# CSCE 580: Artificial Intelligence, Fall 2020

**Instructor**

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**Course Description**

This course will introduce foundational ideas and techniques underlying the design of intelligent systems that solve complex real-world problems such as speech recognition, machine translation, and autonomous driving. Specific topics include search, constraint satisfaction, graphical models, and machine learning. By the end of this course, you will be equipped with the concepts and tools that apply to a wide range of artificial intelligence problems.

**Learning Outcomes**

- Understanding classical as well as recently discovered methods in AI, and exploring their potential applications.
- Building AI agents that make decisions in fully informed, partially observable, adversarial environments.
- Building AI agents that make probabilistic inferences in uncertain and dynamic environments.
- Acquiring basics concepts and tools for tackling machine learning tasks.

These learning outcomes are equivalent to those of a face-to-face (F2F) version of the course.

**Course Overview**

This is a course blended with online and face-to-face teaching.

The lectures are 100% online. We expect to have a small number of meetings as supplementaries of the lectures (e.g., for homework discussion, Q&A, and demos). These meetings can be either online or face-to-face, depending on the circumstances.

**Communication**

- We will use Piazza/Blackboard for announcements, general questions about the course, discussions about lectures, clarifications about assignments, student questions to each other, and so on. These questions will be answered within 48 hours, often within 24 hours.
- We will use Microsoft Teams for online meetings.
- If you need to contact the instructor privately, you should use email. Generally, I will reply to emails within 48 hours.

**Prerequisite**

Prior computer programming experience is expected. Programming assignments will be in Python. If you do not have previous experience with the language, we expect you to learn the basics very rapidly. Also, a facility for basic concepts of probability theory is expected.

**Textbook**
There is no required textbook for this class, and you should be able to learn everything from the lectures and assignments. However, if you would like to gain more perspectives and insights, here is a comprehensive reference for all the topics that we will cover:

- Stuart Russell and Peter Norvig (2020). Artificial Intelligence: A Modern Approach. Prentice-Hall.

**Assignments**
There will be 7 homework assignments, each consisting of written questions and/or programming questions. Assignments are submitted via Blackboard/Gradescope in electronic format. For written assignments, you are required to use LaTeX. For programming assignments, you are required to use Python 3.

**Exams**
There will be a final, take-home exam.
During the exam, you are not allowed to discuss with others about the exam.

**Course Project**
The course project provides an opportunity for you to use the tools from class to build something interesting of your choice, and/or deepen your understanding of a topic in the course materials. For graduate students, you will not be able to earn an “A” if you don’t do the course project; for undergraduate students, you are encouraged to do the course project, which gives you extra credit (see “Grading” for details).

You can work individually, or in a team of up to three. You can choose one of the following three types of projects:

- Replicate an existing paper in AI.
- Investigate deeply a topic from the course materials.
- Design an AI system to a setting that you're interested in.

**Attendance and Participation**
Lectures will be streamed in a synchronous format, and then posted online. Attendance to the lectures is expected. You will get credit by answering quizzes that are distributed during the lectures.

Online and face-to-face meetings will be scheduled via Piazza/Blackboard. You will get credit by participating in online meetings. Attendance to face-to-face meetings will NOT be graded.

You can also get credit by posting or answering questions on Piazza/Blackboard in a substantial and helpful way.

**Grading**

Rubric for undergraduates

- Assignments (60%), Exam (30%), Attendance and Participation (10%)
- Course Project (extra 20%)

Rubric for graduates

- Assignments (50%), Exam (20%), Attendance and Participation (10%)
- Course Project (20%)

Grades (for both undergrads and grads)

- A >= 90%
- B+ [86 – 90)%
- B [75 – 86)%
- C+ [70 – 75)%
- C [60 – 70)%
- D+ [55 – 60)%
- D [40 – 55)%
- F [0 – 40)%

**Accommodating Disabilities**

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Student Disability Resource Center: 803-777-6142, TDD 803-777-6744, email sadrc@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Student Disability Resource Center. See https://www.sa.sc.edu/sds/.

**Academic Integrity**

I would encourage you to discuss or brainstorm with other students or professors about the homework assignments, and course projects, but submissions should be your own work. We will actively check for code and other kinds of plagiarism (both from current classmates and other available online sources). We trust you all to submit your own work, but be aware if you plagiarize from other students or online sources, you will simply fail this course. Also, all the potential Honor Code violations will be reported to the Office of Academic Integrity, which has the authority to implement non-academic penalties as described in STAF 6.25.

**Identification of Provisions for Student-to-Instructor (S2I), Student-to-Student (S2S), and Student-to-Content (S2C) Interactions**

- S2I and S2C interactions will be mainly provided by online lectures, online and face-to-face meetings.

S2S interactions will be mainly provided by Piazza/Blackboard discussion, online and face-to-face meetings.