences during rotations and their alignment with specific research interests. They will join the selected clinical advisor for Clinical AI Design Studio II for a more in-depth experience.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The primary goal of this course is to provide students with exposure to clinical environments and allow them to observe routine clinical workflows. Armed with this understanding, students will be better prepared to tackle real-world AI problems. Throughout the course, students will gain insights into relevant clinical challenges and obstacles, as well as envision potential AI-based solutions.

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

None. This course is designed to be a practical, hands-on experience that spans a variety of clinical specialties, offering students the opportunity to actively participate and apply their knowledge in real-world settings. While there is no mandatory reading assigned, it is anticipated that students will fully immerse themselves and participate with enthusiasm throughout their clinical rotations. Active engagement is crucial for the acquisition of skills and knowledge, and students are encouraged to take initiative, ask questions, and seek out learning opportunities as they navigate through the diverse areas of clinical practice.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

N/A - Dependent on lab or clinical setting

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Upon completion of every clinical rotation, the students will be expected to deliver a 10-minute presentation to the PI and lab of each rotation. This presentation is expected to encapsulate the fundamental clinical principles of the specific subspecialty at hand, as well as identify promising opportunities for the integration of AI to enhance both clinical care and the efficiency of clinical workflows. It should also reflect on the student's personal learning experience, emphasizing the newfound understanding and perspectives on the role of AI in healthcare, as informed by their direct clinical encounters.

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Josh Wong - Department of Neurology, College of Medicine
Samir Shah - Department of Surgery, College of Medicine
Brandon Zielinski - Department of Pediatrics, College of Medicine
To be determined
Josh Wong - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#)*

It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• *<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>*

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• *Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.*

Response:
Yes

Clinical AI Design Studio I

Course director

Name: Joshua Wong, MD

Email address: Joshua.wong@neurology.ufl.edu

Office phone number: (352) 294-5400

Course Description

Clinical AI Design Studio I offers an immersive learning experience for students interested in the intersection of artificial intelligence (AI) and clinical practice. Throughout the semester, students will participate in rotations, spending time working in various faculty members' labs or clinical domains. These rotations provide a unique opportunity to delve into various research domains and acquire valuable insights into ongoing clinical AI initiatives. Additionally, they provide hands-on experience and real-world exposure, informing and inspiring the implementation of AI innovations within clinical settings. Students will not only observe but may actively contribute to the work happening in these labs, acquiring practical skills related to AI development, data analysis, and clinical problem-solving. The course emphasizes understanding the clinical context, allowing students to apply AI technologies to real-world healthcare challenges. At the end of the course, students will decide who they want as their clinical advisor, informed by their experiences during rotations and their alignment with specific research interests. They will join the selected clinical advisor for **Clinical AI Design Studio II** for a more in-depth experience.

Course objectives

The primary goal of this course is to provide students with exposure to clinical environments and allow them to observe routine clinical workflows. Armed with this understanding, students will be better prepared to tackle real-world AI problems. Throughout the course, students will gain insights into relevant clinical challenges and obstacles, as well as envision potential AI-based solutions.

Course blocks

Each rotation through 4 course blocks will be 4 weeks. The students will be able to select from a pool of core faculty for each block, however the rotations are subject to PI lab availability.

The core faculty are as follows:

Joshua Wong, MD

Samir Shah, MD

Mohammad Al-Ani, MD

Brandon Zielinski, MD PhD

Reza Forghani, MD, PhD

Tyler Loftus, MD

Azra Bihorac, MD

Faheem Guirgis, MD

Below are sample blocks for the course:

Joshua Wong MD	Samir Shah MD	Mohammad Al-Ani MD	Brandon Zielinski MD PhD
Movement Disorders Neurology	Vascular Surgery	Cardiovascular medicine	Pediatric Neurology

Reza Forghani MD, PhD	Tyler Loftus MD	Azra Bihorac MD	Faheem Guirgis MD
Neuroradiology	Trauma Surgery	Critical care medicine	Emergency medicine

Required textbooks

None. This course is designed to be a practical, hands-on experience that spans a variety of clinical specialties, offering students the opportunity to actively participate and apply their knowledge in real-world settings. While there is no mandatory reading assigned, it is anticipated that students will fully immerse themselves and participate with enthusiasm throughout their clinical rotations. Active engagement is crucial for the acquisition of skills and knowledge, and students are encouraged to take initiative, ask questions, and seek out learning opportunities as they navigate through the diverse areas of clinical practice.

Evaluation

Upon completion of every clinical rotation, the students will be expected to deliver a 10-minute presentation to the PI and lab of each rotation. This presentation is expected to encapsulate the fundamental clinical principles of the specific subspecialty at hand, as well as identify promising opportunities for the integration of AI to enhance both clinical care and the efficiency of clinical workflows. It should also reflect on the student's personal learning experience, emphasizing the newfound understanding and perspectives on the role of AI in healthcare, as informed by their direct clinical encounters.

Grading scheme

Grade Scale	Grade Value
100-93 = A	A = 4.0
92-90 = A-	A- = 3.67

89-86 = B+	B+ = 3.33
85-82 = B	B = 3.00
81-79 = B-	B- = 2.67
78-76 = C+	C+ = 2.33
75-72 = C	C = 2.00
71-69 = C-	C- = 1.67
68-66 = D+	D+ = 1.33
65-62 = D	D = 1.00
61-60 = D-	D- = 0.67
59-0 = E	E = 0.00

Rationale and placement in curriculum

Insert text here

Materials and Supplies Fee

None

Course Policies

Attendance

It is mandatory for students to attend all clinical rotations. The daily schedule for these rotations will be provided by the PI of each lab. Please note that the schedule may differ from one rotation to another, reflecting the unique requirements and activities planned for each clinical experience.

Online Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. This class supports the needs of different learners; it is important for students to share their accommodation letter with their instructor and discuss their access needs as early as possible in the semester. Please do not hesitate to me during the semester if you have any individual concerns or issues that need to be discussed.

The Disability Resource Center (<https://disability.ufl.edu/> 352-392-8565) helps to provide an accessible learning environment for all by providing support services and facilitating accommodations, which may vary from course to course. Once registered with DRC, students will receive an accommodation letter that must be presented to the instructor as early as possible in the semester when requesting accommodations.

Counseling and Wellness Center

UF provides counseling and other kinds of help for students in distress. You can call the on-campus Counseling and Wellness Center at **352-392-1575** and see their website at <https://counseling.ufl.edu/>.

The "U Matter, We Care" program provides resources for everyone in the UF community. See the website at umatter.ufl.edu/. Students can contact umatter@ufl.edu seven days a week for assistance for students in distress. There is also a phone number for this program: **(352) 294-CARE**.

Course|New for request 20017

Info

Request: CAI 6XXX Clinical AI Design Studio II

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS).

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:28:29 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Clinical AI Design Studio II

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Clinical AI Design Studio II

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:
On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Fall

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
Yes

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Directed Individual Studies

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Independent Study

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week <i>on average </i>throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
Clinical AI Design Studio II offers a unique, extended engagement with a faculty advisor, building upon the foundational experiences from Clinical AI Design Studio I. Students will delve into the specialized clinical domain of their advisor, gaining firsthand insights into the intricacies of patient care and medical decision-making processes.

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite. Please verify that any prerequisite courses listed are active courses.

Response:

Fundamentals of AI in Medicine I (course request 19996)[C] & Fundamentals of AI in Medicine II (course request 19997)[C] & AI Design Studio I (course request 19998)[C] & AI Design Studio II (course request 19999)[C] & Clinical AI Design Studio I

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, “MAC 2311(B)” indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

``

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course offers a unique, extended engagement with a faculty advisor, building upon the foundational experiences from Clinical AI Design Studio I. Because students will integrate into their advisor’s research lab, contributing to a significant research project, they need to have experience developing, validating, and implementing AI tools for biomedical or clinical contexts.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The primary objectives of this course are as follows:

- Develop a deep understanding of a specific clinical subspecialty through direct exposure and mentorship.
- Gain practical experience in conducting research within a clinical AI lab environment.
- Master the art of translating clinical problems into AI-driven solutions.
- Learn the methodologies for designing, executing, and deploying AI models that can impact clinical outcomes.

Course Textbook(s) and/or Other Assigned Reading

Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks.

Response:

None. This course is designed to be a practical, hands-on experience that spans a variety of clinical specialties, offering students the opportunity to actively participate and apply their knowledge in real-world settings. While there is no mandatory reading assigned, it is anticipated that students will fully immerse themselves and participate with enthusiasm throughout their clinical rotation

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

N/A - dependent on biomedical or clinical setting

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

As part of Clinical AI Design Studio II, students will engage in the scholarly process by preparing and submitting an abstract for consideration at a scholarly conference. This abstract will encapsulate the research findings and insights gained throughout the course. Additionally, students will create a poster to visually communicate their project, which they will prepare for presentation at a conference setting, be it local, regional, or national.

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Reza Forghani - Department of Radiology, College of Medicine
Faheem Guirgis - Department of Emergency Medicine, College of Medicine
Azra Bihorac - Department of Medicine, College of Medicine
To be determined
Josh Wong - course director

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

Clinical AI Design Studio II

Course director

Name: Joshua Wong, MD

Email address: Joshua.wong@neurology.ufl.edu

Office phone number: (352) 294-5400

Course Description

Students will embark on an immersive journey into the world of clinical artificial intelligence with **Clinical AI Design Studio II**. This course offers a unique, extended engagement with a faculty advisor, building upon the foundational experiences from **Clinical AI Design Studio I**. Students will delve into the specialized clinical domain of their advisor, gaining firsthand insights into the intricacies of patient care and medical decision-making processes.

Throughout the term, students will integrate into their advisor's research lab, contributing to a significant research project. This hands-on experience is designed to enhance students' understanding of the clinical application of AI technologies. They will acquire and refine critical skills in project conceptualization, robust study design, effective study execution, and the strategic deployment of AI models within a real-world clinical setting.

The course structure is tailored to foster a collaborative learning environment, with a blend of mentor-guided research, interdisciplinary teamwork, and independent study. Students will participate in regular lab meetings, engage in critical discussions on current AI research, and receive personalized mentorship to guide their project development.

Course objectives

The primary objectives of this course are as follows:

- Develop a deep understanding of a specific clinical subspecialty through direct exposure and mentorship.
- Gain practical experience in conducting research within a clinical AI lab environment.
- Master the art of translating clinical problems into AI-driven solutions.
- Learn the methodologies for designing, executing, and deploying AI models that can impact clinical outcomes.

Course schedule

This is a 16-week long course, with the option for students to continue their research beyond the official course timeline, subject to faculty approval. It is important to note that daily schedules are personalized and will be determined by the respective faculty advisor, reflecting the dynamic nature of clinical research and patient care.

After completing **Clinical AI Design Studio I**, the students will apply to join a faculty advisor's lab for **Clinical AI Design Studio II**.

The core faculty are as follows:

Joshua Wong, MD

Samir Shah, MD

Mohammad Al-Ani, MD
Brandon Zielinski, MD PhD
Reza Forghani, MD, PhD
Tyler Loftus, MD
Azra Bihorac, MD
Faheem Guirgis, MD

Required textbooks

None. This course is designed to be a practical, hands-on experience that spans a variety of clinical specialties, offering students the opportunity to actively participate and apply their knowledge in real-world settings. While there is no mandatory reading assigned, it is anticipated that students will fully immerse themselves and participate with enthusiasm throughout their clinical rotation.

Evaluation

As part of **Clinical AI Design Studio II**, students will engage in the scholarly process by preparing and submitting an abstract for consideration at a scholarly conference. This abstract will encapsulate the research findings and insights gained throughout the course. Additionally, students will create a poster to visually communicate their project, which they will prepare for presentation at a conference setting, be it local, regional, or national.

This process is not only a requirement for course completion but also serves as a valuable opportunity for students to practice and refine their scientific communication skills. They will receive guidance on how to effectively summarize their research, design a compelling poster, and present their work confidently to an audience of peers and experts in the field.

By participating in these activities, students will not only gain recognition for their work but also contribute to the ongoing dialogue in the field of clinical AI, fostering academic growth and potential collaborations.

Examples of acceptable conferences include: UF College of Medicine's Celebration of Research, College of Medicine departmental research days, and the UF AI4Health conference.

