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 OHE136

Exams Tuesday 4-6pm on June 9, July 7, and August 4.

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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Calendar: http://www-scf.usc.edu/~csci561a/calendar.htm
Office Hours:
Tuesday/Thursday 6-7pm and by appointment

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

Participation Activities	10%
Exam 1	30%
Exam 2	30%
Exam 3	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   Weekly assignments will combine written problems from the textbook and programming exercises. 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.uscden.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 the USC Blackboard System since the Blackboard System timestamps your submission. 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)
    Homework Assignment 1

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

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

Week 4 – Exam 1 on Tuesday, June 9/ Logic
    Reading: Chapter 7 (AIMA)
    Homework Assignment 4

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

Week 5 – Inference
    Reading: Chapter 9 (AIMA)
    Homework Assignment 6

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

Week 8 – **Exam 2 on Tuesday, July 7/** Uncertainty and Probabilistic Reasoning
    Reading: Chapter 13-14 (AIMA)
    Homework Assignment 8

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

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

Week 11 – Communicating, Perceiving, Acting, and Future Directions/ Review for Exam 3
    Reading: Chapter 22-27 (AIMA)

Week 12 – **EXAM 3 on Tuesday, August 4**

Syllabus is subject to change.

2015

April

	S	M	T	W	T	F	S
				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30		

July

	S	M	T	W	T	F	S
7				1	2	3	4
8	5	6	7	8	9	10	11
9	12	13	14	15	16	17	18
10	19	20	21	22	23	24	25
11	26	27	28	29	30	31	

May

	S	M	T	W	T	F	S
						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
1	17	18	19	20	21	22	23
2	24	25	26	27	28	29	30
	31						

August

	S	M	T	W	T	F	S
							1
12	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31					

June

	S	M	T	W	T	F	S
3		1	2	3	4	5	6
4	7	8	9	10	11	12	13
5	14	15	16	17	18	19	20
6	21	22	23	24	25	26	27
7	28	29	30				

September

	S	M	T	W	T	F	S
			1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30			

Lecture   Exam