San José State University
Department of Computer Science
CS 156, Introduction to Artificial Intelligence, Section 2, Spring 2018

Course and Contact Information

Instructor:	Rula Khayrallah
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Office Hours:	Drop-In: Tuesday 12-1 PM, Thursday 3-4 PM By appointment only (15 minute slots): Friday 9:30-12:30 PM To schedule an appointment, please visit https://goo.gl/CXkgsE

Class Days/Time:	TuTh: 1:30-2:45 PM
Classroom:	MH 233
Prerequisites:	CS 146 and either CS 151 or CMPE 135 with a grade of C- or better in each

Course Format

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.

Canvas Course Site

Course materials such as syllabus, lecture notes, assignments, quizzes and exams can be found on the Canvas Leaning Management System course website at http://sjsu.instructure.com. You are responsible for regularly checking with Canvas to learn of any updates.

Course Description

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.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. By code or by hand find solution nodes in a state space using the A* algorithm.

2. By code or by hand translate sentences in first-order logic to conjunctive normal form (CNF).
3. By code or by hand find proofs by using resolution.
4. Explain the advantages and disadvantages of breadth-first search compared to depth-first search.
5. Explain the advantages and disadvantages of informed search, compared to uninformed search.
6. Explain the advantages and disadvantages of hill climbing.
7. Explain the advantages and disadvantages of forward checking in constraint satisfaction.
8. Explain the advantages and disadvantages of alpha-beta pruning.
9. Explain the advantages and disadvantages of the PDDL/STRIPS representation for planning.
10. Describe the frame problem.
11. Describe default reasoning.
12. Describe or implement at least one learning algorithm.

Recommended Textbook

Artificial Intelligence: A Modern Approach. 3rd Edition. Stuart Russell and Peter Norvig
ISBN: 9780136042594

Software

Python 3 https://www.python.org/downloads/release/python-363/
PyCharm Professional or Community Edition - recommended IDE

Course Requirements and Assignments

Homework Assignments:

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date.

Weekly Quizzes:

We will have a weekly quiz that consists of a single question to check your understanding of the previous week's material. I will count the 10 best scores out of the 13 total quizzes in the semester. You must be in the classroom and must use the LockDown browser to take the quiz. Missed quizzes cannot be made up.

Midterm Exam:

The midterm exam will take place in the classroom during class time on Thursday March 15.

Final Exam:

The final exam will take place in the classroom on Wednesday May 16 from 12:15 PM – 2:30 PM.

Grading Information

The final grade in the course will be calculated based on the following percentages:
Homework Assignments: 40%
Weekly Quizzes: 10%
Midterm: 20%
Final Exam: 30%

No extra credit options will be given.

Late Work:

Late assignments will be accepted with a 20% penalty for each day or partial day late. Late days include weekend days. For example, an assignment worth 100 points, due on Wednesday by 11:59 PM will incur a penalty of 80 points if submitted at 8:00 AM on Sunday. Everyone gets two free 'late days' for the semester.

Grade Scale:

The letter grade will be determined based on the following scale:

A+ = 98% - 100%	A = 93% - 97%	A- = 90% - 92%
B+ = 87% - 89%	B = 83% - 86%	B- = 80% - 82%
C+ = 77% - 79%	C = 73% - 76%	C- = 70% - 72%
D = 60% - 69%		
F = below 60		

Classroom Protocol

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.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

CS156 Introduction to Artificial Intelligence, Spring 2018, Course Schedule

Please note that this schedule is subject to change with fair notice. Any changes will be announced in class and posted on the Canvas course site.

Course Schedule

Week	Date	Topics	Readings AIMA	HW Due date
1	Jan 25	Course Logistics – What is AI?	Chapter 1	
2	Jan 30	Python		HW1 Feb 7
2	Feb 1	Python		
3	Feb 6	Intelligent Agents	Chapter 2	
3	Feb 8	Problem Solving – Search	Sec 3.1-3.3	HW2 Feb 16
4	Feb 13	Uninformed Search	Sec 3.4	
4	Feb 15	Informed Search: greedy, A* search	Sec 3.5	HW3 Feb 26
5	Feb 20	Heuristics	Sec 3.6	
5	Feb 22	Hill Climbing	Sec 4.1	
6	Feb 27	Constraint Satisfaction Problems	Chapter 6	HW4 Mar 7
6	Mar 1	Constraint Satisfaction Problems		
7	Mar 6	Adversarial Search	Chapter 5	HW5 Mar 20
7	Mar 8	Adversarial Search	Chapter 5	
8	Mar 13	Review		
8	Mar 15	Midterm		
9	Mar 20	Logical Agents	Chapter 7	
9	Mar 22	First-Order Logic	Chapter 8	
10	Mar 27	Spring Recess		
10	Mar 29	Spring Recess		
11	Apr 3	Inference in First-Order Logic	Chapter 9	HW6 Apr 10
11	Apr 5	Inference in First-Order Logic, Default Reasoning	Sec 12.6	
12	Apr 10	Planning	Chapter 10	
12	Apr 12	Uncertainty	Chapter 13	HW7 Apr 25
13	Apr 17	Bayes Nets Representation	Sec 14.1-14.4	
13	Apr 19	Probabilistic Reasoning Over Time		
14	Apr 24	Machine Learning, Naïve Bayes Classification	Chapter 20	
14	Apr 26	Perceptron	Chapter 18	HW8 May 8
15	May 1	Neural Nets, Nearest Neighbors		
15	May 3	Unsupervised Learning: Clustering		
16	May 8	Machine Learning Applications		
16	May 10	Review		
Final	May 16	MH 233: 12:15 PM – 2:30 PM		