Grading scheme

Grade Scale	Grade Value
100-93 = A	A = 4.0
92-90 = A-	A- = 3.67
89-86 = B+	B+ = 3.33
85-82 = B	B = 3.00

81-79 = B-	B- = 2.67
78-76 = C+	C+ = 2.33
75-72 = C	C = 2.00
71-69 = C-	C- = 1.67
68-66 = D+	D+ = 1.33
65-62 = D	D = 1.00
61-60 = D-	D- = 0.67
59-0 = E	E = 0.00

Rationale and placement in curriculum

Insert text here

Materials and Supplies Fee

None

Course Policies

Attendance

Laboratory attendance is mandatory for students. The daily schedule for this rotation will be provided by the PI of each lab. Please note that the schedule may differ from one rotation to another, reflecting the unique requirements and activities planned for each clinical experience.

Online Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. This class supports the needs of different learners; it is important for students to share their accommodation letter with their instructor and discuss their access needs as early as possible in the semester. Please do not hesitate to me during the semester if you have any individual concerns or issues that need to be discussed.

The Disability Resource Center (<https://disability.ufl.edu/> 352-392-8565) helps to provide an accessible learning environment for all by providing support services and facilitating accommodations, which may vary from course to course. Once registered with DRC, students will receive an accommodation letter that must be presented to the instructor as early as possible in the semester when requesting accommodations.

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The "U Matter, We Care" program provides resources for everyone in the UF community. See the website at umatter.ufl.edu/. Students can contact umatter@ufl.edu seven days a week for assistance for students in distress. There is also a phone number for this program: **(352) 294-CARE**.

Course|New for request 20021

Info

Request: CAI 6XXX Supervised Research in AI for Health

Description of request: This is a new course request for the recently proposed new MS program, Artificial Intelligence in Biomedical and Health Sciences (AIBHS)

Submitter: Elizabeth Palmer eanpalmer@ufl.edu

Created: 5/16/2024 3:31:55 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
CAI

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Supervised Research in AI for Health

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Supervised Research

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:

On-Campus, Online

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:

No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Fall

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
Yes

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
Yes

Multiple Offerings in a Single Semester

Can this course be taken by a student multiple times in the same semester?

Response:
No

If repeatable, # total repeatable credit allowed

Indicate the maximum number of total repeatable credits allowed per student.

Response:
6

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:

Variable

If variable, # min

Response:

1

If variable, # max

Response:

6

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:

No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:

Supervision of Teaching/Research

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:

Supervised Research (6910)

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:

3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:

Students will work with their technical and clinical advisors to design, develop, and complete an agreed-upon substantive project. Students may take this course in order to advance their research interests, to complete a capstone project, or to complete a Master's Thesis.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

N/A

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

Clinical AI Design Studio I (course request 20000)[C] & Clinical AI Design Studio II (course request 20017)[C]

Completing Prerequisites:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

• Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.

• Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

This is an advanced course designed to give students the opportunity to conduct further research beyond that required for the M.S.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

By the end of this course, students will:

- Develop a deeper understanding of AI applications in the selected biomedical or clinical domain.
- Refine research skills, including the ability to formulate research questions, design rigorous studies, collect and analyze data, and draw valid conclusions.
- Identify areas in biomedical research or clinical care that could be improved by AI.
- Design, develop, and validate AI methodologies to accelerate biomedical research or to improve clinical care
- Enhance their communication skills, both written and oral, to effectively present their ideas, arguments, and research findings to diverse audiences.
- Cultivate problem-solving skills, applying theoretical knowledge to real-world challenges and proposing innovative solutions

Course Textbook(s) and/or Other Assigned Reading

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks. *

Response:

N/A. Readings will be determined in consultation with the student's advisor and based on the project

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

TBD with faculty. Students will meet regularly with their advisors.

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

Successful completion of this course requires students to complete a rigorous substantive project, such as a paper suitable in scope and quality to be presented at a conference, a passable capstone project, or a passable Master's Thesis.

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:
to be determined

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:
Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is required to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

CAI 6XXX – Supervised Research in AI for Health

Course Description

Students will work with their technical and clinical advisors to design, develop, and complete an agreed-upon substantive project. Students may take this course in order to advance their research interests, to complete a capstone project, or to complete a Master's Thesis.

Course objectives

By the end of this course, students will:

- Develop a deeper understanding of AI applications in the selected biomedical or clinical domain.
- Refine research skills, including the ability to formulate research questions, design rigorous studies, collect and analyze data, and draw valid conclusions.
- Identify areas in biomedical research or clinical care that could be improved by AI.
- Design, develop, and validate AI methodologies to accelerate biomedical research or to improve clinical care
- Enhance their communication skills, both written and oral, to effectively present their ideas, arguments, and research findings to diverse audiences.
- Cultivate problem-solving skills, applying theoretical knowledge to real-world challenges and proposing innovative solutions

Prereqs

AI Design Studios and Clinical AI Design Studios or permission of instructor

Course schedule

TBD with faculty. Students will meet regularly with their advisors.

Required textbooks

None. Readings will be determined in consultation with the student's advisor and based on the project.

Evaluation

Successful completion of this course requires students to complete a rigorous substantive project, such as a paper suitable in scope and quality to be presented at a conference, a passable capstone project, or a passable Master's Thesis.

Grading scheme

Course|New for request 19963

Info

Request: DCP 6XXX Green Building Strategies

Description of request: Requesting a graduate level for an existing undergraduate course, DCP4214.

Submitter: Bahar Armaghani barmagh@ufl.edu

Created: 5/2/2024 10:12:47 PM

Form version: 2

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
DCP

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
C

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:
Green Building Strategies

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:
Green BLDG Strategies

Degree Type

Select the type of degree program for which this course is intended.

Response:
Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:
On-Campus

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:
Yes

Co-Listing Explanation

Please detail how coursework differs for undergraduate, graduate, and/or professional students. Additionally, please upload a copy of both the undergraduate and graduate syllabus to the request in .pdf format. It is recommended that a Course Differentiation document be provided for review and approval purposes. Please see the example below.

• Differentiation of Co-Listed Courses - Example

 For more information please see the [Co-Listed Graduate Undergraduate Courses Policy](#).

Response:

Please see syllabus that includes below per page for the graduate level.

In addition to the undergraduate tasks, the following is included in the graduate syllabus and required for the graduate students, and it is shown in italic and bold.

- Under "Course Information": (page 1 of 20, in italic and highlighted in gray)", Students are required to demonstrate Project Management competencies and application of advanced analytical skills as it relates to implementation of LEED certification for Building Design, Construction and Major Renovation, and Building Operation and Maintenance projects. In this syllabus, graduate students' deliverables are delineated in italics and highlighted in light gray.

- Under grading table for final presentation (page 5 of 20) "For graduate students this will include a mixed methods analysis report of findings."

- Under module 9, Commissioning and Renewable Energy, (page 15 of 20), Students to complete an in-depth the Collaboratory energy modeling output, renewable energy assessment, needs, installation, cost, and Return on Investment (ROI) for Photovoltaic installation.

- Under Module 15, final presentation, (page 18 of 20), Graduate students will be required to complete an in-depth report on the implementation of one of the following:

? LEED Rating System Analysis:

One LEED Category based on the project documentation used. This report will include the following components:

- In depth gap analysis for achieving LEED Certification for one category (ex. Energy)
- Proposed implementation plan based on current state conditions (cost considerations, proposed phasing, return on investment)
- Inferential analysis of one LEED Category (e.g., Energy, Water, Materials, etc.)

In addition, each team will present a pitch to the class/attendees on why "LEED Building Standards" using 3MT presentation approach and guidelines. UF 3MT resources.

? DOE Building Science application to the built environment, identify opportunities, challenges, and make recommendations for UF projects to get to Zero Energy buildings.

- In depth analysis of the building science application and integration into the class project
- Identify strategies and technologies to be applied to Collaboratory to get to net zero energy.

- Analyze UF's standards and identify strategies and technologies to be used to apply to all UF projects to get to net zero.

- Identify challenges and make recommendations for campus projects to get to net zero.

In addition, each team will present a pitch to the class/attendees on why "Net Zero energy Buildings" using 3MT presentation approach and guidelines. UF 3MT resources.

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:

Spring

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
2025

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
6

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
10

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
This is an interactive multidisciplinary course, in which students are introduced to green strategies and technologies for the design, construction and operation of high-performance buildings. The course is designed to equip students with the skills and knowledge needed to be effective communicators, critical thinkers, project managers, problem solvers, and team players. Students learn the Department of Energy Zero Design and prepare to earn LEED credentials.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:
None

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.

Response:

Listed prerequisite course is an active course, DCP3210, or completed another course in the topic area and approved by the instructor.

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

The undergraduate course, DCP4214, Green Building Strategy offered in DCP, since 2014, and it is very popular course. Since establishing the master's degree, Master of Integrated Sustainable Development (M.I.S.D.), that is an interdisciplinary and STEM master's degree, the first cohort started fall of 2023, the M.I.S.D. students are interested in this course to gain the skills, tools, and credentials needed in the industry. We believe, it will add value to the M.I.S.D. curriculum and give students another option for their electives. Specifically professional and international students are interested in this course. In addition, our SBE 4+1 students are interested in this grade level course too.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

Learning Objectives

This course's objectives are to accelerate students' learning and leadership in the green building industry. The objectives emphasize project planning, design, construction, and operations.

Students will:

- Compare and contrast different green building rating systems and apply LEED™ V4 to a building design and construction.
- Describe the strategies used to design Net-Zero energy building including types of energy, renewable energy, building envelope, HVAC, lighting, and plug load.
- Assess the application of LEED™ V4 strategies and technologies to the project's site, location and transportation, water and energy conservation, material use, and Indoor Environmental Quality (IEQ).
- Apply the skills and tools needed in today's green building industry including Energy Star Portfolio Manager, Energy Star Target Finder, energy modeling, Arc, LEED™ V4 online,

The Final Presentation rubric is based on a composite score of student performance on two criteria which includes Quality of overall submission and the final (pitch a Shark Tank style), (20 points); Quality of graphic, visual communication, and delivering the pitch (10 points).

Please see detailed for grading on the syllabus.

Assignment

Individual; reading, 15%

Individual, discussion, 15%

Team, PowerPoint 15%

Quizzes, Individual, 30%

Attendance, 5%

Final Presentation 20%

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Bahar Armaghani

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

**DCP6xxx | Class xxxxx | Section xxxx | 6 Credits
Green Building Strategies (LEED Lab)
|Fall 2024|**

Instructor:	Bahar Armaghani LEED Fellow WELL Faculty Director & Instructional Associate Professor Program in Sustainability and the Built Environment (SBE) College of Design, Construction, and Planning (DCP) University of Florida
Office Correspondence:	352.294.1428 Canvas email (preferred) barmagh@ufl.edu (alternative)
Course Time & Location:	Tuesdays Period 6-8 12:50 – 3:50 Architecture Building, Room 411 Thursdays Period 6-8 12:50 – 3:50 Architecture Building, Room 411
Course Co/Prerequisite:	DCP3210 (or) another course in the topic area and approved by the instructor
Office hours:	Tuesdays 8:30-10:30 am Thursdays 8:30-10:30 am Or By appointment Architecture Building, Room 446
Course Website:	https://ufl.instructure.com/courses/508164 for modules, announcements, assignments, discussions, lecture slides, readings, quizzes, and grades
Graduate students	<i>Graduate students are required to demonstrate Project Management competencies and application of advanced analytical skills as it relates to implementation of LEED certification for Building Design, Construction and Major Renovation, and Building Operation and Maintenance projects. In this syllabus, graduate students' deliverables are delineated in italics in the Final Project description and highlighted in light gray.</i>

Strategies to Design and Build High Performance Sustainable Buildings

As Part of UF’s commitment to sustainability in operation, teaching, and research, since 2003, UF integrated sustainability into the development, planning, design, construction, and operations of its buildings on & off campus. UF has been using Leadership in Energy and Environmental Design (LEED™) as a framework to design, build, and operate green for over two decades. In this course, a campus building/project is selected for class project, this semester LEED™ V4 for New Construction and Major Renovation will be applied to the DCP Collaboratory project. An introduction to the [Department of Energy Zero Energy Buildings design](#) approach, benefits, and needs integrated into the course to think beyond LEED application to the built environment.

