CS 308 Artificial Intelligence

Winter 2024

Course Credits: 4
Contact Hours: 56 hours
Instructor: TBA
Email:TBA

COURSE OBJECTIVES

Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviors on a computer. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. Topics in AI include: problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming, machine learning, and so on.

Upon Completion of this Course, students will be able to:

1. Implement basic search- and planning-algorithms from Artificial Intelligence, and apply them to real-world problems;
2. Apply first-order logic to model physical situations and to reason about the effects of actions;
3. Select and apply the principal models of uncertainty employed in Artificial Intelligence in concrete problem-solving situations;
4. Apply techniques for representing (qualitative) temporal and spatial information in Artificial Intelligence.

PREREQUISITES

CS123 Introduction to Algorithms

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
2 Assignments	20 Points
2 Quizzes	20 Points
Midterm	25 Points
Final Exam	35 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Stuart J. Russell, Peter Norvig, ***Artificial Intelligence: A Modern Approach,*** *3rd Edition, 3rd Pearson Education, 2016.*

Recommended (Optional) Texts or Other Materials:

None.

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Introduction to Artificial Intelligence Topic 2: Agents and Environments Topic 3: Solving Problems by Searching Topic 4: Local Search and Optimization Problems **Assessments:** Assignment #1
Module 2	**Topics:** Topic 5: Constraint Satisfaction Problems Topic 6: Game Theory Topic 7: Heuristic Alpha--Beta Tree Search/Monte Carlo Tree Search Topic 8: Logical Agents **Assessments:** Quiz #1

Module 3	**Topics:** Topic 9: First-Order Logic Topic 10: Forward Chaining/Backward Chaining Topic 11: Algorithms for Classical Planning Topic 12: Hierarchical Planning **Assessments:** Assignment #2 Midterm Exam
Module 4	**Topics:** Topic 13: Quantifying Uncertainty Topic 14: Probabilistic Reasoning Topic 15: Machine Learning Topic 16: Deep Learning **Assessments:** Quiz #2
Module 5	**Topics:** Topic 17: Reinforcement Learning Topic 18: Natural Language Processing Topic 19: AI Application Topic 20: Final Exam Review **Assessments:** Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

1) Late assignments are not acceptable and are subjected to grade deductions.
2) Assignments submitted in the wrong format will be counted as not submitted.
3) Failure to submit or fulfill any required course component results in failure of the class.
4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACEDEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a

learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.