

Introduction to Artificial Intelligence

CS 156

Fall 2026 Section 05 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 07/31/2026

Contact Information

Instructor: Rula Khayrallah

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Office Hours

Wednesday, 12:15 PM to 1:15 PM
in-person only (MH 218)

Thursday, 4:00 PM to 5:00 PM
online via Zoom

Course Information

Class Meetings (in-person)

Monday, Wednesday, 1:30 PM to 2:45 PM, Duncan Hall 450

Course Description and Requisites

Basic concepts and techniques of artificial intelligence: problem solving, search, deduction, intelligent agents, knowledge representation. Topics chosen from logic programming, game playing, planning, machine learning, natural language, neural nets, robotics.

Prerequisite(s): CS 146 (with a grade of "C-" or better); Allowed Majors: Computer Science, Data Science, Computer Science and Linguistics, Applied and Computational Mathematics or Software Engineering; or instructor consent.

Grading: Letter Graded

Cross-listed with SE 156. Computer Science is responsible for scheduling.

* Classroom Protocols

Regular attendance is an integral part of the learning process. Please arrive to class on time and make sure your cell phones are silent during the lecture.

Class time will be spent in interactive lecture. You are required to bring your wireless laptop to class. Your laptop must remain closed except for designated activities.

We'll use iClicker to gather your feedback and check understanding during the lecture. iClicker helps me understand what you know, gives everyone a chance to participate, and allows you to review the material after class. You must be in the classroom to participate in the iClicker activity.

📋 Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

🎯 Course Goals

To give students a broad understanding of the basic principles and techniques in use today for building "intelligent" software systems.

📊 Course Learning Outcomes (CLOs)

Upon successful completion of this course, students will be able to demonstrate the following knowledge and skills by solving problems manually or by implementing appropriate algorithms in a programming language:

1. Apply the A* search algorithm to identify solution nodes in a state space.
2. Compare and evaluate the strengths and limitations of:
 - breadth-first search and depth-first search
 - informed and uninformed search strategies
 - hill-climbing search
 - STRIPS/PDDL representations for automated planning
3. Apply forward checking to solve constraint satisfaction problems.
4. Apply alpha-beta pruning to improve the efficiency of adversarial search algorithms.
5. Convert first-order logic sentences into conjunctive normal form (CNF).
6. Construct proofs using the resolution inference method.
7. Implement and evaluate at least one machine learning algorithm.

8. Explain the following foundational concepts in artificial intelligence:
- the frame problem
 - possible representations for time and for beliefs

Course Materials

Artificial Intelligence: A Modern Approach (Optional)

Author: Stuart Russell and Peter Norvig

Publisher: Pearson

Edition: 4th

ISBN: 978-0134610993

Optional

Course Requirements and Assignments

Homework

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date and time. A detailed grading rubric is provided for all assignments. Please make sure you read and follow the grading rubric to ensure full credit.

Some assignments will be individual work. Others will be team assignments. I will make it clear whether the assignment is an individual assignment or a team assignment. All work submitted on individual assignments must be your own. You may not share or copy code or answers from fellow students or from the web.

Infractions will be detected and will lead to an automatic 0. If someone else copies your work, with or without your permission, you will be held responsible.

For team assignments, teams will consist of two students. The work must be done by both team members and both team members will receive the same grade. Teams may not share or copy code from other teams or from the web. Both team members will receive a zero if that happens regardless of who copied or shared the work. Both team members will also be reported to the Student Conduct and Ethical Development office.

Questions of the Week

We will have a single question every week to check your understanding of the previous week's material. I will count the 11 best scores out of the 14 total questions in the semester. You must be in the classroom and must use the LockDown browser to access and answer the question on Canvas. Missed questions cannot be made up.

Class Participation

You are expected to attend all class meetings as you are responsible for all the material discussed. Since active participation is essential to ensure maximum benefit, we'll use iClicker to give everyone a chance to participate. The iClicker participation points may be used to give your final grade in the course a slight boost.

Midterm Exam

The midterm exam will take place in the classroom during class time on October 14.

Final Exam

The final exam is scheduled according to the SJSU Final Exam Schedule, on Friday, December 11.