Class project, UF-653- DCP Collaboratory



Course Description

This is an interactive multidisciplinary course, in which students are introduced to green strategies and technologies for the design, construction and operation of high-performance buildings. The course is designed to equip students with the skills and knowledge needed to be effective communicators, critical thinkers, project managers, problem solvers, and team players. Students learn the strategies for greening new construction and the need to continue through operation with applying green building rating systems principles and framework of Leadership in Energy and Environmental Design (LEED™). Students will understand the alignment of the [United Nations Sustainable Development Goals \(UN SDGs\)](#) with green building strategies. This semester, **UF-653- DCP Collaboratory project/building** is used for the class project and hands-on learning. Successful course completion can prepare the student for LEED™ V4 Green Associate (GA) and Accredited Professional (AP) credential exams.

In addition, this semester the course integrated the [Department of Energy Zero Energy Buildings design](#) strategies that addresses building science principles that are paramount to the successful design of high-performance, energy-efficient buildings to prepare the students for net-zero emission economy by 2050 and trigger them think beyond LEED.

Learning Objectives

This course's objectives are to accelerate students' learning and leadership in the green building industry. The objectives emphasize project planning, design, construction, and operations. Students will:

- Compare and contrast different green building rating systems and apply LEED™ V4 to a building design and construction.
- Describe the strategies used to design Net-Zero energy building including types of energy, renewable energy, building envelope, HVAC, lighting, and plug load.
- Assess the application of LEED™ V4 strategies and technologies to the project's site, location and transportation, water and energy conservation, material use, and Indoor Environmental Quality (IEQ).
- Apply the skills and tools needed in today's green building industry including Energy Star Portfolio Manager, Energy Star Target Finder, energy modeling, Arc, LEED™ V4 online, Ecomedes, metering utility and analysis, and HelioScope.
- Analyze LEED project from inception to post occupancy.
- Prepare students for LEED™ V4 Green Associate (GA) and LEED™ V4 Accredited Professional (AP) credential exams.

Student Learning Outcomes (SLO)

Upon completion of this course, students will be able to:

- Acquire the knowledge, skills, tools, and confidence needed to optimize the built environment and to thrive in the green building industry.
- Apply Net Zero energy building standards that will lead to net zero emission economy.
- Formulate and deliver high quality verbal and written communication.
- Earn LEED credentials.
- Value the worth of teamwork and each team member's contribution to the success of the project.

Required Text/Reading:

- No textbook required, but below links from USGBC, UN, and DOE are integrated into the course
- <https://www.usgbc.org/guide/bdc> , <https://www.usgbc.org/leed> , <https://www.usgbc.org/leed/why-leed>, [LEED Crosswalks](#),
- [LEED V4.1 information](#)
- [United Nations, Sustainable Development Goals \(UN SDGs\)](#).
- <https://www.solardecathlon.gov/building-science.html>

- Weekly readings posted under each module on Canvas e- Learning portal, <https://ufl.instructure.com/courses/508164>
- Students expected to complete readings and watch videos assigned as advance preparation for class discussion.

Course Format

Approach: The course approaches a real project setting, using an on-campus building/project. This semester the class is using [UF-653, DCP Collaboratory](#) .

Delivery Method: Lectures, discussions, field trips on campus to LEED certified building, hands on learning, guest speakers, working in teams, presentations, and quizzes.

Guest Speakers

For every module, a professionals/ subject matter expert(s) in the industry and research will present to the class to reinforce the importance of learning skills in that topic and give the students a networking opportunity with industry leaders. See modules.

Paperless Activities and Assignments:

E-learning on Canvas will be the central location for all course communication, discussion, announcements, submitted assignments, papers/projects/videos, quizzes, and presentation material.

Students are responsible for:

- Checking e-learning on Canvas for the material and presentations that will be covered weekly.
- Setting up and checking Canvas messaging to receive class announcements from e-learning.
- Submitting electronic assignments/papers/presentations/videos through Canvas.

Class Attendance and Make-Up Policy

- Attendance is required. Only excused absences can be made up. Excused absences include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, and professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competitions or debates. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) are excused. Absences must be properly documented.
- See UF's requirements for class attendance and make-up exams, assignments, and other work in this course is consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>
- Students may miss up to the equivalent number of class periods as the course credits (e.g., 3 credits = 3 periods @ 50 minutes/each in Spring/Fall) without penalty and with no need for an excuse. Beyond those "waived" absences, students must provide a valid, and properly documented, excuse.

Class Project

This semester, the class will be working on DCP Collaboratory, a new building/project on campus. The class is divided into four teams. Each team will present their part at the final presentation. However, each team will work on all aspects of the project from start to finish during the semester. Each team will have a team manager rotating bi-weekly overseeing the team's weekly deliverables completion and submission on time, lead discussion and weekly reflection within the team, and finalize the weekly presentation.

Each team will develop a PowerPoint presentation at the end of each module with integrated UN SDGs related to the module topic and net zero energy buildings, this will become a cumulative presentation for the end of the semester. The intent of the weekly presentation is reflection on what the student learned.

Each team will present a shortened presentation from the final cumulative presentation to reflect on the semester that includes the approach, strategies, tools, skills, and technologies learned to optimize DCP Collaboratory project and the potential and recommendations for taking this project to net zero energy building.

Final Project/Teams' Presentation: Team Delivery, each team to include and identify [UN SDGs](#) that relate to the team's topic and its application to the class project and make recommendation for UF buildings and campus. In addition, the Energy team to include the strategies to take the project to net zero energy building. Here are the four teams.

- **Energy Efficiency team:** Present strategies and technologies for net zero energy building including types of energy, envelope, HVAC system, lighting, plug load, commissioning, and tools & skills needed. In addition, complete Energy & Atmosphere credits submission with backup documentation. Prepare the final presentation to the client and include LEED v4.1 substitution and the [SDGs](#) related to the class project.
- **Indoor Environmental Quality and Sustainable Site team;** Present strategies and technologies used for the site management including landscape, rainwater, heat island, lighting, and the IEQ including approach, tools, and skills needed. In addition, complete IEQ and Site credits submission with backup documentation. Prepare final presentation to the client and include LEED v4.1 substitution and the [SDGs](#) related to the class project.
- **Water Efficiency and Transportation team;** Present on strategies and technologies used for water efficiency inside and outside the building and transportation including tools, approach, and skills needed. Also, complete Water Efficiency and Transportation submission with backup documentation. Prepare final presentation to the client and include any LEED v4.1 substitution and report of the [SDGs](#) related to the class project.
- **Material & Resources, Innovation and Regional Priority team;** Present strategies and technologies used for material selection, approach, skills, and tools needed. Also, complete Material and Resources credits submission with backup documentation. Prepare final presentation to the client and include LEED v4.1 substitution and report of the [SDGs](#) related to the class project.

Team/Project Manager's responsibilities:

- Lead the discussion in the breakout sessions that covers LEED, net-zero energy and SDGs
- Ensure the weekly PowerPoint presentation is completed for each module and submitted on time.
- Manage and update the LEED checklist, credits, and prerequisites documents and upload them to Canvas.

Assignments and Grading

Assignment details, deliverables, due dates, and grades are published on Canvas and may be subject to change.

<i>Grading Category</i>	<i>Additional Details</i>	<i>Points</i>
Attendance	Required. Two points related to attending the SBE GBLC on October 17, 2024	5
Readings (Individual)	Readings, and checklist assessment (points vary) (0-15) • Weekly & Module-Based	15
Discussion (Individual)	Discussions (points vary) (0-15) • Weekly & Module-Based	15
Presentations (Team)	PowerPoint presentation (points vary) (0-15) • Weekly & Module-Based	15
Exams	• Mid-term (15) • Final (15)	30
Final Project	Final Class Presentation including UN SDGs and Net-Zero Energy Building. <i>Graduate students include a mixed methods analysis report of findings.</i>	20
Total		100

Grade and Grading Policy:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Numeric Grade	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59
Quality Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0

Final student grades will follow University of Florida grades and grading policies.

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> .

- Undergraduate Students: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Expectations

- Be Present. This will allow you to get the most out of class time as well as for your classmates to get the most out of their collaborations with you.
- Students attend class prepared for active participation and discussion. A quality learning experience in this course relies heavily on interaction and exchange of ideas related to the sustainable built environment.
- Students should plan to bring their computers to every class for coursework.
- Put your cell phone away unless you are actively using it to further the class activities.
- Be prepared. The readings and videos have been carefully chosen to support the class activities.
- Listen carefully and do not interrupt others.
- Give quality feedback. What constitutes “quality” will be discussed in class.
- Respect the opinions of others, even when you do not agree.
- Keep an open mind; embrace the opportunity to learn something new.
- Avoid monopolizing the discussion. Give others a chance to contribute and be heard.
- Do not be afraid to revise your ideas as you gather more information.
- Try to look at issues from more than one perspective.
- Respect others by learning and using the name and pronoun they prefer.
- Do not use offensive language.

Follow UF Netiquette – Communication Courtesy:

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. Please refer to:

<http://biostat.ufl.edu/resources/e-learning-resources/e-learning-basics/etiquette-online/> (Links to an external site.)

Other Resources

- USGBC Resources, <https://www.usgbc.org/resources>
- Calculators, <https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D>
- Certification, <https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D>
- LEED Checklists, <https://www.usgbc.org/resources/checklist-leed-v4-building-design-and-construction>
- Standards, <https://www.usgbc.org/resources?LEED+Resources=%5B%22Standards%22%5D>
- Tools, <https://www.usgbc.org/resources?Education+Resources=%5B%22Toolkit%22%5D>
- LEED case studies, <https://www.usgbc.org/resources?Education+Resources=%5B%22LEED+Case+Studies%22%5D>
- LEED candidate's handbook, <https://www.usgbc.org/resources?Credentialing+resources=%5B%22Candidate+Handbooks%22%5D>
- LEED GA exam, <https://www.usgbc.org/articles/prepare-your-leed-green-associate-exam>
- https://www.usgbc.org/sites/default/files/LEED%20v4%20BDC_07.25.19_current.pdf
- GSA, <https://sftool.gov/>
- Making tight envelope, https://www.buildinggreen.com/sites/default/files/ebn/TBGR_26-08.pdf
- BuildingGreen, Homepage, *UF membership access* | <https://www.buildinggreen.com/>
Knowledge Base | <https://www.buildinggreen.com/knowledge-base>
Product Guidance | <https://www.buildinggreen.com/product-guidance>
- Green Building Advisor, Homepage | <https://www.greenbuildingadvisor.com/>
Green Basics | <https://www.greenbuildingadvisor.com/green-basics>
- My Florida Home Energy, Homepage | <http://www.myfloridahomeenergy.com/>
Find Help | <http://www.myfloridahomeenergy.com/help/>
- U.S. Green Building Council, *UF membership access* | www.usgbc.org
- LEED User, *UF membership access* | www.leeduser.buildinggreen.com
- Zero Energy Home Ready program, <https://www.energy.gov/eere/buildings/zero-energy-ready-home-program>
- Office of Energy Efficiency & Renewable Energy, <https://www.energy.gov/eere/office-energy-efficiency-renewable-energy>
- U.S. Department of Energy, Building science education Series, <https://www.solardecathlon.gov/building-science.html>
- U.S. Department of Energy, Solar Decathlon, <https://www.solardecathlon.gov/education-resources.html>

See Canvas for Additional Course Information

Additional information about the course is available on Canvas, including instructional methods, tips for success, personal conduct policies, mobile communications, computing policies, and more.

Course Modules

General course module main topics and sub-topics are summarized below. Course modules and topical content including readings, assignments, discussions, PowerPoints, and final project are explained within Canvas and may be subject to change. In Canvas, each module is organized per date what is expected from the students before the class, during the class, and after the class. All links to readings, tools, and resources listed on Canvas and all assignments are linked within each module for easy access.

Below is a summary of the course. Again, On Canvas, each module is developed with details including module learning objectives and SLOs, what to do before, during and after class, readings, assignments, discussions, quizzes, weekly presentations, weekly guest speakers, and final project with rubrics.

