

University of South Carolina  
College of Engineering and Computing  
**CSCE 180: Artificial Intelligence for All**  
**Fall 2024**

Forest Agostinelli, Ph.D. Assistant Professor Computer Science and Engineering foresta@cse.sc.edu	Course Website: Blackboard
	Class Time: T,TH 2:50pm-4:05pm
	Class Location: Horizon Parking Garage

## Course Description

This course will cover what artificial intelligence (AI) is and how to use it in practice. By the end of this class, you should be able to understand classes of problems to which AI can be applied, what AI algorithms are suitable for these classes of problems, how to pose real-world problems as a particular class of AI problem, and what practical considerations to have when applying AI to these problems.

## Prerequisites

There are no prerequisites for this course. This course is intended for all students interested in AI.

## Learning Outcomes

Students who take this class will learn to:

- Define classes of problems to which AI can be applied
- Understand AI algorithms at a high level
- Determine which AI algorithms are suitable for a given class of problems
- Pose real-world problems as a particular class of AI problem
- Create a plan for applying AI to real-world problems
- Particular AI algorithms that will be taught are learning algorithms (supervised, reinforcement, and unsupervised learning, which includes generative models), search algorithms (heuristic and adversarial search), and reasoning algorithms

The learning outcomes of this class are equivalent to those of a face-to-face version of the course.

## Required Textbooks

There are no required textbooks, however, much of the course material will draw from:

- Artificial Intelligence: A Modern Approach
- Reinforcement Learning: An Introduction

All reading materials comply with copyright/fair use policies.

# Course Overview

All required material for the class will be online. The class will consist of in person lectures. The instructor, along with the students, will be able to help each other with conceptual questions through Piazza.

The expected turnaround time for discussion board postings and communication via email is one business day. The expected turnaround time for homework assignments is one week. Students are encouraged to attend the weekly office hours to ask questions and get feedback on ideas.

## Piazza

All class-related discussion will be conducted through Piazza. You to ask questions when you're struggling to understand a concept and can even do so anonymously. To ensure everyone turns in their own work, do not post code or solutions (or partially completed solutions) to written homework assignments on Piazza.

## Technology

Students do not need any special technology.

## Homework

The homework will consist of conceptual problems to ensure you understand the theoretical aspects of AI as well as practical applications of AI. **In order to receive credit on written homework questions your answers must be legible.**

## Exams

Exams will be in class. Seats will be assigned.

## Late Work

Any homework turned in after the assigned deadline will be marked late regardless of how close to the deadline it may be. Homework can be turned in a maximum of 1 day late with a penalty of 20 percentage points. Students should aim to submit their homework early in order to avoid any last minute issues. Students are allowed to submit their homework multiple times and the more recent submission will be used for grading.

## Grading

Grades will be determined on the following scale:

A	[90 – 100]
B+	[83 – 90)
B	[75 – 83)
C+	[68 – 75)
C	[60 – 68)
D+	[53 – 60)
D	[45 – 53)
F	[0 – 45)

Homework	60%
Report	20%
Final Exam	20%

## Incomplete

A grade of Incomplete (“I”) is only given in extreme cases when a student is unable to complete some portion of the assigned course work because of a significant incident. These may include an unanticipated illness, accident, work-related responsibility, family hardship, or verified learning disability. An incomplete will only account for 20% of the overall course grade, and it only applies to work after the reported incident. In addition, a student must be in good grade standing, a “C” or greater, at the time of the incident to qualify.

## Course Schedule

Week 1: Linear models

Week 2: Neural networks

Week 3: Explainability

Week 4: Adversarial examples

Week 5: Reinforcement learning

Week 6: Reinforcement learning

Week 7: Pathfinding

Week 8: Adversarial search

Week 9: Optimization

Week 10: Logic

Week 11: Case studies

Week 12: Case studies

Week 13: Unsupervised learning

Week 14: Generative models

Week 15: Generative models

## Attendance Policy

Attendance is an essential part of this class as asking questions, discussing lecture material, and proposing new ideas will be greatly enhance your learning experience.

## Request for Accommodations

If you are a student with a disability and require accommodation to participate, notify me immediately and contact the Student Disability Resource Center (<http://www.sa.sc.edu/sds>, 1705 College Street, Close-Hipp, Suite 102 Columbia, SC 29208, 803-777-6142, [sadrc@mailbox.sc.edu](mailto:sadrc@mailbox.sc.edu)) for verification of eligibility and determination of specific accommodations. In addition, please provide me the required accommodation letter from the Student Disability Resource Center.

## Academic Integrity

All work turned in must be your own. Plagiarism of any kind, including from online sources, is strictly prohibited. All potential Honor Code violations will be reported to the Office of Academic Integrity. Honor Code violations of any kind (including plagiarism) on the homework assignments will result in a zero on that assignment. Furthermore, students who have plagiarized a homework assignment will not be able to drop their lowest grade. Honor Code violations of any kind (including plagiarism) on the midterm or final will result in failure of the course. You can familiarize yourself with the Honor Code here: <http://www.sc.edu/policies/ppm/staf625.pdf>.

## Student Interaction

- Student-to-Instructor: There will be weekly face-to-face sessions held for synchronous instruction. There will be weekly office hours.
- Student-to-Student: Students will be able to interact with each other on Piazza and during synchronous sessions.
- Student-to-Content: Students will have access to the slides.

## Health and Safety

Students are expected to comply with all university health and safety guidelines including those about COVID-19. For current COVID-19 guidelines, visit [https://sc.edu/safety/coronavirus/safety\\_guidelines](https://sc.edu/safety/coronavirus/safety_guidelines).

## Syllabus Change Policy

This syllabus is a guide and every attempt is made to provide an accurate overview of the course. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester and may depend, in part, on the progress, needs, and experiences of the students. Changes to the syllabus will be made with advance notice.