

COSC 370 - Artificial Intelligence

Spring 2021

Syllabus

Training the future scientists who will make Skynet a reality.

Just the Facts

Course Number: COSC 370

Title: Artificial Intelligence

Semester: Spring 2021

Meeting Time: TR 12-1:50pm

Locale: Schaefer 106

Instructor: Alan Jamieson

Office: Schaefer 154

Office Hours: MF 1-2pm, R 8-9pm via Zoom

Email: acjamieson@smcm.edu

Slack: via COSC 370 Group

Online Office Hours: Most evenings and weekends via Slack

Textbook: *Russell and Norvig, Artificial Intelligence: A Modern Approach, 3e*

Website: <http://ripark.github.io/s21/cosc370>

Catalog Description: This course surveys artificial intelligence. Topics include symbolic processing; expert systems; machine learning; and neural networks, natural language processing, pattern matching, genetic algorithms and fuzzy logic. Not open to students who have received credit for COSC 260. Formerly COSC 260. Prerequisite: COSC 201; and MATH 200 or MATH 281.

Overview: In this course you will learn the basics behind a number of artificial intelligence subjects with a focus on the higher-level theory and the direct application of those fundamentals to project work. You will be exposed to the major, high impact problems in AI and you should walk away from the course with a working knowledge of the basics behind intelligent systems and agents.

Purpose: The purpose of this course is to give you an overview to the theoretical and practical sides of artificial intelligence. The subfield of AI is very deep and while we cannot get to everything in a semester, we will touch on a number of topics including neural networks, game playing and robotics with a focus on the fundamentals of artificial intelligence and a dash of practicality.

Grade Distribution:

Quizzes and Homework - 15%
Smaller Projects (2) - 20% each
Larger Project - 30%
Presentation - 15%

The class will be run fairly informally. While there will be some amount of a traditional lecture involved with each class period, I expect there will be a less traditional discussion in each class period involving questions and concepts being batted back and forth amongst you, your peers and myself. Please participate in these discussions, I can almost guarantee that you'll get more out of the class in general if you do.

Learning Objectives: At the completion of COSC 370, students will be able to:

explain neural networks.

explain solution space search.

explain rule-based systems.

explain genetic algorithms.

explain machine learning.

explain natural language process.

construct solutions to artificial intelligence problems.

discover problems with technical solutions.

research complex technical concepts.

present complex technical concepts.

construct solutions to artificial intelligence problems.

write reviews of the current state of the art.

Final Information: The final will occur Friday, April 30th at 2:00pm. Attendance at that session is mandatory.

Assignments: There will be three out-of-class programming assignments during this course, two smaller programming projects, and one larger project targeted for the back half of the course. Each of the projects will be application of one of the techniques we talked about in class to some problem. During this class you will be working in groups of 2 or 3 for most of these projects, but expect that you will be required to change partners for each project. The third project will incorporate scholarly reading, application of AI theory, and spaceships. Pew pew. In addition, you will do a presentation on an artificial intelligence paper, including a critique and identifying technical problems with the solution. These presentations will happen the last two weeks of classes.

Technology Use: I will be utilizing Blackboard primarily for your grades and for posting recorded lectures. Please check there often as I will be updating grades as I get graded material evaluated. All other materials will be posted to the class website and mirrored on Blackboard. All class sessions and office hours will be held via Zoom.

Policies

Cell Phones: Please, turn off or turn to silent any cell phones prior to getting to class. If they go off in class they are distraction not only to myself, but to everyone else in the class as well. Habitual offenders will be excused from the class with a 0 for any quizzes that day.

Computer Use: Computer use in this lab is for academic use only. If you bring a laptop with you to this class I expect you to be only using it for purposes related to this class. The same goes for the computers in this lab.

Attendance and Tardiness: Attendance is highly recommended. Missing a class not only causes you to miss the information disseminated in that lecture, but can cause you to miss important information in regards to exams and assignments and the potential of receiving a 0 for a quiz that day. I start class promptly on the hour and expect the students to be in class at that time. If you have circumstances that can prevent you from being in class on time, please let me know as soon as possible. Habitual offenders will be excused from the class with a 0 for any quizzes that day. If you miss class, it is your responsibility to get lecture notes and what was covered from your classmates.