Weekly Class Schedule

Date	Topics
Module 0: Course Overview	
TH, 8/22	<ul style="list-style-type: none"> - Welcome & Introduction - Review syllabus, course resources, UF resources and policies - Review use of Canvas, course files, material, and paperless approach - Review green building rating systems including: <ul style="list-style-type: none"> • Green Glob • BREAM • ASHRAE 189 • Living Building Challenge • International Green Construction Code (IGCC) • Florida Green Building Coalition (FGBC) • WELL Building Standards <ul style="list-style-type: none"> ○ International WELL Building Institute (IWBI) ○ WELL V2 checklist
	<ul style="list-style-type: none"> - UF campus sustainability overview and status <ul style="list-style-type: none"> • 99 + LEED certified Buildings on campus • UF Office of Sustainability - Introduction to United Nations Sustainable Development Goals, UN SDGs - UN SDGs 2021 report; global, US, and other regions of the world - US State Sustainable Development Report 2021 - DOE Building Science Education Series - U.S. Department of Energy, Solar Decathlon, https://www.solardecathlon.gov/education-resources.html <p>Teams</p> <ul style="list-style-type: none"> - Divide the class into teams <ul style="list-style-type: none"> • Identify project team managers (rotating every 2 weeks), members, roles & responsibilities, semester schedule for each team by the team and post it on team's Canvas page • Navigate GATORCLOUD, use it as a free resource

Module 1: Introduction to Green Building/LEED & Net-Zero Energy Buildings

<p>T, 8/27</p>	<p>➤ Instructor’s presentation on the module</p> <p>Reading:</p> <ul style="list-style-type: none"> - Introduction to LEED rating system and Green Buildings <ul style="list-style-type: none"> • U.S. Green Building Council (USGBC) • Green Business Certificate Inc. (GBCI) • DOE Building Science Education Series - Introduction to alignment within the rating systems and main resources: <ul style="list-style-type: none"> • Leadership in Energy and Environmental Design (LEEDV4) <ul style="list-style-type: none"> ○ Its application to the built environment ○ https://www.usgbc.org/search ○ LEED V4, LEED V4 checklist
	<ul style="list-style-type: none"> ○ LEED V4.1 • UN SDGs • WELL Building Standards and LEED and UN SDGs • LEED™ v4.0 and WELL v2 crosswalk tool (Equivalent or Aligned), • WELLv2 crosswalk in general • LEED User, https://leeduser.buildinggreen.com/uf • GSA, General Services Administration, sustainability and building decarbonization • Building Green, https://www.buildinggreen.com/ <p>Establish USGBC Account, https://www.usgbc.org/registration/create-user</p>
<p>TH, 8/29</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews and discuss the module topics - Each team develops a PowerPoint presentation summarizing the module and the intent of the rating systems, DOE programs, and UN SDGs.
<p><i>Guest Speaker: UF Climate Action Plan Coordinator</i></p>	
<p><i>Assignment #1, reading summary (individual assignment)</i></p> <p><i>Assignment #1, discussion on Canvas (individual assignment)</i></p> <p><i>Assignment #1, PowerPoint presentation summarizing the module (team assignment)</i></p>	

Module 2: Introduction to the class project

<p>T, 9/3</p>	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Reading links on Canvas:</p> <ul style="list-style-type: none"> - Introduction to DCP Collaboratory, class project <ul style="list-style-type: none"> • Review project program development, Owner’s Project Requirement (OPR), and Basis of Design (BOD) • Building drawings; Civil, Landscape, architectural and MEP and specification -How to start a LEED project <ul style="list-style-type: none"> • Identify key strategies the project team should consider to project goals • Integrative process and Design Charrette • Getting Started • Rating system selection • Assess LEED™ V4.0 checklist and identify substitution credits with LEED™ V4.1 and the class project including: <ul style="list-style-type: none"> • Calculate occupancy, Full time equivalent (FTE), parttime, transient, and peak occupancy • Establish LEED boundary, use Google Earth or ArcGIS • Assess Minimum Program Requirements (MPR) and Pre-requisites • Introduction to LEED online • Register LEED project - Review DOE Net-Zero components and application to the project <p>Tools:</p> <ul style="list-style-type: none"> • ArcGIS or Google Earth • LEEDuser • LEED v4.0 • LEED V4.1 • LEEDonline.com • DOE Building Science
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Guest Speaker: PDC Construction Sustainability Coordinator

<p>TH, 9/5</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements - Review LEED v4 checklist for the class project - How to develop backup documentations - Each team develops a PowerPoint presentation summarizing the module, identify the project elements and application of LEED, DOE Net-Zero and related SDGs
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Assignment #2, reading summary (individual assignment)
Assignment #2, discussion on Canvas module (individual assignment)
Assignment #2, PowerPoint presentation summarizing the module (team assignment)

Module 3: Location and Transportation (L&T)

<p>T, 9/10</p>	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Reading links on Canvas:</p> <ul style="list-style-type: none"> - Location & Transportation overview - Strategies used for the site selection, density, and transportation options - Neighborhood Development Location, parking, and pedestrian access - Green Vehicles - Building Civil drawings and specification - Complete requirements for L&T <p>Tools:</p> <ul style="list-style-type: none"> - ArcGIS or Google Earth - Walk Score - LEEDuser - Arc - LEED v4.0 reference guide for L&T assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
<p><i>Guest Speaker: Collaboratory Architect/Designer</i></p>	
<p>TH, 9/12</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify and discuss key strategies the project team should consider meeting requirements for L&T - Review LEED v4 checklist, L&T for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
<p><i>Assignment #3, reading summary (individual assignment)</i> <i>Assignment #3, discussion on Canvas module (individual assignment)</i> <i>Assignment #3, PowerPoint presentation summarizing the module (team assignment)</i></p>	

Module 4: Sustainable Site (SS) Approach

T, 9/17	<p>➤ Instructor's presentation on the module</p> <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Site assessment, development, and open spaces - Landscape - Green roof - Rainwater management - Heat island effect - Outdoor light pollution - Building Civil and landscape drawings and specification - Complete requirements for SS <p>Tools:</p> <ul style="list-style-type: none"> - ArcGIS or Google Earth - LEEDuser - LEED v4.0 reference guide for SS assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
Guest Speaker: Collaboratory Landscape Architect/Designer	
TH, 9/19	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify and discuss key strategies the project team should consider meeting requirements for SS - Review LEED v4 checklist, SS for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
<p>Assignment #4, reading summary on Canvas module and heat island effect reduction calculation (individual assignment)</p> <p>Assignment #4, discussion on Canvas module (individual assignment)</p> <p>Assignment #4, PowerPoint presentation summarizing the module (team assignment)</p>	

Module 5: Water Efficiency (WE) strategies

T, 9/24	<p>➤ Instructor's presentation on the module</p> <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Water conservation overview - Indoor and outdoor water conservation strategies and technologies - Water use assessment, reduce demand, apply strategies to decrease consumption - Net zero water - Building MEP drawings and specification (Plumbing only) - Complete requirements for WE <p>Tools:</p> <ul style="list-style-type: none"> - Indoor water use reduction calculator
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	<ul style="list-style-type: none"> - Outdoor water use reductio calculator - Ecomedes - LEEDuser - Arc - LEED v4.0 reference guide and checklist for WE assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
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Guest Speaker: Ecomedes

TH, 9/26	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify and discuss key strategies the project team should consider meeting requirements for WE - Review LEED v4 checklist, WE for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
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Assignment #5, reading summary on Canvas module and Indoor & out water use reduction calculations and Ecomedes with ROI example for one flow and one flush fixture (individual assignment)

Assignment #5, discussion on Canvas module (individual assignment)

Assignment #5, PowerPoint presentation summarizing the module (team assignment)

Module 6: Energy & Atmosphere (EA), Building Systems, and Net Zero Energy

T, 10/1	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Energy conservation overview - Energy efficiency and conservation strategies - Energy modeling, ASHRAE 90.1 - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 1: Building and Energy - Building MEP drawings and specification (mechanical and lighting only) - Complete requirements for EA <p>Tools:</p> <ul style="list-style-type: none"> - Energy Star Portfolio Manager - LEEDuser - Arc - LEED v4.0 reference guide and checklist for EA assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
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Guest Speaker: Collaboratory, Energy modeling	
TH, 10/3	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module Introduction to the zero energy Buildings <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 2: Zero Energy Buildings In class breakout session: <ul style="list-style-type: none"> - Each team reviews the module topics - Review DOE building and energy - Identify and discuss key strategies the project team should consider for energy conservation - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
	<p><i>Assignment #6, complete Energy Star Portfolio Manager for the class project (individual assignment)</i></p> <p><i>Assignment #6, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #6, PowerPoint presentation summarizing the module (team assignment)</i></p>

Mid-term exam, October 4, 2024

Module 7: Building Systems and Commissioning

T, 10/8	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module Reading links on Canvas module: Introduction to the zero energy Buildings <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 3: Building Envelop - Building envelopes design and specification. - Building envelopes commissioning - Building architecture drawings - Complete requirements for EA Tools: <ul style="list-style-type: none"> - Energy Star Target Finder - LEEDuser - LEED v4.0 - LEED V4.1 - LEEDonline.com
TH, 10/10	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module Introduction to the zero energy Buildings <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 4: HVAC Systems - HVAC drawing and specification

	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for optimized building HVAC - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
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Guest Speaker: Branch Pattern, Decarbonization

	<p><i>Assignment #7, complete Energy Star Target Finder for the class project (individual assignment)</i></p> <p><i>Assignment #7, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #7, PowerPoint presentation summarizing the module (team assignment)</i></p>
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Module 8: Building Systems and Commissioning (Cont.)

T, 10/15	<p>➤ Instructor’s presentation on the module</p> <p>Reading links on Canvas module:</p> <p>Introduction to Net- Zero Energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 5: Lighting Systems - Lighting design and specification inside and outside - Lighting audit and commissioning - Building MEP drawings and specification (mechanical and lighting only) - Complete requirements for EA <p>Tools:</p> <ul style="list-style-type: none"> - Energy Star Portfolio Manager - LEEDuser - LEED v4.0 reference guide and checklist for EA assessment - LEED V4.1 - LEEDonline.com
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Guest Speaker: Collaboratory Contractor

TH, 10/17	<p>➤ Instructor’s presentation on the module</p> <p>Introduction to the zero energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 6: Plug and Process Load - Building plug load review and specification - Review energy modeling for plug load <p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for plug load - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
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Assignment #8, assessment and calculations for lighting results from Ecomedes (individual assignment)
Assignment #8, discussion on Canvas module (individual assignment)
Assignment #8, PowerPoint presentation summarizing the module (team assignment)



Green Building Learning Collaborative (GBLC) program & Reception is highly recommended for this course and is scheduled for Thursday, **October 17, 2024, at 4:30-6:30 pm** at the Gallery at the [Architecture building](#).

Module 9: Commissioning and Renewable Energy

T, 10/22

- **Instructor’s presentation on the module Reading links on Canvas module:**
- Introduction to the zero energy Buildings**
 - DOE Building Science Education
 - [Module 8: Renewable Energy and Net Zero Energy Building](#)
 - Renewable energy types, PV for the project
 - Review drawings and specification for renewable energy for class project
 - Renewable energy and commissioning
 - Building MEP drawings and specification
 - **Complete requirements for EA**
- Tools:**
 - [HelioScope](#)
 - [LEEDuser](#)
 - [LEED v4.0](#) reference guide
 - [LEED V4.1](#)
 - [LEEDonline.com](#)

Guest Speaker: Renewable energy, Moss

TH, 10/24

- In class breakout session:**
- Each team reviews the module topics
 - Identify key strategies the project team should consider for the class project based on the project goals
 - Review [LEED v4 checklist](#), EA for the class project
 - Develop backup documentations for credits attempted
 - **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #9, HelioScope design with ROI for class project (individual assignment)
Assignment #9, discussion on Canvas module (individual assignment)
Assignment #9, PowerPoint presentation summarizing the module (team assignment)

Students to complete an in-depth the Collaboratory energy modeling output, renewable energy assessment, needs, installation, cost, and Return on Investment (ROI) for Photovoltaic installation.

