



Foundations of Artificial Intelligence

CS 561 (3 Units)

Overview This course provides an overview of the field of Artificial Intelligence: foundations of symbolic intelligent systems, search, logic, knowledge representation, planning, learning.

Prerequisite Recommended preparation: good programming and algorithm analysis skills.

Lecture Tuesday/Thursday 4-6pm in OHE122

Exams Tuesday 4-6pm on July 5, and August 2.

Textbook Russell and Norvig, *Artificial Intelligence, A Modern Approach*, 3rd Edition
See also <http://aima.cs.berkeley.edu/> for additional resources including Code <http://aima.cs.berkeley.edu/code.html>
Demos <http://aima.cs.berkeley.edu/demos.html>

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Office Hours:
Tuesday/Thursday 6-7pm and by appointment

Grading: The following point structure will determine the grade for the course:

Participation Activities	10%
Midterm	30%
Final	30%
Homework	30%

Final letter grades for the course will follow this scale:

>85%	85-80%	79-75%	74-70%	69-65%	64-60%	59-55%	54-50%
A	A-	B+	B	B-	C+	C	C-

Participation Activities Unlike some traditional classroom settings where the instructor talks and students listen, we will attempt to create a classroom environment where the instructor facilitates active student participation in their own

learning process. Simply showing up to class is not enough; come to class ready to participate, listen, think, and ask questions. Small in-class activities will be provided to help facilitate achievement of learning goals. Two in-class activities can be missed due to sickness or absence without penalty.

Reading Assignments Readings from the book contain theoretical concepts, examples and usable code that will be very helpful for all the work in this course.

Homework Assignments There will be three homework assignments, which may consist of programming problems, class presentations, and questions representative of those that will appear on course exams. These exercises can be completed using the Python programming language. **They are to be completed individually outside of class.** A separate document will be provided with the description for each assignment.

Course Exams Students will be expected to know the material from the assigned readings in the book, in-class activities, and the homework assignments. The exams are a student's chance to demonstrate that they fully understand the course material. Exams are closed book. They will cover the lectures, readings, activities, and homework. For absences due to illness, a doctor's note is *required* as proof of illness or emergency. There are no make-up exams, but providing the instructor with a doctor's note will add the weight of the missed exam to the next exam.

Learning Management System This course will make extensive use of the online learning management system, DEN@Viterbi. Students will submit all homework assignments via this system. This system will also be used to provide online discussion forums where students can discuss topics with their peers, the teaching assistants, and course instructors. DEN@Viterbi can be found online at: <https://courses.uscdcn.net/d2l/login>

Policies Statement for Students with Disabilities
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

Academic dishonesty includes (but not limited to) the following:

1. Giving or receiving information during an exam.
2. Unauthorized or malicious use of computing facilities.
3. Deception or misrepresentation in a student's dealing with the

- instructor, teaching assistant, or grader.
4. Inappropriate collaboration on or copying of homework assignments to reduce or share the work.
 5. Plagiarism, the submission of material authored by another person but represented as the student's own work. It does not matter whether the author of the original work gave permission.
 6. Any violation of academic integrity standards described in the student conduct code.

All students are responsible for reading and following the Student Conduct Code. Note that the USC Student Conduct Code prohibits plagiarism. Some examples of what is not allowed by the conduct code: copying all or part of someone else's work (by hand or by looking at others' files, either secretly or if shown), and submitting it as your own; giving another student in the class a copy of your assignment solution; and consulting with another student during an exam. If you have questions about what is allowed, please discuss it with the instructor.

Students who violate university standards of academic integrity are subject to disciplinary sanctions, ***including failure in the course and suspension from the university***. Since dishonesty in any form harms the individual, other students, and the university, policies on academic integrity will be strictly enforced. Violations of the Student Conduct Code will be filed with the Office of Student Conduct.

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus* contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Homework Assignment Submission

Please also note that you may submit your homework assignments to be corrected using Vocareum. You should also verify what you have submitted is what you intended to submit. Please note that **it is your responsibility** to ensure that *you have submitted valid submissions*.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of DEN@USC, teleconferencing, and other technologies. See the university's site on Campus Safety and Emergency Preparedness (<http://preparedness.usc.edu/>).

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CSCI 561 (3 Units)

Week 1 – Introduction to Artificial Intelligence and Intelligent Agents
Reading: Chapter 1-2 (AIMA)

Week 2 – Problem Solving and Search, Informed Search
Reading: Chapter 3-4 (AIMA)
Homework Assignment 1

Week 3 – Game Playing / Constraint Satisfaction Problems/ Review for Exam 1
Reading: Chapter 5-6 (AIMA)

Week 4 – Logic
Reading: Chapter 7 (AIMA)
Homework Assignment 1 due

Week 5 – Logical Reasoning
Reading: Chapter 8 (AIMA)
Homework Assignment 2

Week 5 – Inference
Reading: Chapter 9 (AIMA)

Week 7 – Knowledge Representation / Planning / Review for Midterm
Reading: Chapter 10, 12 (AIMA)
Homework Assignment 2 due

Week 8 – **Exam 2 on Tuesday, July 5/** Uncertainty and Probabilistic Reasoning
Reading: Chapter 13-14 (AIMA)
Homework Assignment 3

Week 9 – Learning with Examples/Knowledge in Learning
Reading: Chapter 18-19 (AIMA)

Week 10 - Learning Probabilistic Models/Reinforcement Learning
Reading: Chapter 15-17, 20-21 (AIMA)
Homework Assignment 3 due

Week 11 – Communicating, Perceiving, Acting, and Future Directions/ Review for Final
Reading: Chapter 22-27 (AIMA)

Week 12 – **Final on Tuesday, August 4**

Syllabus is subject to change.

