Spring 2016 Syllabus

This syllabus is subject to change. Note that unannounced project out and due dates are just guesses and will likely change somewhat.

<table>
<thead>
<tr>
<th>Day</th>
<th>Topic</th>
<th>Ch.</th>
<th>Optional Reading</th>
<th>Slides</th>
<th>Videos</th>
<th>Assignment</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu 1/19</td>
<td>Introduction to AI</td>
<td>1</td>
<td>Live</td>
<td>Edited</td>
<td></td>
<td>Multi-Step Diagnostic</td>
<td>PS Tutorial</td>
</tr>
<tr>
<td>Th 1/21</td>
<td>Agents and Search</td>
<td>3.1-4 (2e Ch. 3)</td>
<td>Live</td>
<td>Edited</td>
<td>HW1 (sections 1-3)</td>
<td>M 1/21 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 1/26</td>
<td>Search and Heuristics</td>
<td>3.5-6 (2e Ch. 4.1-2)</td>
<td>Live</td>
<td>Edited</td>
<td>P1: Search Control T: Search</td>
<td>F 1/26 5pm</td>
<td>Th 1/27 11:59pm</td>
</tr>
<tr>
<td>Th 1/28</td>
<td>Constraint Satisfaction Problems</td>
<td>6.1 (2e Ch. 5.1)</td>
<td>Live</td>
<td>Edited</td>
<td>HW2 (section 2)</td>
<td>M 2/8 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 2/2</td>
<td>CSPs I</td>
<td>6.2-3 (2e Ch. 5.2-4)</td>
<td>Live</td>
<td>Edited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 2/4</td>
<td>Game Trees: Minimax</td>
<td>5.3-4 (2e Ch. 5.2-5)</td>
<td>Live</td>
<td>Edited</td>
<td>HW3 (sections 3 exam prep 1)</td>
<td>Tu 2/16 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 2/9</td>
<td>Game Trees: Experience Utility</td>
<td>5.2-3 (2e Ch. 6.2-3)</td>
<td>Live</td>
<td>Edited</td>
<td>P2: Multi-Agent Search Control T: Multi-Agent Search</td>
<td>F 2/19 5pm</td>
<td>Th 2/21 11:59pm</td>
</tr>
<tr>
<td>Th 2/11</td>
<td>Markov Decision Processes (I)</td>
<td>16.1-3</td>
<td>Live</td>
<td>Edited</td>
<td>HW4 (section 4 exam prep 2)</td>
<td>Th 2/23 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 2/18</td>
<td>Markov Decision Processes (II)</td>
<td>Sutton and Bart Ch. 3-4</td>
<td>Live</td>
<td>Edited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 2/21</td>
<td>Reinforcement Learning</td>
<td>17.1-3, 5&amp;8 Ch. 6.1,2,3</td>
<td>Live</td>
<td>Edited</td>
<td>HW5 (section 5 exam prep 3)</td>
<td>M 2/29 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 2/23</td>
<td>Reinforcement Learning II</td>
<td>13.1-5 (2e Ch. 13.1-4)</td>
<td>Live</td>
<td>Edited</td>
<td>P3: Reinforcement Learning</td>
<td>F 3/4 5pm</td>
<td></td>
</tr>
<tr>
<td>Th 2/23</td>
<td>Probability</td>
<td>14.1-2,4</td>
<td>Live</td>
<td>Edited</td>
<td>HW6 (section 6 exam prep 4)</td>
<td>M 3/7 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 3/1</td>
<td>Bayes’ Nets: Representation</td>
<td>14.1, Jordan 2.1</td>
<td>Live</td>
<td>Edited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 3/3</td>
<td>Bayes’ Nets: Inference</td>
<td>14.3, Jordan 2.1</td>
<td>Live</td>
<td>Edited</td>
<td>Section 7 exam prep 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu 3/8</td>
<td>Bayes’ Nets: Sampling</td>
<td>14.4-5</td>
<td>Live</td>
<td>Edited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 3/10</td>
<td>Decision Networks / VR</td>
<td>15.1-3, 6</td>
<td>Live</td>
<td>Edited</td>
<td>Practice Midterm / Solutions</td>
<td>Sa 3/12 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Tu 3/19</td>
<td>MIDTERM (1.10p)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 3/17</td>
<td>VR and Markov Models</td>
<td>15.2-5</td>
<td>Live</td>
<td>Edited</td>
<td>PS: Bayes Nets</td>
<td>M 4/4 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Th 3/19</td>
<td>Spring Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu 3/22</td>
<td>Spring Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu 3/26</td>
<td>Hidden</td>
<td>15.2,6</td>
<td>Live</td>
<td>Edited</td>
<td>HW7</td>
<td>Tu 4/5 11:59pm</td>
<td></td>
</tr>
<tr>
<td>Th 3/29</td>
<td>HMM/Filtering</td>
<td>15.2,6</td>
<td>Live</td>
<td>Edited</td>
<td>Section 9 exam prep 7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 4/5</td>
<td>ML: Naive Bayes</td>
<td>15.2,6</td>
<td>Live</td>
<td>Edited</td>
<td>PS: Ghostbusters HM9</td>
<td>F 4/15 5pm</td>
<td>Th 4/12 11:59pm</td>
</tr>
<tr>
<td>Th 4/7</td>
<td>ML: Perceptron</td>
<td>15.2,6</td>
<td>Live</td>
<td>Edited</td>
<td>Final Exam</td>
<td>Section 10 exam prep 8)</td>
<td>Su 4/24 11:59pm</td>
</tr>
<tr>
<td>Tu 4/12</td>
<td>ML: Deep Learning I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 4/14</td>
<td>ML: Deep Learning II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu 4/19</td>
<td>Advanced Topics: Robotics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 4/21</td>
<td>Advanced Topics: Natural Language Processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 4/24</td>
<td>Advanced Topics: Human Robot Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 4/28</td>
<td>Advanced Topics: Final Course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Th 5/12</td>
<td>FINAL EXAM (8:30 11:00am)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Course Policies