Module 10: Materials and Resources (MR)

<p>T, 10/29</p>	<p>➤ Instructor’s presentation on the module</p> <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Material use overview. - Material specification considering post and pre consumer contact, EPD and HPD
	<ul style="list-style-type: none"> - Construction and demolition waste management planning - Design for deconstruction - Material life cycle - Complete requirements for MR <p>Tools:</p> <ul style="list-style-type: none"> - Material Calculator - LEEDuser - LEED v4.0 reference guide - LEED V4.1 - LEEDonline.com
	<p>Guest Speaker: Siemens, ESCO</p>
<p>TH, 10/31</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for the class project based on the project goals - Review LEED v4 checklist, MR for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
	<p><i>Assignment #10, Develop construction waste management plan (individual assignment)</i></p> <p><i>Assignment #10, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #10, PowerPoint presentation summarizing the module (team assignment)</i></p>

Module 11: Indoor Environmental Quality (IEQ)

T, 11/5

➤ **Instructor’s presentation on the module**

Reading links on Canvas module:

- Strategies for healthy building
- ASHREA 62.1, ventilation
- ASHREA 55, thermal comfort
- Acoustic, daylight, views
- Low emitting materials
- Air quality management during construction
- Building MEP drawings (mechanical)
- **Complete requirements for IEQ**

Tools:

- [LEEDuser](#)
- [Arc](#)
- [LEED v4.0](#) reference guide and checklist for IEQ assessment
- [LEEDonline.com](#)
- Canvas team page for organizing the backup documentation for IEQ

Guest Speaker: Commissioning Envelop, MEP

TH,11/7

In class breakout session:

- Each team reviews the module topics
- Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements
- Review LEED v4 checklist, IEQ for the class project
- Develop backup documentations for credits attempted
- **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #11, Develop IEQ plan during construction (individual assignment)

Assignment #11, discussion on Canvas module (individual assignment)

Assignment #11, PowerPoint presentation summarizing the module (team assignment)

Module 12: Innovation and Regional Priority (RP)

T, 11/12

➤ **Instructor’s presentation on the module**

Reading links on Canvas module:

- Strategies for innovative approach
- Pilot credits
- Exemplary performance
- **Complete requirements for Innovation and RP**

LEED project field trip, Malachowsky Hall for Data Science & Information Technology

TH, 11/14

In class breakout session:

- Each team reviews the module topics
- Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements
- Review LEED v4 checklist, Innovation and RP for the class project
- Develop backup documentations for credits attempted
- **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned. Reflection on the semester

Module 13: LEED Exam Review

T, 11/19

Reading links on Canvas module:

- Review GA exam registration
- Prepare for LEED GA Exam
- LEED v4 Green Associate Candidate Handbook
- Guide to the LEED Green Associate V4 Exam from UF Library
- Continuing education for credential maintenance
- Practice samples of the 100 questions for the LEED GA exam

In class breakout session:

- Each team reviews the module topics
- Identify key strategies to prepare for the LEED GA exam
- Practice LEED GA exam registration

Review DOE Building Science Education Series

- [Module 7, Additional/Optional Resources](#)

Module 14: Review class project

TH, 11/21

Each team reviews:

- The module topics
- Reflect on the LEED process for the class project and application Net Zero Energy Building
- Review the tools used
- Review the skills learned
- Review the LEED project administration process
- [Crosswalk LEED and synergies](#)
- Review UN SDGs applied
- Review [DOE Net Zero Energy Building](#)
- Each team review the semester long cumulative presentation and drive a simplified presentation for the final presentation **w/o the details and step by step credits approach**

In class breakout session:

- Each team reviews the final presentation
- Each team list the tools and skills learned
- **Practice the final presentation**

Final exam, November 22, 2024

Module 15: Final presentation

T, 12/3

The final presentation to the Building Owner, occupants, and other campus stakeholders. This presentation is a simplified version of the semester long weekly cumulative PowerPoint (simplified to address each category's approaches, strategies, technologies, Net-Zero Building, and UN SDGs. In addition, each team makes a case on why use "LEED Building Standards and pursue Net Zero Energy Building".

Graduate students will be required to complete an in-depth report on the implementation of one of the following:

➤ *LEED Rating System Analysis:*

One LEED Category based on the project documentation used. This report will include the following components:

- *In depth gap analysis for achieving LEED Certification for one category (ex. Energy)*
- *Proposed implementation plan based on current state conditions (cost considerations, proposed phasing, return on investment)*
- *Inferential analysis of one LEED Category (e.g., Energy, Water, Materials, etc.)*

In addition, each team will present a pitch to the class/attendees on why “LEED Building Standards” using 3MT presentation approach and guidelines. [UF 3MT resources.](#)

- *DOE Building Science application to the built environment, identify opportunities, challenges, and make recommendations for UF projects to get to Zero Energy buildings.*
- In depth analysis of the building science application and integration into the class project
 - Identify strategies and technologies to be applied to Collaboratory to get to net zero energy.
 - Analyze UF’s standards and identify strategies and technologies to be used to apply to all UF projects to get to net zero.
 - Identify challenges and make recommendations for campus projects to get to net zero.

In addition, each team will present a pitch to the class/attendees on why “Net Zero energy Buildings” using 3MT presentation approach and guidelines. [UF 3MT resources.](#)

Getting Help

Health and Wellness

[U Matter, We Care:](#)

If you or a friend is in distress, please contact umatter@ufl.edu / or 352 392-1575, a team member will reach out to the student.

[Counseling and Wellness Center:](#) 392-1575; and the

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <https://police.ufl.edu/>

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu, <https://elearning.ufl.edu/>

Other Campus Resources

[Career Resource Center,](#) Reitz Union, 392-1601. Career assistance and counseling.
<http://www.crc.ufl.edu/>

[Library Support,](#) <http://cms.uflib.ufl.edu/ask/>. Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center,](#) Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<http://teachingcenter.ufl.edu/>

[Writing Studio,](#) 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<http://writing.ufl.edu/writing-studio/>

University Policies

Online course evaluation

Students expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/students/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-resuL&Ts/>.

Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Disability Resource Center (DRC). The DRC coordinates the needed accommodations for students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues.

Upon registering, the DRC will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking quizzes or exams. Accommodation is not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations. Contact DRC at 352-392-8565, or viewing, www.dso.ufl.edu/drc/.

Student Honor Code and Academic Honesty

UF students are bound by The Honor Pledge, which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions.

Software Use:

All faculty, staff and students at the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. As such, violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Religious Observances:

Please inform the instructor of any religious holidays or other days of special religious significance that may interfere with your participation in this class so that appropriate accommodation can be provided.

Sexual Harassment:

Sexual harassment is reprehensible and will not be tolerated by the University. It subverts our academic mission and threatens the careers, educational experience, and well-being of students, faculty, and staff. The University will not tolerate behavior between, nor among, members of this community that creates an unacceptable working environment.

Course|New for request 20038

Info

Request: MMC 6XXX Computational Methods for Media Research

Description of request: Proposal for new graduate course in computational methods. Includes hands-on and relevant literature in this emerging area.

Submitter: Jennifer Goodman rgoodman@jou.ufl.edu

Created: 5/21/2024 4:34:44 PM

Form version: 1

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:
MMC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:
6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:
xxx

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:
None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Computational Methods for Media Research

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Media Computational Methods

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i> <i>planned</i> to be delivered.**

Response:

On-Campus

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:

No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Lecture

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
Computational methods for media research is an introductory and project-oriented course with an emphasis on data collection and computational methods. Students learn how to conduct social research using digital trace data (broadly defined as data collected through digital means) and computational methods (including but not limited to text analysis and social network analysis). Includes hands-on practice.

Co-requisites

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:

n/a

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.

Response:
graduate student status

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2### or greater, FAS2### or greater, BOT2### or greater, PCB2### or greater, BCH2### or greater, ZOO2### or greater, MCB 2### or greater, CHM 2### or greater, PHY 2### or greater, or STA 2### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:
Technology and communications is one of the largest growth areas in our field in the past two decades, and computational social science is an exciting, emerging field that also offers a wide range of research tools. Courses such as this provide students with theoretical and methodological understanding to engage with and research "new" media, AI, programming, and technology from a communication perspective.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

- Response:
1. Collect digital trace data from the webs
 2. Become familiar with computational methods and tools to analyze the data
 3. Construct and execute basic programs in R
 4. Use techniques to effectively visualize information
 5. Understand the advantages and limitations of digital data

Health. 2020; 17(3):864. <https://doi.org/10.3390/ijerph17030864>

Hopp, T., Ferrucci, P., & Vargo, C.J. (2020). Why Do People Share Ideologically Extreme, False, and Misleading Content on Social Media? A Self-Report and Trace Data-Based Analysis of Countermedia Content Dissemination on Facebook and Twitter. *Human Communication Research*, 46, 357-384.

Shin, J. (2020). How Do Partisans Consume News on Social Media? A Comparison of Self-Reports With Digital Trace Measures Among Twitter Users. *Social Media + Society*, 6(4). <https://doi.org/10.1177/2056305120981039>

Stier, S., Breuer, J., Siegers, P., & Thorson, K. (2020). Integrating Survey Data and Digital Trace Data: Key Issues in Developing an Emerging Field. *Social Science Computer Review*, 38(5), 503-516. <https://doi.org/10.1177/0894439319843669>

Munger, K. Tweetment Effects on the Tweeted: Experimentally Reducing Racist Harassment. *Polit Behav* 39, 629–649 (2017). <https://doi.org/10.1007/s11109-016-9373-5>

Gary King, Benjamin Schneer, and Ariel White. 11/10/2017. "How the news media activate public expression and influence national agendas." *Science*, 358, Pp. 776-780. Publisher's Version Copy at <https://tinyurl.com/y8qzebpx>

Timothy R. Hannigan, Richard F. J. Haans, Keyvan Vakili, Hovig Tchalian, Vern L. Glaser, Milo Shaoqing Wang, Sarah Kaplan, and P. Devereaux Jennings, 2019: Topic Modeling in Management Research: Rendering New Theory from Textual Data. *ANNALS*, 13, 586–632, <https://doi.org/10.5465/annals.2017.0099>

Hyunjin Song, Jakob-Moritz Eberl, Olga Eisele, Less Fragmented Than We Thought? Toward Clarification of a Subdisciplinary Linkage in Communication Science, 2010–2019, *Journal of Communication*, Volume 70, Issue 3, June 2020, Pages 310–334, <https://doi.org/10.1093/joc/jqaa009>

Jacobi, C., van Atteveldt, W., & Welbers, K. (2016). Quantitative analysis of large amounts of journalistic texts using topic modelling. *Digital Journalism*, 4(1), 89–106. <https://doi.org/10.1080/21670811.2015.1093271>

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1 (Jan. 12) Module 0. Introduction
Week 2 (Jan. 19) Module 1. R programming
Week 3 (Jan. 26) Module 2. Volume data
Week 4 (Feb. 2)
Week 5 (Feb. 9) Module 4. Text data (part 1) t
Week 6 (Feb. 16) Module 5. Text data (part 2)
Week 7 (Feb. 23) Module 6. Survey: Merge of survey + digital trace data
Week 8 (Mar. 1) Module 7. Topic Modeling
Week 9 (Mar. 8) Module 8. Structural Topic Modeling
Week 10 (Mar. 22) Module 8. Network analysis (part 1) : Network size, centrality measures
Week 11 (Mar. 29) Module 9. Network analysis: Reciprocity, transitivity
Week 12 (Apr. 5) Presentation
Week 13 (Apr. 12) Presentation
Week 14 (Apr. 19)

Submit final paper

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

100-93 A; 92-90 A-; 89-87 B+; 86-84 B; 83-80 B-; 79-77 C+; 76-74 C; 73-70 C-; 69-67 D+; 66-64 D; 63-60 D-; 59 and below E

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Jieun Shin

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Response:

Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies.

Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy.

A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:

Yes

MMC6936 Computational Methods for Media Research

Spring 2024

Fridays 9:35 am – 12:15 pm

Professor: Jieun Shin

Email:

Office:

Office Hours:

Course Description

Computational social science is an exciting, emerging field that also offers a wide range of research tools. This course is an introductory and project-oriented course with an emphasis on data collection and computational methods. In this course, students will learn how to conduct social research using digital trace data (broadly defined as data collected through digital means) and computational methods (including but not limited to text analysis and social network analysis). Throughout the semester, students will practice translating their ideas into empirical research. Each week, students will have the opportunity to try their hands at analyzing data from a wide range of data sources. The goal is to help students identify datasets and apply proper methods to analyze their own data. We will be mainly using the R software environment for collecting, cleaning, and analyzing data. Previous experience with R is not assumed.

Course Goals

Upon successful completion of this course, students will be able to

1. Collect digital trace data from the webs
2. Become familiar with computational methods and tools to analyze the data
3. Construct and execute basic programs in R
4. Use techniques to effectively visualize information
5. Understand the advantages and limitations of digital data

Course Schedule

Schedule	Module	Assignment
Week 1 (Jan. 12)	Module 0. Introduction	-Download R -Download R studio

Week 2 (Jan. 19)	Module 1. R programming	-Lab1 : Vector, List, and Data frame
Week 3 (Jan. 26)	Module 2. Volume data	-Lab 2 : Counting values, Data manipulation
Week 4 (Feb. 2)	Module 3. API	-Lab 3 : Data collection through API
Week 5 (Feb. 9)	Module 4. Text data (part 1)	-Lab 3 : Pattern matching and String replacement
Week 6 (Feb. 16)	Module 5. Text data (part 2)	-Lab 4 : Sentiment analysis
Week 7 (Feb. 23)	Module 6. Survey	-Lab 6 : Merge of survey + digital trace data
Week 8 (Mar. 1)	Module 7. Topic Modeling	-Lab 7 : Topic modeling
Week 9 (Mar. 8)	Module 8. Structural Topic Modeling	-Lab8 : STM
Week 10 (Mar. 22)	Module 8. Network analysis (part 1)	-Lab9 : Network size, centrality measures
Week 11 (Mar. 29)	Module 9. Network analysis (part 2)	- Lab 10 : Reciprocity, transitivity
Week 12 (Apr. 5)	Presentation	No Lab
Week 13 (Apr. 12)	Presentation	No Lab
Week 14 (Apr. 19)	Final project	Submit the paper

Required Text

All required readings are in the Course Shell. There are no required textbooks.

