

CS 640 Artificial Intelligence

Fall 2025 Syllabus

Official Course Description

Studies computer systems that exhibit intelligent behavior, in particular, perceptual and robotic systems. Topics include human computer interfaces, computer vision, robotics, game playing, pattern recognition, knowledge representation, planning.

Prerequisites

Formally, Undergraduate Prerequisites: (CASCS330) and CASCS132 or CASMA242, or consent of instructor.

Practically, basic algorithms, linear algebra, and probability will be needed.

Weekly Cadence

Weekly reading material and assignments will usually be posted the previous Friday.

- Lectures:
 - Tuesday/Thursday 11:00-12:15
- Discussions:
 - Friday 9:05-9:55, 10:10-11:00, 11:15-12:05
- Instructor: Jeffrey Considine
 - Office: CDS 1645
 - Office hours:
 - Monday 11-12, Tuesday 3-4, Wednesday 1-2, Thursday 1-2
 - Email: jconsidi@bu.edu
- Teaching Assistant: Mahir Patel
 - Office hours:
 - Monday 12-1:30, Wednesday 2-3:30
 - Email: mahirp@bu.edu

Course Infrastructure

- [Blackboard](#) for course material including readings.
- [Piazza](#) for course announcements and questions.
- [Gradescope](#) for assignments and exams (entry code VWJDKN). All regrade requests must be submitted through Gradescope within a week of grades being posted.

- You are expected to have a personal laptop that you can bring to discussion ready for coding and other basic tasks. If this is an issue, reach out to the instructor as soon as possible.

Textbooks and Reference Materials

- Many weeks will also have academic papers and other articles assigned as reading. These will be linked from Blackboard.

Course Assessment

- Discussions: 12%
- Homework: 48%
- Midterm: 20%
- Final: 20%

Late submissions will usually be allowed for up to two days but will be penalized 1% per hour based on last submission times recorded by Gradescope. This penalty will be applied separately from the raw scores that you see in Gradescope and Blackboard. See Gradescope for assignment-specific deadlines.

Most assignments will be focused on implementing techniques covered in class, but you will sometimes be asked questions with text answers. For example, you may be asked to explain, motivate or otherwise argue for an approach. In those cases, you are expected to give a concise and direct answer and not be unnecessarily verbose. Points may be deducted for poorly written responses.

Schedule

This schedule is subject to change, particularly towards the end of the course.

Date	Lecture Topic	Assignments
Tuesday, September 2	What is AI?	Homework 1 released
Thursday, September 4	Measures of Success	
Tuesday, September 9	Responsible AI	Homework 2 released
Thursday, September 11	Rule-based Systems	Homework 1 due
Tuesday, September 16	Search and Admissible Heuristics	Homework 3 released
Thursday, September 18	Robot Path Planning	Homework 2 due

Date	Lecture Topic	Assignments
Tuesday, September 23	Introduction to Neural Networks	Homework 4 released
Thursday, September 25	SCC Tutorial	Homework 3 due
Tuesday, September 30	Training by Backpropagation	Homework 5 released
Thursday, October 2	Model Evaluation and Cross Validation	Homework 4 due
Tuesday, October 7	Natural Language Processing part 1	
Thursday, October 9	Natural Language Processing part 2	Homework 5 due
Tuesday, October 14	Substitute Monday Schedule of Classes	
Thursday, October 16	Midterm	
Tuesday, October 21	Introduction to Computer Vision.	Homework 6 released
Thursday, October 23	ImageNet	
Tuesday, October 28	Face Recognition and Other Biometrics	Homework 7 released
Thursday, October 30	Pose Estimation	Homework 6 due
Tuesday, November 4	Markov Models and Hidden Markov Models	Homework 8 released
Thursday, November 6	Training Hidden Markov Models	Homework 7 due
Tuesday, November 11	Continuous-time Hidden Markov Models	Homework 9 released
Thursday, November 13	Markov Decision Processes and Policies	Homework 8 due
Tuesday, November 18	Value and Policy Iteration	Homework 10 released
Thursday, November 20	Temporal Difference and Q-Learning	Homework 9 due
Tuesday, November 25	Learning Policies	Homework 10 due, Homework 11 released
Tuesday, December 2	Game Playing	Homework 12 released
Thursday, December 4	Monte Carlo Tree Search	Homework 11 due
Tuesday, December 9	Logic and Planning	Homework 12 due

Student Code of Conduct

All students are expected to abide by University conduct policies as detailed in the following links.

- [Boston University Student Codes of Conduct](#)
- [College of Arts & Sciences Codes of Conduct](#)
- [Boston University Student Responsibilities](#)

Academic Honesty

You may discuss assignments with classmates and consult the Internet, but you must cite your collaborators and sources. To be clear, this includes all use of generative AI. If you are copying, paraphrasing, or adapting the words of someone or something else, you should cite them.

Regardless of the sourcing and citation, you are responsible for understanding the content that you submit. If you cannot explain your submission, credit may be withdrawn at the discretion of the instructor independent of whether appropriate citations were provided.

Accommodations for Students with Disabilities

From <https://www.bu.edu/disability/>,

Our goal at Disability & Access Services is to provide services and support to ensure that students are able to access and participate in the opportunities available at Boston University. In keeping with this objective, students are expected and encouraged to utilize the resources of Disability & Access Services to the degree they determine necessary. Although a significant degree of independence is expected of students, Disability & Access Services is available to assist should the need arise.

In addition to helping students receive accommodations, we also provide resources to the University community so that events and opportunities can be made accessible.

To make an appointment, please call 617-353-3658. For general inquiries feel free to email access@bu.edu. Please note, emails will be responded to within three business days.