

Course Missive

Spring 2009

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1 Overview

Welcome to CS 141! We're so pleased that you are interested in artificial intelligence (AI).

In this course, you will be exposed to the fundamentals of AI, and its limitations, by working through numerous examples of how, when, and where to apply AI techniques. Application areas include natural-language processing, machine vision, machine learning, and intelligent web agents. Example tasks range from game playing to transportation planning. Core topics include search and optimization, knowledge representation, logical inference, and probabilistic modeling and inference.

Here are some relevant logistics:

Course Number: CS 141

Course Prerequisites: CS 16, 18 or 19 and CS 22

Course Time & Location: Tu/Th 10:30-11:50, CIT 219

Course Website: <http://www.cs.brown.edu/courses/cs141/>

Optional Textbook: *Artificial Intelligence: A Modern Approach*, by Russell & Norvig

2 Staff

Professor	Amy Greenwald	amy@brown.edu
Head TA	Alex Franks	afranks@cs.brown.edu
Grad TA	Eric Sodomka	sodomka@cs.brown.edu
UTA	Andy Miller	amiller@brown.edu
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UTA	Alex Tuteur	atuteur@cs.brown.edu
UTA	Zac Townsend	ztownsen@cs.brown.edu

Please email general questions about the course to cs141tas@cs.brown.edu.

TA office hours will be posted on the course website in short order.

Here is some relevant information about the Professor:

Office Number: 383

Office Phone: 863-7678

Office Hours: Tuesdays and Thursdays, 12-1

URL: <http://www.cs.brown.edu/people/amy/>

3 Syllabus

What is AI?

Week 1 1/19 Intelligent Agents

Search

Week 2 1/26 Blind and Heuristic Search

Week 3 2/2 Heuristic and Local Search

Week 4 2/9 CSPs and Satisfiability

Week 5 2/16 ILPs and Adversarial Search

Logic

Week 6 2/23 Propostional Logic

Week 7 3/2 First-Order Logic

Week 8 3/9 Planning

Probability

Week 9 3/16 Probability and Utility Theories

Week 10 3/23 *Spring Break*

Week 11 3/30 Bayesian Networks

Week 12 4/6 Markov Decision Processes (MDPs)

Week 13 4/13 MDPs & Reinforcement Learning

Week 14 4/20 Partially-Observable MDPs & Markov Games

4 Assignments

There will be four projects and (roughly) seven homeworks in this course. Two weeks will be allotted for each project, and either one or two weeks for each homework, depending on scheduling and topic. All homeworks will be posted on Mondays at (roughly) 5:01 pm and will be due the following Monday at (promptly) 5pm.

All projects will be posted on Thursdays (roughly) at noon and will be due on Thursdays (promptly) at 12:00 a.m. To be on the safe side, the TAs recommend handing in each project on the Wednesday prior to its due date by 11:59 p.m. Projects must be pair-programmed, each one with a different partner. Please refer to the pair programming handout for information about this practice.

There will not be a midterm, but there will be a take-home final exam.

The tables below outline the homework and project schedules, and the grading breakdown.

Homeworks

Out	In	Topic
1/26	2/9	Blind and Heuristic Search
2/9	2/23	Local Search and CSPs
2/23	3/2	ILPs and Game Search
3/2	3/9	Propositional Logic
3/9	3/16	First-Order Logic
3/16	4/6	Bayesian Networks
4/6	4/20	MDPs and RL

Projects

Out	In	Topic
1/29	2/12	Slide
2/19	3/5	Word
3/12	4/2	Chips
4/9	4/23	Blackjack

Grading

Homeworks:	45%
Projects:	35%
Final Exam:	20%

Grading Projects In all CS 141 projects, the majority of your grade will depend on your program's functionality, with the parts of the assignment that are more difficult weighted more heavily. But some percentage of your grade will also be reserved for style. You should always:

- Spend time trying to find the clearest solution, because clearer solutions usually result in shorter code that is easier to read.
- Add comments to any code that would otherwise be unclear.

As a way to predict your style grade, think about the TA grading your project. The TA should never be in doubt about what a section of code is doing or how it works.

Late Policy Each student may opt to hand in one homework and one project one day late without any penalty. Otherwise, homeworks and projects will be penalized 50% per day late.

Extensions A request for an extension must be made to the professor at least 24 hours before the due date. Extensions are only granted for good reasons. Illness (with a note from health services) is always a good reason. Please do not compromise your health to finish an assignment.

5 A Paper-Free Environment

Out of deference to the humble trees that populate our picturesque Rhode Island landscape, this course is paperless. All assignments will be posted on the website in pdf format, and you are expected to turn in assignments electronically. If you prefer to have a hard copy of some assignment, you may print it yourself. Printing CS-related materials in the Sun Lab is “free.”¹

Your code should be submitted in plain-text: e.g., as Java files (.java).

Non-code solutions must be submitted in a L^AT_EX file (.tex). L^AT_EX is a powerful typesetting system that you will learn to use during the first week of the semester. All the documents for the course (including this one) have been typeset in L^AT_EX. One of the great strengths of L^AT_EX is its ability to typeset mathematical equations. It is also easily extensible.

As an example, L^AT_EX typsets this expression

`\[\sum_{i=0}^{\infty} (\tfrac{1}{2})^i = 2\]`

like this:

$$\sum_{i=0}^{\infty} \left(\frac{1}{2}\right)^i = 2$$

We hope this policy will be convenient for both you and us. We welcome your feedback.

Handing In Assignments All assignments (homeworks, projects, and exams) should be submitted using the `cs141-handin` script. You are required to submit both editable and viewable copies of your work. For code, the Java files serve both purposes. For L^AT_EX, you should submit both the source file and a pdf.

To run the handin script from a computer in the CS department:

1. Change to the assignment directory (for example, if you are turning in Homework 1, the directory should be `/u/yourlogin/course/cs141/homeworks/hw01`).
2. Run `cs141-handin <assignment name>`. For example,

```
cs141-handin hw01
cs141-handin slide
cs141-handin final
```

This will hand in the contents of the directory for assignment *<assignment name>*.

¹It won't cost you any money today, but it will cost our society in the long run.