Note.

1. Please ask class-related questions in the question forum, not in the “comments” section of an assignment. This way, you can share the answers with other fellow students.

2. For technical issues with Canvas, please contact E-learning technical support 352-392-4357 (select option 2) or e-mail Learningsupport@ufl.edu. <http://helpdesk.ufl.edu/>

GRADING

Area	Percent of Grade
10 Labs (5 % each)	50%
Final presentation	10%
Final paper	40%
Total	100%

Grading scale

100-93 A; 92-90 A-; 89-87 B+; 86-84 B; 83-80 B-; 79-77 C+; 76-74 C; 73-70 C-; 69-67 D+; 66-64 D; 63-60 D-; 59 and below E

Please see: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Labs (assignments)

All labs are due at the specified dates – usually due on Sunday by midnight. Any assignments turned in after the designated due date will receive a penalty (50 % of the available points within 24 hours after the due date). Assignments will not be accepted after 24 hours. Additionally, with respect to assignments and discussions, it is assumed that students will present them professionally. This means students will use proper grammar, word usage, spelling, and content organization. Academic honesty is expected on all assignments and discussions.

Final Presentation

Each student will present their project (in progress) for my feedback. Aim for a 30-minute PowerPoint presentation followed by a 10-minute Q&A session. The presentation should include the main research question and/or hypotheses, detailed methods, and major findings.

Final Project

As a part of the assigned work for this course, you are required to complete a research project of your own choosing on one or two methods covered in this course. The premise of the project must be closely related to some aspect of the course material but may explore an avenue that was left unaddressed in class. The final project report should be around 20 pages. Please submit your report by April 28.

The final report should include the following elements. Prepare your manuscript in APA style.

1. Literature review: This section should include the motivation and background of your project. Explain the context and why the problem matters. Why are they worth studying? What difference would knowing the answers make?
2. Methods: (A) Dataset- Describe the real, existing dataset that you used. (B) Data Analysis- Describe how you analyzed the data.
3. Results: Present and discuss your research results. Focus on the results that are most interesting, surprising, or important. Discuss the consequences or implications. Make sure to include tables, graphs, or figures.
4. Discussion: Interpret and describe the significance of your findings in light of what was already known about the research problem. Also, include the limitations of your approach.

OTHER CLASS POLICIES

Students with Special Needs: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.a.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.a.ufl.edu/public-results/>.

Academic Honesty: The University of Florida Honor Code applies to all activities associated with this class. UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and possible sanctions. You can review UF’s academic honesty guidelines in detail at: <https://www.dso.ufl.edu/sccr/seminars-modules/academic-integrity-module>

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence.

Attendance: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Recording lectures: Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.”

Campus Resources: Health and Wellness • U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student. • Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies. • Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161. • University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Course|New for request 20032

Info

Request: MMC 6XXX Human Machine Communication

Description of request: A new course on Human Machine Communication. HMC is an area of study that investigates the creation of meanings among humans and machines. It involves communication with digital interlocutors including embodied machine communicators, virtual/artificially intelligent agents, and technologically augmented persons, either in real or augmented environments. H

Submitter: Jennifer Goodman rgoodman@jou.ufl.edu

Created: 5/17/2024 12:04:17 PM

Form version: 1

Responses

Recommended Prefix

Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.

Response:

MMC

Course Level

Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

Response:

6

Course Number

Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.

Response:

XXX

Lab Code

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:

None

Category of Instruction

Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.

Response:

Intermediate

- 1000 level = *Introductory undergraduate*
- 2000 level = *Introductory undergraduate*
- 3000 level = *Intermediate undergraduate*
- 4000 level = *Advanced undergraduate*
- 5000 level = *Introductory graduate*
- 6000 level = *Intermediate graduate*
- 7000 level = *Advanced graduate*
- 4000/5000= *Joint undergraduate/graduate*
- 4000/6000= *Joint undergraduate/graduate*

**Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Committee)*

Course Title

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles. *

Response:

Human Machine Communication

Transcript Title

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).

Response:

Human Machine Communication

Degree Type

Select the type of degree program for which this course is intended.

Response:

Graduate

Delivery Method(s)

*Indicate all platforms through which the course is *<i>currently</i>* *<i>planned</i>* to be delivered.*

Response:

On-Campus

Co-Listing

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:

No

Effective Term

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:
Earliest Available

Effective Year

Select the requested year that the course will first be offered. See preceding item for further information.

Response:
Earliest Available

Rotating Topic

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:
No

Repeatable Credit?

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:
No

Amount of Credit

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:
3

S/U Only?

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:
No

Contact Type

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Clinical Instruction [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

Course Type

Please select the type of course being created. These categories are required by the Florida Board of Governors.

Response:
Seminar

Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week *on average* throughout the duration of the course.

Response:
3

Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines. Please do not start the description with "This course.."

Response:
Human-machine communication is an area of study that investigates the creation of meanings among humans and machines. It involves communication with digital interlocutors including embodied machine communicators, virtual/artificially intelligent agents, and technologically augmented persons, either in real or augmented environments.

Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Undergraduate courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.

Response:
Graduate standing

Completing Prerequisites:

- Use “&” and “or” to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- “Permission of department” is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example:

- Prereq published language: BSC 2010/2010L & BSC 2011/2011L & two additional Science or Math classes.
- Prereq logic enforced for registration: BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L and (two additional Science or Math courses = any courses that are BSC 2#### or greater, FAS2#### or greater, BOT2#### or greater, PCB2#### or greater, BCH2#### or greater, ZOO2#### or greater, MCB 2#### or greater, CHM 2#### or greater, PHY 2#### or greater, or STA 2#### or greater).

Rationale and Placement in Curriculum

Explain the rationale for offering the course and its place in the curriculum.

Response:

Technology, AI, and communications is one of the largest growth areas in our field in the past two decades. Courses such as this provide students with theoretical understanding to engage with and research emerging media and technology from a communication perspective.

Course Objectives

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

The objective of this course is to prepare students for advanced research on the social implications and psychological effects of human-machine communication. Deepen knowledge of how human machine interactions influence communication processes. Evaluate perspectives/theoretical frameworks in human machine communication. Develop original ideas about human machine communication.

Course Textbook(s) and/or Other Assigned Reading

Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. Please provide specific examples to evaluate the course and identify required textbooks.

Response:

Weekly Topics and Reading List:

Recommended Readings:

Guzman, A. L. (2018). Human-machine communication: Rethinking communication, technology,

and ourselves.

New York, NY: Peter Lang.

Guzman, A., McEwen, R., & Jones, S. (2023). *The Sage handbook of human-machine communication*. Thousand Oaks, CA: Sage.

Rogers, Y. (2012). *HCI theory: Classical, modern, and contemporary*. Morgan & Claypool.

Required Readings:

(*: Optional.)

Week 2: Conceptualizing Emerging Technologies

1. Lievrouw, L. A., & Livingstone, S. (2006). *Handbook of new media: Social shaping and consequences of ICTs*. London: Sage. pp. 1-32.
2. Manovich, L. (2001). *The language of new media*. MIT press. Chapter 1.
3. Marvin, C. (1997). *When old technologies were new*. Oxford University Press. Introduction.
4. Marvin, C. (1997). *When old technologies were new*. Oxford University Press. Chapter 2

Week 3: Conceptualizing Human-Machine Communication

1. Guzman, A. L. (2018). What is human-machine communication, anyway? In A. L. Guzman (Ed.). *Human-machine communication: Rethinking communication, technology, and ourselves*. New York, NY: Peter Lang.
2. Gunkel, D. J. (2012). Communication and artificial intelligence: Opportunities and challenges for the 21st century. *Communication+* 1, 1(1), 1-25.
3. Turkle, S. (2011). *Alive enough*. In *Alone together: Why we expect more from technology and less from each other*. Basic Books.

Week 4: Computers are Social Actors I

1. Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues*, 56(1), 81-103.
2. Fogg, B. J. (2002). *Computers as persuasive social actors*. In *Persuasive technology: Using computers to change what we think and do*. Morgan Kaufmann Publishers.
3. Nass, C. I., Lombard, M., Henriksen, L., & Steuer, J. (1995). Anthropocentrism and computers. *Behaviour & Information Technology*, 14(4), 229-238
4. *Xu, K. (2019). First encounter with robot Alpha: How individual differences interact with vocal and kinetic cues in users' social responses. *New Media & Society*, 21(11-12), 2522-2547.

Week 5: Computers are Social Actors II

1. Lombard, M., & Xu, K. (2021). Social responses to media technologies: The Media are Social Actors paradigm. *Human-Machine Communication*, 2, 29-55.
2. Gambino, A., Fox, J., & Ratan, R. A. (2020). Building a Stronger CASA: Extending the Computers Are Social Actors Paradigm. *Human-Machine Communication*, 1, 71-85.
3. Xu, K. & Liao, T. (2020). Explicating cues: A typology for understanding emerging media technologies. *Journal of Computer-Mediated Communication*, 25(1), 32-43.

Week 6: Conceptualizing Affordances

1. Norman, D. A. (1988). *The psychology of everyday things*. Basic Books. Chapter 2.
2. Norman, D. A. (1988). *The psychology of everyday things*. Basic Books. Chapter 5.
3. Gaver, W. W. (1991). Technology affordances. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 79-84). ACM.
4. Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating affordances: A conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, 22(1), 35-52.

Week 7: Machine Agency & Algorithms

1. Sundar, S. S., Jia, H., Waddell, T. F., & Huang, Y. (2015). Toward a theory of interactive media effects (TIME): Four models for explaining how interface features affect user psychology. In S. S. Sundar (Ed.), *Handbooks in communication and media. The handbook of the psychology of communication technology* (pp. 47–86). Wiley-Blackwell.
2. Sundar, S. S. (2020). Rise of machine agency: A framework for studying the psychology of human–AI interaction (HAI). *Journal of Computer-Mediated Communication*, 25(1), 74-88.
3. Hancock, J. T., Naaman, M., & Levy, K. (2020). AI-mediated communication: Definition, research agenda, and ethical considerations. *Journal of Computer-Mediated Communication*, 25(1), 89-100.
4. Gillespie, T. (2014). The relevance of algorithms. In T. Gillespie, P. Boczkowski, & K. Foot (Eds.), *Media technologies: Essays on communication, materiality, and society*, pp. 167-193. Cambridge, MA: MIT Press.
5. *Dehnert, M., & Mongeau, P. A. (2022). Persuasion in the Age of Artificial Intelligence (AI): Theories and Complications of AI-Based Persuasion. *Human Communication Research*, 48, 386-403.

Week 9: Science and Technology Studies

1. Pinch, T. J., & Bijker, W. E. (1987). The social construction of facts and artifacts: Or how the sociology of science and the sociology of technology might benefit each other. In W. E. Bijker, T. P. Hughes, & T. J. Pinch (Eds.), *The social construction of technological systems: New directions in the sociology and history of technology*, pp. 17-50. MIT Press.
2. Bijker, W.E. (1989). The Social Construction of Bakelite: Toward a Theory of Invention. In Bijker, W.E., Hughes, T.P. E Pinch, T.J., *The social construction of technological systems: New directions in the sociology and history of technology* (pp. 159-187). Massachusetts: MIT Press.
3. Winner, L. (1993). Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science, Technology, and Human Values*, 18, 362-378.

Week 10: Artifacts, Politics, and Actor-Networks

1. Winner, L. (1980). Do artifacts have politics? *Daedalus*, 121-136.
2. Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker, & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change*, pp. 225-

258. Cambridge, MA: MIT Press.

3. Akrich, M. (1992). The de-scription of technical objects. In W. E. Bijker, & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change*, pp. 205-224. Cambridge, MA: MIT Press.