✓ Grading Information

The final grade in the course will be calculated based on the homework assignments, questions of the week, midterm and final exam.

The iClicker points may be used to give your final grade a slight boost. Students with the highest iClicker scores will get up to 1 bonus point. Students who violate the academic integrity policy are not eligible.

No extra credit options will be given.

Late Work

Assignments are due by 5 PM on the due date. Late assignments will be accepted with a 1-point penalty for each day or partial day late. Late days include weekend days. For example, an assignment due on Tuesday by 5 PM will incur a penalty of 1 point if submitted at 8 AM on Wednesday. Everyone gets two free 'late days' for the semester. No submissions will be accepted more than 2 days late.

Academic Dishonesty

Students who are suspected of cheating will be referred to the Student Conduct and Ethical Development office and will receive a zero on the assignment. Grade Forgiveness does not apply to courses for which the original grade was the result of a finding of academic dishonesty

Criteria

Type	Weight	Topic	Notes
Homework Assignments	18%		
Questions of the Week	22%		

Type	Weight	Topic	Notes
Midterm	30%		
Final Exam	30%		

Breakdown

Grade	Range	Notes
A plus	98 to 100%	
A	93 to 97%	
A minus	90 to 92%	
B plus	87 to 89%	
B	83 to 86%	
B minus	80 to 82%	
C plus	77 to 79%	
C	73 to 76%	
C minus	70 to 72%	
D	60 to 69%	
F	below 60%	

University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

When	Topic	Notes
Week 1: Aug 19	Course Logistics	Form a team by August 25

When	Topic	Notes
Week 2: Aug 24, 26	What is AI? Intelligent Agents	Readings AIMA: Chapters 1, 2
Week 3: Aug 31, Sep 2	Python Essentials, Problem Solving and Search	Q1 on Aug 31 Readings AIMA: Sections 3.1-3.3 Homework 0 (Python Essentials) due September 4
Week 4: Sep 9	Uninformed Search	Q2 on Sep 9 (Sep 7 holiday) Readings AIMA: Sections 3.4 Homework 1 due September 16
Week 5: Sep 14, 16	Informed Search: greedy, A* search	Q3 on Sep 14 Readings AIMA: Sections 3.5.1-3.5.2
Week 6: Sep 21, 23	Heuristics, Local Search	Q4 on Sep 21 Readings AIMA: Section 3.6, 4.1 Homework 2 due Sep 28
Week 7: Sep 28, 30	Constraint Satisfaction Problems	Q5 on Sep 30 Readings AIMA: Chapter 6 Homework 3 due Oct 5
Week 8: Oct 5, 7	Adversarial Search	Q6 on Oct 5 Readings AIMA: Chapter 5 Homework 4 due Oct 12
Week 9: Oct 12, 14	Review, Midterm	Q7 on Oct 12 Midterm on Oct 14
Week 10: Oct 19, 21	Logical Agents	Readings AIMA: Chapter 7, 8
Week 11: Oct 26, 28	Resolution, Automated Planning	Q8 on Oct 26 Readings AIMA: Section 9.5, Chapter 11 Homework 5 due Nov 2

When	Topic	Notes
Week 12: Nov 2, 4	Uncertainty, Bayes Nets	Q9 on Nov 2 Readings AIMA: Chapter 12, Sec. 13.1-13.2 Homework 6 due Nov 18
Week 13: Nov 9	Inference in Bayes Nets, Probabilistic Reasoning over Time	Q10 on Nov 9 (Nov 11 holiday) Readings AIMA: Section 13.3, 14.1-14.3
Week 14: Nov 16, 18	Machine Learning, Naive Bayes, Perceptron	Q11 on Nov 16 Readings AIMA: Sections 19.1-19.2, 20.1-20.2
Week 15: Nov 23	Neural Nets, Nearest Neighbor	Q12 on Nov 23 Readings AIMA: Sections 21.1-21.2, 19.7.1 Homework 7 due Dec 3
Week 16: Nov 30, Dec 2	Unsupervised Learning, Reinforcement Learning, The Ethics of AI	Q13 on Nov 30 Readings AIMA: Chapter 27
Week 17: Dec 7	Final Review	Q14 on Dec 7
Final Exam	Friday, December 11	3:15-5:15PM