Exams and Quizzes: There will not be an exam in this course. Every class has the potential of having a quiz to reinforce the ideas from the lecture the previous class. These will not be announced ahead of time. They will be 1-3 question quizzes that can be easily done in 15 minutes either at the

start or the end of the class period.

Assignments: Assignments and other outside of class work should be done on an individual basis unless otherwise specified in the description of the assignment. Assignments and other outside of class work will not be taken "late" (see Late Policy) except under extraordinary and documented circumstances.

Late Policy: You are allowed 3 "slip-days" throughout the semester. This means that you may turn in an assignment late, where each day it is late will reduce your number of slip-days by 1 (note that for group projects, if the project is turned in one day late, every group member loses a slip-day). So, you could turn in a project 3 days late, but then you wouldn't have any further slip-days left for the rest of the semester. Once you are out of slip-days, if you turn in the assignment late, you will earn a 0 for that assignment. Group projects are limited by the least number of slip days remaining for a group member. You may not use slip-days on quizzes, or for presentations. You may not re-allocate slip-days; once they are used, they are gone. As a further encouragement to turn in assignments on-time, each slip-day you have left at the end of the semester will add 0.5% to your final average.

Extra Credit: I may or may not be offering any extra credit opportunities in this class.

Final Exam: The final exam is the "presentation" of your large project. Failure to attend the final period will result in an F in the course.

Communication: The simplest way to get in touch with me is by coming by my virtual office hours or contacting me via email. The easiest way to get in touch with me "after hours" is to send me an email or slack message. I habitually check my St. Mary's email account all hours of the day. If you come by my office and the door is open, feel free to stop in to chat. The open door indicates that I'm not working on anything that has to keep my undivided attention at that time so do not feel that you are interrupting me. I do make appointments if you have a certain time that you'd like to meet with me. If it fits in my schedule (meaning I'm not teaching class during that time and on campus) I will be happy to meet with you.

Academic Honesty: Academic misconduct policies are covered in the Student Code and Student Rights and Responsibilities, Article III. Pay close attention to the definitions of academic misconduct noted in Section 1. This can be found in the Student Handbook.

Disability: If you have any kind of disability that can affect your performance in this class, please let me know privately through email or stopping by my office.

Title IX and Sexual Misconduct: As stated in the St. Mary's Way, the College is a place where we strive to foster relationships based upon mutual respect, honesty, integrity, and trust. As such, we are committed to providing an educational, living, and working environment free from all forms of harassment and discrimination for all members of our community. The College prohibits all forms of sexual or gender-based harassment, discrimination or misconduct, including sexual assault, sexual harassment, relationship violence, and stalking.

If you or someone you know has experienced sexual misconduct, you may find information about resources and options on the Campus Rights webpage (www.smcm.edu/campus-rights) or by contacting the College's Title IX Coordinator, Michael Dunn (mkdunn@smcm.edu or 240-895-4105). Under College policy, faculty members are required to share any reports of sexual misconduct with Michael in order to make sure that the College is responding appropriately to address the health and safety needs of members of our community.

There are on-campus confidential resources available, including the counselors at the Wellness Center (240-895-4289) and the Sexual Misconduct Advocacy and Resource Team student-run 24/7 hotline (301-904-2015). More information about on- and off-campus confidential resources, as well as medical treatment, law enforcement, and other support services, may be found on the Campus Rights webpage.

Schedule: The schedule for the class will be posted to the class website. The schedule is subject to change (multiple times).

Closing: The most important thing in any of my classes is that you are learning and expanding your horizons. If you are having any undue difficulty with your work as it pertains to this class, please contact me as soon as possible. Always remember that professors win when you don't need us any longer. I want you to be bouncing ideas off of each other throughout the class and it is my hope that by the end of the semester that you are driving the class session rather than me.