Week 11: Human-Computer Interaction

1. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 5.

2. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 6.

3. *Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 7.

4. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 9.

Week 12: Ubiquitous computing and affective computing

1. Weiser, M. (1991). The computer for the 21st Century. *Scientific American*, 265, 94-110.

2. Tsujita, H., & Rekimoto, J. (2011, September). Smiling makes us happier: enhancing positive mood and communication with smile-encouraging digital appliances. In *Proceedings of the 13th international conference on Ubiquitous computing* (pp. 1-10).

3. Picard, R. W. (2003). Affective computing: challenges. *International Journal of Human-Computer Studies*, 59(1-2), 55-64.

Additional reading:

*Week: Introduction to machine learning

1. Grimmer, J., & Stewart, B. M. (2013). Text as data: The promise and pitfalls of automatic content analysis methods for political texts. *Political Analysis*, 21, 267-297.

2. *Denny, M., & Spirling, A. (2017). Text preprocessing for unsupervised learning: Why it matters, when it misleads, and what to do about it. *Political Analysis*, 26, 168-189.

3. *Peng, Y. (2018). Same candidates, different faces: Uncovering media bias in visual portrayals of presidential candidates with computer vision. *Journal of Communication*, 68, 920-941.

4. McAfee, A., & Brynjolfsson, E. (2017). *The Business of Artificial Intelligence*. *Havard Business Review*, 1-20.

*Week: Science and Technology Studies 2

1] Kling, R. (1992). Audiences, narratives, and human values in social studies of technology. *Science, Technology, & Human Values*, 17(3), 349-365.

2] Grint, K., & Woolgar, S. (1992). Computers, guns, and roses: what's social about being shot? *Science, Technology, & Human Values*, 17(3), 366-380.

3] Kling, R. (1992). When gunfire shatters bone: Reducing sociotechnical systems to social relationships. *Science, Technology, & Human Values*, 17(3), 381-385.

*Readings that you can use for your presentation

Liu, B. (2021). In AI we trust? Effects of agency locus and transparency on uncertainty reduction in human–AI interaction. *Journal of Computer-Mediated Communication*, 26(6), 384-402.

Molina, M. D., & Sundar, S. S. (2022). When AI moderates online content: effects of human collaboration and interactive transparency on user trust. *Journal of Computer-Mediated Communication*, 27(4), zmac010.

Lee, K. M., Park, N., & Song, H. (2005). Can a robot be perceived as a developing creature? Effects of a robot's long-term cognitive developments on its social presence and people's social responses toward it. *Human Communication Research*, 31(4), 538-563.

Ho, A., Hancock, J., & Miner, A. S. (2018). Psychological, relational, and emotional effects of self-disclosure after conversations with a chatbot. *Journal of Communication*, 68(4), 712-733.

Lew, Z., & Walther, J. B. (2022). Social Scripts and Expectancy Violations: Evaluating Communication with Human or AI Chatbot Interactants. *Media Psychology*, 1-16.

Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., ... & Rahwan, I. (2018). The moral machine experiment. *Nature*, 563(7729), 59-64.

Liao, T., & Tyson, O. (2021). "Crystal Is Creepy, but Cool": Mapping Folk Theories and Responses to Automated Personality Recognition Algorithms. *Social Media+ Society*, 7(2), 20563051211010170.

Liu, B., Wei, L., Wu, M., & Luo, T. (2023). Speech production under uncertainty: how do job applicants experience and communicate with an AI interviewer?. *Journal of Computer-Mediated Communication*, 28(4), zmad028.

Sundar, S. S., & Nass, C. (2000). Source orientation in human-computer interaction: Programmer, networker, or independent social actor. *Communication Research*, 27(6), 683-703.

Darling-Wolf, F. (2021). In the city, they go "pit pit pit": Digital media's affordances and imagined (dis) connections in a rural Japanese community. *New Media & Society*, 23(7), 1863-1881.

Nyhan, B., Settle, J., Thorson, E., Wojcieszak, M., Barberá, P., Chen, A. Y., ... & Tucker, J. A. (2023). Like-minded sources on Facebook are prevalent but not polarizing. *Nature*, 1-8.

Humphreys, L. (2010). Mobile social networks and urban public space. *New Media & Society*, 12(5), 763-778.

Leo-Liu, J., & Wu-Ouyang, B. (2022). A "soul" emerges when AI, AR, and Anime converge: A case study on users of the new anime-stylized hologram social robot "Hupo". *New Media & Society*, 14614448221106030.

Liao, T. (2018). Mobile versus headworn augmented reality: How visions of the future shape, contest, and stabilize an emerging technology. *New Media & Society*, 20(2), 796-814.

Weekly Schedule of Topics

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week Topic

1 Course introduction

2 What is Human-Machine Communication?

3 Conceptualizing emerging technology

- 4 Computers are Social Actors 1
- 5 Computers are Social Actors 2
- 6 User experience and technology affordances Outline due for proposal
- 7 Conceptualizing machine agency & AI-mediated communication
- 8 Buffering
- 9 Science and Technology Studies (STS)
- 10 Artifacts, Politics, and Actor-Network
- 11 Human-computer interaction Literature review due
- 12 Ubiquitous and Affective Computing
- 13 Presentations and final paper writing
- 14 Q &A + Wrap up + Final paper presentation
- 15 Final paper due

Grading Scheme

List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.

Response:

A = 93-100	A- = 90-92.99	
B+ = 87-89.99	B = 83-86.99	B- = 80-82.99
C+ = 77-79.99	C = 73-76.99	C- = 70-72.99
D+ = 69.66-67	D = 63-66.99	D- = 60-62.99
E = 0 – 59.99%		

Instructor(s)

Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.

Response:

Dr. Kun Xu

Attendance & Make-up

Please confirm that you have read and understand the University of Florida Attendance policy.

A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.

• Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Response:

Yes

Accommodations

Please confirm that you have read and understand the University of Florida Accommodations policy.

A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:

• *Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Response:
Yes

UF Grading Policies for assigning Grade Points

Please confirm that you have read and understand the University of Florida Grading policies. Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:

• <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:
Yes

Course Evaluation Policy

Course Evaluation Policy

Please confirm that you have read and understand the University of Florida Course Evaluation Policy. A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:

• Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Response:
Yes

University of Florida
College of Journalism and Communications

Human-Machine Communication
MMC XXXX

Instructor: Kun Xu

E-Mail:

Office location:

Office Hours:

COURSE DESCRIPTION

Human-machine communication (HMC) involves communication with digital interlocutors including embodied machine communicators, virtual/artificially intelligent agents, and technologically augmented persons, either in real or augmented environments. HMC is an area of study that investigates the creation of meanings among humans and machines. Throughout the semester, we will first look at how “machine” has been conceptualized, along with its relationship to emerging technologies. We will then move to topics such as affordances, user interface and user experience design, and social construction of technology. We will also situate our discussion in the historical context and examine the academic debates on human-computer interaction and human-robot interaction. Then we will cover a few perspectives on computing, which includes but are not limited to social computing, affective computing, and ubiquitous computing. This course is a seminar-based course.

COURSE GOALS

The objective of this course is to prepare students for advanced research on the social implications and psychological effects of human-machine communication. I envision this course to be a highly participatory one. In addition to completing readings and participating in discussions, students will do research, individually or in groups, applying theories to an emerging technology or some feature or process found in the social world of emerging technologies. During the semester, students will be responsible for making regular presentations on assigned readings and on their research ideas.

Required Readings:

All readings including links to online sources will be available on Canvas (elearning.ufl.edu).

Recommended readings:

1. Rogers, Y. (2012). *HCI theory: Classical, modern, and contemporary*. Morgan & Claypool.
2. Guzman, A. L. (2018). *Human-machine communication: Rethinking communication, technology, and ourselves*. New York, NY: Peter Lang.

3. Guzman, A., McEwen, R., & Jones, S. (2023). *The Sage handbook of human-machine communication*. Thousand Oaks, CA: Sage.
4. Booth, W. C., Colomb, G. G., Williams, J. M., Bizup, J., & Fitzgerald, W. T. (2016). *The craft of research*. The University of Chicago Press.

Outcomes Assessment:

Class discussion and participation: 10%

Discussion leading (twice) and reading summary: $2 \times 15\% = 30\%$

HMC paper presentation (twice): $2 \times 10\% = 20\%$

Outline of final paper: none

Literature review: 10%

Final paper and presentation: 30%

Grading Criteria:

A = an earned grade that represents outstanding and exceptional work; keep working and submit to conferences/journals

B = an earned grade indicating competent, above average work; need some conceptual modification for conference submission and journal submission

C = an earned grade for work that is average and/or merely fulfills the basics of the assignment and lacks some important connection to the course material; need a thorough revision to enhance the work.

F = an earned failing grade for late work, poorly executed work, plagiarism or other failure to adhere to the requirements of academic integrity.

	A = 93-100	A- = 90-92.99
B+ = 87-89.99	B = 83-86.99	B- = 80-82.99
C+ = 77-79.99	C = 73-76.99	C- = 70-72.99
D+ = 69.66-67	D = 63-66.99	D- = 60-62.99
	E = 0 – 59.99%	

- For more information see:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

ASSIGNMENTS

Class discussion and participation (10%)

- Students are expected to come to class with having thoroughly read the assigned articles and chapters. The goal of any advanced Ph.D. course is first to understand the concepts outlined in the readings, but more importantly students should be able to use these works to think with and apply. This is a graduate seminar, so most of the course will be discussing and dissecting the readings. Please notice that class participation is different from class attendance. Share your questions/comments/ideas in (and out of) class; get involved; turn things in on time. If you don't engage in class discussion, your participation grade will be low.
- It is required that you leave your weekly questions/comments on a Google Doc. Share anything that's related to our class discussion.

Discussion leading and reading summary (twice) (30%)

- To facilitate understanding of the readings, we are going to have a rotating group of students lead discussion on each week's readings. Each student will engage in discussion leading twice throughout the semester. Students in charge of the weekly leading class discussion for that week should work on a **discussion sheet with discussion questions** (3-5 questions) on Google Doc and get it ready by Monday night.
- Discussion leaders should select two weeks for their discussion leading. "Talk us through it" during the class discussion.
- Discussion leaders should also write a **2-page single-spaced summary** about the readings for that week. The summary should first include each article's main perspectives. Then, the summary should put emphasis on building and analyzing the relationships among these articles.

Summary and critique of paper/presentation (twice) (20%)

- As I will mention in class, human-machine communication is an emerging field. This field subsumes part of human-computer interaction, human-agent interaction, and human-robot interaction. As our class will primarily focus on the "ideas" from various relevant areas (e.g., STS, CASA, user experience), we have fewer opportunities to be exposed to **empirical research**. This assignment requires you to look for, summarize, and present two classic HMC-related empirical papers.
- Present to us the goals of this paper, the theoretical frameworks used, **the method**, the major findings, and your own reflection on the paper.
- The papers you select should be from *Nature*, *Science*, *CHI Proceedings*, *Journal of Computer-Mediated Communication*, *New Media & Society*, *Communication Research*, *Journal of Communication*, *Human Communication Research*, or others that are approved by me in advance.
- You only need to deliver the presentation (12-15 mins). A list of candidate readings will be provided. You may also choose your own ones based on my approval.

Final research paper (40% including literature review)

- Write a full research paper/proposal related to any human-machine communication topics. Please note that a research paper does not exclusively mean an empirical study. You can choose to write a conceptual/topic paper if you want. The full paper should be about 20-30 pages including references, tables, and figures. If you are working on a research proposal, it should be about 10-15 pages long including introduction, literature review, hypotheses/research questions, methods, data analyses plans, and references. Use APA format. You can take any approach to your study (e.g., quantitative, qualitative, computational, critical, etc.).
- Make sure you take into consideration IRB application, data collection, etc.
- You may choose to coauthor with classmates. But in that case, you should submit a full research paper. You can only collaborate with only one classmate (i.e., two authors in total). If you have taken my other classes where you proposed a study, you can continue to work on that (e.g., start data collection) and finish a full paper.
- Here is a general guideline about an empirical study-based research paper.
 - Purpose and rationale of the study

- Literature review: What needs to be investigated? What research gap existed in prior research? What are the theoretical frameworks? What are the debates? What is the logic of your proposed hypotheses and RQs?
- Hypotheses and research questions
- Research methods: Include sample, procedures, measures, data analysis, etc.
- Discussion (for a full research paper): What do the results mean? What can you conclude based on results? What theoretical contribution is there?

