

Artificial Intelligence Systems

EGN 6216 Section 23211

Class Periods: Tuesdays, 8:30AM-10:25AM, periods 2-3, Thursdays, 9:35AM-10:25AM, period 3

Location: CSE E220

Academic Term: Fall 2025

Instructor:

Dr. Andrea Ramirez-Salgado

Email Address: aramirezsalgado@ufl.edu

Office Location: MALA 4112

Office Hours: Thursdays 11:45am-1:45pm or by appointment

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

None

Course Description

(3 credits) This course offers a comprehensive framework for managing the entire life cycle of Artificial Intelligence (AI) systems in real-world applications. It covers key stages, including planning, building, deploying, and monitoring AI systems at scale, all within a project-based approach. The primary focus is to equip students with the concepts and tools needed to successfully envision, implement, and manage AI systems in real-life scenarios.

Course Pre-Requisites / Co-Requisites

Prereq: None

Coreq: EGN 5216 (Machine Learning for AI systems)

Other: Students are expected to bring a portable computer to class meetings

Course Objectives

Upon completion of this course, students will be able to:

1. Formulate an AI system development plan that includes a problem description, project computing requirements, human-centered computing concepts and trustworthiness and risk considerations.
2. Plan and carry out data collection using sensors, and devices that align with the specific problem and project requirements, ensuring the data supports AI validation and testing.
3. Effectively develop and train AI models.
4. Develop and implement a robust deployment strategy for AI models, ensuring scalability, security, and compliance with organizational and regulatory standards.
5. Establish and maintain an effective operating and monitoring framework to track AI model performance and improvement.

Materials and Supply Fees

None

Required Textbooks and Software

Software:

- Python 3+
- Git
- TensorFlow/PyTorch
- Anaconda (recommended)
- Docker

The course notes are developed by the instructor.

Recommended Materials

All reading materials will be available as electronic copies with Course Reserves

- Artificial Intelligence: A Systems Approach from Architecture Principles to Deployment
 - David R. Martinez and Bruke M. Kifle
 - The MIT Press, 2024
- The Machine Learning Solutions Architect Handbook - Second Edition: Practical strategies and best practices on the ML lifecycle, system design, MLOps, and generative AI
 - David Ping
 - Packt Publishing, 2024
- Designing Machine Learning Systems: An Iterative Process for Production-Ready Applications
 - Chip Huyen
 - O'Reilly Media, 2022
- Building Machine Learning Powered Applications: Going from Idea to Product
 - Emmanuel Ameisen
 - O'Reilly Media, 2020

Required Computer

Recommended Computer Specifications: <https://it.ufl.edu/get-help/student-computer-recommendations/>

HWCOE Computer Requirements: <https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/>

Course Schedule

Week	Subject	Assignments
1	AI Systems Introduction and Introduction to the AI Cycle	
2	Real-world Use Cases (Objective 1) and Project Life Cycle (Objective 1)	Project Proposal (5%)
3	Computing Infrastructure and High-Performance Computing (Objective 1)	
4	Human-Computer Interaction (Objective 1)	Elevator Pitch (10%) Elevator Pitch Peer-Feedback (5%)
5	Security, Privacy, Ethics (Objective 1)	
6	Risk Management (Objective 1)	Project Plan (10%)
7	Data Collection and Management I (Objective 2)	
8	Data Collection and Management II (Objective 2)	Data Collection Management Plan and Report (10%)
9	Mid-semester Project Review	Project Plan Peer-Feedback (5%)
10	ML Experiment Design I (Objective 3)	
11	ML Experiment Design II, Testing & Deployment I (Objectives 3-4)	Experiment Design and Report (10%)
12	Testing & Deployment II (Objective 4)	
13	Operating and Monitoring (Objective 5)	Performance Metrics Report (10%)
14	AI system evaluation (Objectives 1-5)	Final Code Repository (10%)
Thanksgiving		
15	Final Project Reports and Presentations	Final Report (10%) Final Presentation (10%) Final Presentation Peer Feedback (5%)

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Project deliverables	Specified in the table above	65%
Presentations		20%
Peer Feedback		15%
		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

Academic Policies & Resources

Please refer to the academic policies and campus resources included on the website:
<https://go.ufl.edu/syllabuspolices>.

Code Policy

In this course, students are expected to write their own code for all assignments. You are the one who is being tasked with coming up with a solution to the various AI problems in this course—not your friend, not your roommate, not a stranger on the Internet or any AI-code generators. The reasoning behind this is that later in your educational career it will be expected that you are capable of solving problems on your own, if and when the need arises. Even in a team-based environment, each member of that team must be capable of carrying their own weight. **Unless otherwise noted, there are no group or collaborative assignments in this course.** When working on assignments, discussion of those assignments with your classmates is not only inevitable, but it is strongly encouraged! (We often learn very effectively in social environments.) That said, you should discuss the problem in high level terms, not telling someone else (or being told) how to complete the work. Here are some examples of what could be considered acceptable and unacceptable:

If you're unsure about the acceptable use of AI tools for your work, ask for clarification! Always refer to the "Policy for Use of AI Tools" information available on Canvas to ensure you stay within the guidelines. Don't hesitate—it's better to ask than to risk violating the policy.

Expectations

I expect all students to be bound to the honor pledge as indicated in the [student honor code](#). If you are not capable of completing an assignment on your own, that's okay. Lots of things in life can take time to really “click” for us, and we all learn at different rates. Under no circumstances should you ever consider cheating—that is, submitting someone else's work as your own—as an option. The consequences for doing so will be far worse than if you simply did not do the assignment. Students will complete this course with honor and integrity, or not at all. Submissions which are believed to be not entirely a student's own work will be reported to administration for

disciplinary action. Students who commit any of the unacceptable acts listed above will also be reported. In ALL cases, I will recommend the following sanctions be imposed on that student or students:

- 1. A failing grade (an 'E') for the course**
- 2. That you not be allowed to drop the course for any reason**

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

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 Coordinator
- HWC OE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu