School of Computer Science and Mathematics
College of Health, Science, and Technology
University of Central Missouri
Course Syllabus

3 Credit Hours

Course: CS 4700/5700 – Artificial Intelligence
Semester: Spring 2025
Class Time: TR 12:30-1:45
Classroom: W.C. Morris Science Building. Room 231
Instructor: Tyler Banks, PhD

Email: tylerbanks@ucmo.edu
Office Hours: TR 3:30 – 4:30 pm
by appointment
Phone: 210-519-8326

*Office Hours are conducted via Zoom. Please request an appointment if hours will not work for you.

Textbook: *Artificial Intelligence: A Modern Approach, 4th Edition* by Peter Norvig and Stuart Russell, Pearson, 2020

Prerequisite: (CS 2400 Discrete Structures or Math 2410 Discrete Mathematics) and CS 2300 Data Structures or instructor consent.

Description: This course provides opportunities to learn the elements and techniques of artificial intelligence and how they apply to daily life. Concepts and methods are illustrated with real-world applications.
This course is designed for upper-level computer science undergraduate and first-year graduate students. Artificial intelligence (AI) has a long history in computer science but continues to grow in part due to new applications in diverse fields. The frontier areas of AI include autonomous vehicles, face recognition, speech recognition, robotics, and many more. The aim of this course is to provide foundational knowledge in the field of artificial intelligence. This course assumes no previous knowledge of artificial intelligence concepts.

Objectives:

A. Understand the current trends of AI applications.
B. Familiarize themselves with various techniques of AIs.
C. Write computer scripts to solve different types of AI problems.

In addition, a student taking this course for graduate credits will be able to:

D. Understand the theoretical aspect of AI.
E. Design an AI solution for practical applications.

Course Content Outline:

1. Introduction to AI
2. Agents
3. Search
4. Games
5. Constraint Satisfaction Problems (CSPs)
6. Markov Decision Processes
7. Reinforcement Learning
8. Probability
9. Bayes
10. Logic
11. Machine Learning (Supervised, Unsupervised)
12. Natural Language Processing, LLMs
13. Computer Vision
14. Robotics

Course Format: This class is a traditional lecture format. Classes will meet at the listed times and lectures will be delivered. There will be prescribed homework assignments, a midterm, final project and a final exam. All assignments will be posted and submitted through Blackboard. You will be expected to read and study the textbook as needed.

Grading:

Midterm Exam (15%) There will be a final exam that seeks to incorporate all of the topics from the **first half** of the semester. The exam will consist of multiple choice, short answer, and coding problems.

Final Exam (25%) There will be a final exam that seeks to incorporate all of the topics from the **second half** of the semester. The exam will consist of multiple choice, short answer, and coding problems.

Assignments (50% Undergraduate | 40% Graduate) There will be homework assignments, primarily from the textbook, and programming problems. Both undergraduate and graduate students will complete the same assignments. All assignments are due by midnight on the date listed. No late work will be accepted without an extenuating circumstance.

Final Project (10% Undergraduate | 20% Graduate) The student will design his/her own AI solution to a practical application. As a result, the term project will strengthen students' critical thinking skills on the content of AI. A student who is taking this course for graduate credits will complete a term project individually at a higher standard. Undergraduates will complete this project as a group.

Grading Scale (percent) A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: 0-59

Other Information and Policies:

1. **Your UCM email account will be used, frequently, by the instructor, to communicate messages. It is your responsibility to check this account regularly.**
2. **Graduate students are held to a higher standard - late homework will not be accepted without an extenuating circumstance. Plan ahead.**
3. Assignments will be posted by email and/or Blackboard. It is the responsibility of the student to frequently check their email and Blackboard for course changes and updates.
4. **The assigned textbook is not required but will serve as a good reference**.
5. Students with documented disabilities who are seeking academic accommodations should contact the Office of Accessibility Services, Union 222, oas@ucmo.edu, 660.543.4421.
6. Advanced arrangements for unavoidable absences should be made whenever possible. Neither absence nor notification of absence relieves you of the responsibility of meeting all course requirements.
7. **Homework is to be done independently unless otherwise directed.**
8. **ChatGPT/LLM use policy:** You are allowed to consult with LLMs to answer specific questions about code, as an information provider. However, using GPT to generate entire portions of your homework assignment is not allowed, the work must be your own. Assignments suspected of doing so will receive a 0.
9. Any form of academic dishonesty will be dealt with according to the guidelines found at https://www.ucmo.edu/offices/general-counsel/university-policy-library/academic-policies/academic-honesty-policy/.

Title IX Sexual Misconduct

The University of Central Missouri seeks to foster a safe and healthy environment built on mutual respect and trust. Sex discrimination, including sexual harassment, sexual violence, and other forms of sexual misconduct will not be tolerated. All faculty and most staff are considered mandated reporters by the University and must disclose all information they receive about sexual misconduct to the Title IX Coordinator. As a faculty member of the University, I am a mandated reporter.

If you, or someone you know, has experienced sexual misconduct, please know assistance and options are available. UCM strongly encourages all members of the community to seek support and report incidents of sexual misconduct to the Title IX Office. Anyone who wishes to report sexual misconduct https://www.ucmo.edu/consumer-information/title-ix-sex-discrimination-and-sexual-assault/reporting-options/ or to learn more about the University process and options available, please visit https://www.ucmo.edu/consumer-information/title-ix-sex-discrimination-and-sexual-assault/support-and-resources/