COURSE POLICIES

Classroom Etiquette

- Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

Academic Honesty/Policy on Plagiarism

- Honesty is expected in all assignments, exams, and presentations. All writing submitted to this course must be your original work. Use the American Psychological Association (APA) citation format including quoting and paraphrasing in your writing. Plagiarism, including self-plagiarism, is the most extreme form of academic dishonesty and will result in failing this course and possible removal from the university. Plagiarism includes cheating on assigned work, submitting the same paper for two courses, buying papers, turning in someone else's work for your own use.
- Plagiarism is something that is a zero-tolerance policy for me. As a student at an institution of higher learning, by misrepresenting your work and your capabilities, that is academic fraud, and your degree is invalid. Cheating is a learned behavior, and I believe

if you are caught you need to be punished to prevent it from happening again. If you are not, that only teaches you that it is acceptable and will continue, which then becomes a reflection on us and a failure of our faculty. I also understand that there may be different academic standards internationally, but this is the university policy on academic integrity. A complete UF student honor code is available here:

<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

Attendance and Make-Ups

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Grade Appeals

- If a student believes he/she have legitimate grounds on which to dispute a grade on a particular assignment, the student may submit a written appeal (email is ok) to the instructor within 10 days of receiving the original grade. The appeal must provide rationale for why the current grade is inaccurate. Feelings are not criteria. Once the student has submitted a formal grade appeal and all the supporting evidence including the graded copy of the assignment in question, the instructor will carefully examine the assignment and provide a new grade. Once the instructor has entered the final grade to the university system, that grade will not be changed under any circumstances.

Accommodations for Special Needs:

- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.”

Tentative Course Schedule

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Notes</u>
1	8/29	Course introduction	
2	9/5	What is Human-Machine Communication?	
3	9/12	Conceptualizing emerging technology	
4	9/19	Computers are Social Actors 1	
5	9/26	Computers are Social Actors 2	
6	10/3	User experience and technology affordances	Outline due for proposal
7	10/10	Conceptualizing machine agency & AI-mediated communication	
8	10/17	Buffering	
9	10/24	Science and Technology Studies (STS)	
10	10/31	Artifacts, Politics, and Actor-Network	
11	11/7	Human-computer interaction	Literature review due
12	11/14	Ubiquitous and Affective Computing	
13	11/21	Presentations and final paper writing	
14	11/28	Q &A + Wrap up + Final paper presentation	
15	12/5	Final paper due	Final paper due

Note: Changes that occur to the syllabus will be announced in class or on Canvas.

Weekly Topics and Reading List:

Recommended Readings:

Guzman, A. L. (2018). *Human-machine communication: Rethinking communication, technology, and ourselves*. New York, NY: Peter Lang.

Guzman, A., McEwen, R., & Jones, S. (2023). *The Sage handbook of human-machine communication*. Thousand Oaks, CA: Sage.

Rogers, Y. (2012). *HCI theory: Classical, modern, and contemporary*. Morgan & Claypool.

Required Readings:

(*: Optional.)

Week 2: Conceptualizing Emerging Technologies

1. Lievrouw, L. A., & Livingstone, S. (2006). *Handbook of new media: Social shaping and consequences of ICTs*. London: Sage. pp. 1-32.
2. Manovich, L. (2001). *The language of new media*. MIT press. **Chapter 1**.
3. Marvin, C. (1997). *When old technologies were new*. Oxford University Press. **Introduction**.
4. Marvin, C. (1997). *When old technologies were new*. Oxford University Press. **Chapter 2**

Week 3: Conceptualizing Human-Machine Communication

1. Guzman, A. L. (2018). What is human-machine communication, anyway? In A. L. Guzman (Ed.). *Human-machine communication: Rethinking communication, technology, and ourselves*. New York, NY: Peter Lang.
2. Gunkel, D. J. (2012). Communication and artificial intelligence: Opportunities and challenges for the 21st century. *Communication+ 1*, 1(1), 1-25.
3. Turkle, S. (2011). Alive enough. In *Alone together: Why we expect more from technology and less from each other*. Basic Books.

Week 4: Computers are Social Actors I

1. Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues*, 56(1), 81-103.
2. Fogg, B. J. (2002). *Computers as persuasive social actors*. In *Persuasive technology: Using computers to change what we think and do*. Morgan Kaufmann Publishers.
3. Nass, C. I., Lombard, M., Henriksen, L., & Steuer, J. (1995). Anthropocentrism and computers. *Behaviour & Information Technology*, 14(4), 229-238
4. *Xu, K. (2019). First encounter with robot Alpha: How individual differences interact with vocal and kinetic cues in users' social responses. *New Media & Society*, 21(11-12), 2522-2547.

Week 5: Computers are Social Actors II

1. Lombard, M., & Xu, K. (2021). Social responses to media technologies: The Media are Social Actors paradigm. *Human-Machine Communication*, 2, 29-55.
2. Gambino, A., Fox, J., & Ratan, R. A. (2020). Building a Stronger CASA: Extending the Computers Are Social Actors Paradigm. *Human-Machine Communication*, 1, 71-85.
3. Xu, K. & Liao, T. (2020). Explicating cues: A typology for understanding emerging media technologies. *Journal of Computer-Mediated Communication*, 25(1), 32-43.

Week 6: Conceptualizing Affordances

1. Norman, D. A. (1988). *The psychology of everyday things*. Basic Books. Chapter 2.
2. Norman, D. A. (1988). *The psychology of everyday things*. Basic Books. Chapter 5.
3. Gaver, W. W. (1991). Technology affordances. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 79-84). ACM.
4. Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating affordances: A conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, 22(1), 35-52.

Week 7: Machine Agency & Algorithms

1. Sundar, S. S., Jia, H., Waddell, T. F., & Huang, Y. (2015). Toward a theory of interactive media effects (TIME): Four models for explaining how interface features affect user psychology. In S. S. Sundar (Ed.), *Handbooks in communication and media. The handbook of the psychology of communication technology* (pp. 47–86). Wiley-Blackwell.
2. Sundar, S. S. (2020). Rise of machine agency: A framework for studying the psychology of human–AI interaction (HAII). *Journal of Computer-Mediated Communication*, 25(1), 74-88.
3. Hancock, J. T., Naaman, M., & Levy, K. (2020). AI-mediated communication: Definition, research agenda, and ethical considerations. *Journal of Computer-Mediated Communication*, 25(1), 89-100.
4. Gillespie, T. (2014). The relevance of algorithms. In T. Gillespie, P. Boczkowski, & K. Foot (Eds.), *Media technologies: Essays on communication, materiality, and society*, pp. 167-193. Cambridge, MA: MIT Press.
5. *Dehnert, M., & Mongeau, P. A. (2022). Persuasion in the Age of Artificial Intelligence (AI): Theories and Complications of AI-Based Persuasion. *Human Communication Research*, 48, 386-403.

Week 9: Science and Technology Studies

1. Pinch, T. J., & Bijker, W. E. (1987). The social construction of facts and artifacts: Or how the sociology of science and the sociology of technology might benefit each other. In W. E. Bijker, T. P. Hughes, & T. J. Pinch (Eds.), *The social construction of technological systems: New directions in the sociology and history of technology*, pp. 17-50. MIT Press.
2. Bijker, W.E. (1989). The Social Construction of Bakelite: Toward a Theory of Invention. In Bijker, W.E., Hughes, T.P. E Pinch, T.J., *The social construction of technological systems: New directions in the sociology and history of technology* (pp. 159-187). Massachusetts: MIT Press.

3. Winner, L. (1993). Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science, Technology, and Human Values*, 18, 362-378.

Week 10: Artifacts, Politics, and Actor-Networks

1. Winner, L. (1980). Do artifacts have politics? *Daedalus*, 121-136.
2. Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker, & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change*, pp. 225-258. Cambridge, MA: MIT Press.
3. Akrich, M. (1992). The de-description of technical objects. In W. E. Bijker, & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change*, pp. 205-224. Cambridge, MA: MIT Press.

Week 11: Human-Computer Interaction

1. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 5.
2. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 6.
3. *Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 7.
4. Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press. Chapter 9.

Week 12: Ubiquitous computing and affective computing

1. Weiser, M. (1991). The computer for the 21st Century. *Scientific American*, 265, 94-110.
2. Tsujita, H., & Rekimoto, J. (2011, September). Smiling makes us happier: enhancing positive mood and communication with smile-encouraging digital appliances. In *Proceedings of the 13th international conference on Ubiquitous computing* (pp. 1-10).
3. Picard, R. W. (2003). Affective computing: challenges. *International Journal of Human-Computer Studies*, 59(1-2), 55-64.

Additional reading:

***Week: Introduction to machine learning**

1. Grimmer, J., & Stewart, B. M. (2013). Text as data: The promise and pitfalls of automatic content analysis methods for political texts. *Political Analysis*, 21, 267-297.
2. *Denny, M., & Spirling, A. (2017). Text preprocessing for unsupervised learning: Why it matters, when it misleads, and what to do about it. *Political Analysis*, 26, 168-189.
3. *Peng, Y. (2018). Same candidates, different faces: Uncovering media bias in visual portrayals of presidential candidates with computer vision. *Journal of Communication*, 68, 920-941.

4. McAfee, A., & Brynjolfsson, E. (2017). The Business of Artificial Intelligence. *Harvard Business Review*, 1-20.

***Week: Science and Technology Studies 2**

- 1] Kling, R. (1992). Audiences, narratives, and human values in social studies of technology. *Science, Technology, & Human Values*, 17(3), 349-365.
- 2] Grint, K., & Woolgar, S. (1992). Computers, guns, and roses: what's social about being shot? *Science, Technology, & Human Values*, 17(3), 366-380.
- 3] Kling, R. (1992). When gunfire shatters bone: Reducing sociotechnical systems to social relationships. *Science, Technology, & Human Values*, 17(3), 381-385.

***Readings that you can use for your presentation**

Liu, B. (2021). In AI we trust? Effects of agency locus and transparency on uncertainty reduction in human–AI interaction. *Journal of Computer-Mediated Communication*, 26(6), 384-402.

Molina, M. D., & Sundar, S. S. (2022). When AI moderates online content: effects of human collaboration and interactive transparency on user trust. *Journal of Computer-Mediated Communication*, 27(4), zmac010.

Lee, K. M., Park, N., & Song, H. (2005). Can a robot be perceived as a developing creature? Effects of a robot's long-term cognitive developments on its social presence and people's social responses toward it. *Human Communication Research*, 31(4), 538-563.

Ho, A., Hancock, J., & Miner, A. S. (2018). Psychological, relational, and emotional effects of self-disclosure after conversations with a chatbot. *Journal of Communication*, 68(4), 712-733.

Lew, Z., & Walther, J. B. (2022). Social Scripts and Expectancy Violations: Evaluating Communication with Human or AI Chatbot Interactants. *Media Psychology*, 1-16.

Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., ... & Rahwan, I. (2018). The moral machine experiment. *Nature*, 563(7729), 59-64.

Liao, T., & Tyson, O. (2021). “Crystal Is Creepy, but Cool”: Mapping Folk Theories and Responses to Automated Personality Recognition Algorithms. *Social Media+ Society*, 7(2), 20563051211010170.

Liu, B., Wei, L., Wu, M., & Luo, T. (2023). Speech production under uncertainty: how do job applicants experience and communicate with an AI interviewer?. *Journal of Computer-Mediated Communication*, 28(4), zmad028.

Sundar, S. S., & Nass, C. (2000). Source orientation in human-computer interaction: Programmer, networker, or independent social actor. *Communication Research*, 27(6), 683-703.

Darling-Wolf, F. (2021). In the city, they go “pit pit pit”: Digital media’s affordances and imagined (dis) connections in a rural Japanese community. *New Media & Society*, 23(7), 1863-1881.

Nyhan, B., Settle, J., Thorson, E., Wojcieszak, M., Barberá, P., Chen, A. Y., ... & Tucker, J. A. (2023). Like-minded sources on Facebook are prevalent but not polarizing. *Nature*, 1-8.

Humphreys, L. (2010). Mobile social networks and urban public space. *New Media & Society*, 12(5), 763-778.

Leo-Liu, J., & Wu-Ouyang, B. (2022). A “soul” emerges when AI, AR, and Anime converge: A case study on users of the new anime-stylized hologram social robot “Hupo”. *New Media & Society*, 14614448221106030.

Liao, T. (2018). Mobile versus headworn augmented reality: How visions of the future shape, contest, and stabilize an emerging technology. *New Media & Society*, 20(2), 796-814.