TIMES AND LOCATIONS:
- Lecture/Lab/Tutorial: Monday and Tuesday 1:10-2:30PM in 106 Chateau
- Recitation Sections: Beginning of the week in 252-253
- 101: MWF 11-12pm (106 Chateau)
- 102: MWF 11-12pm (126 Chateau)
- 103: TR 11-12pm (126 Chateau)
- 104: TR 11-12pm (90 Memorial Hall)
- 111: MWF 9-10am (126 Chateau)
- 112: MWF 9-10am (90 Memorial Hall)
- 113: MWF 9-10am (101 Isilo Hall)
- 114: MWF 9-10am (118 Folsom Hall)
- 115: MWF 9-10am (118 Folsom Hall)
- 116: MWF 9-10am (118 Folsom Hall)
- 117: MWF 9-10am (118 Folsom Hall)
- 118: MWF 9-10am (118 Folsom Hall)

RECOMMENDED RECITATION Sections: Check the website for the weekly schedule.
- 101: MWF 9-10am, 2205 CPE (Cohen)
- 102: MWF 9-10am, 2205 CPE (Cohen)
- 103: MWF 9-10am, 118 Folsom Hall
- 104: MWF 9-10am, 101 Isilo Hall
- 111: MWF 9-10am, 90 Memorial Hall
- 112: MWF 9-10am, 118 Folsom Hall
- 113: MWF 9-10am, 118 Folsom Hall
- 114: MWF 9-10am, 118 Folsom Hall
- 115: MWF 9-10am, 118 Folsom Hall
- 116: MWF 9-10am, 118 Folsom Hall
- 117: MWF 9-10am, 118 Folsom Hall
- 118: MWF 9-10am, 118 Folsom Hall

COMMUNICATION:
There will be several modes of communication for this course:
- Announcements will be posted on the website.
- The main mode of discussion and communication between students and staff will be through Piazza. It is intended for general questions about the course, as well as sharing assignments, due dates, and other matters. Questions about material, and so on. We strongly encourage students to participate in discussion, and, even more questions through this site. The recitation will also answer discussion.
- If you need to communicate, the course staff primarily, you should email or call 106 Chateau. You may also come to the professor or 90 Memorial Hall to discuss with the course staff.

CURRICULUM:
This course will introduce students to the basic ideas and terminology underlying the design of intelligent computer systems. Specific emphasis will be placed on the statistical and learning-theoretic foundations of computer science.

By the end of the course, you should have developed enthusiasm for and appreciation for the potential of artificial intelligence applications to our world. You will learn how to apply basic AI techniques to solve research and real-world problems. The course will also force you to think critically about the ethical implications of AI technology.

By the end of the course, you should have developed enthusiasm for and appreciation for the potential of artificial intelligence applications to our world. You will learn how to apply basic AI techniques to solve research and real-world problems. The course will also force you to think critically about the ethical implications of AI technology.

See the syllabus for class, deadlines, and late work schedule.

PREREQUISITES:
- CS 161 or CS 260: Programming experience is expected. Students with at least four credits in computer science courses will be allowed to take this course.
- CS 161 or CS 260: Facility with basic concepts of propositional logic and probability is expected and students who have not taken these courses may take the course.

This course has been substantially modified from previous offerings; students who took CS 161 from previous instructors may not be able to take this course.

CS 161 and CS 260 are recommended backgrounds.

LANGUAGE:
Course programming assignments will be in Python. We do not assume that students have prior experience with the language; we do expect you to learn the basics very quickly. Project 1 is designed to teach you the basics of Python. But if you want to get a head start there is a good tutorial at: http://www.python.org

ASSIGNMENTS:
This class includes programming projects and regular written assignments.

Collaboration: Projects 1 to 5 can be completed alone. Projects 6 through 10 can be completed alone or in teams of two. When completing a team of two is a requirement, the two team members should submit their own response. Students are to be responsible for their own understanding of the material presented in class and the code they write.

You are required to submit all of your work on the due date. You should submit the assignment in a single file, please do not submit anything else. Your assignment should be submitted online through CS 161's grading system. You may submit an additional assignment for each project if you wish. Your assignment should be submitted online through CS 161's grading system. You may submit an additional assignment for each project if you wish. Your assignment should be submitted online through CS 161's grading system.

LATE SUBMISSIONS:
Late submissions will lose the entire grade.

PLAGIARISM:
Plagiarism is giving credit to another person or another source for any ideas or information that you use in your work. Plagiarism is considered to be a very serious offense.

ETHICAL BEHAVIOR:
Ethical behavior is an important part of computer science. You are expected to work independently on all projects. You are not allowed to share code or other materials.

GRADING:
Grades are on the following scale:

A 90-100%
A- 85-89%
B+ 80-84%
B 75-79%
B- 70-74%
C+ 65-69%
C 60-64%
C- 55-59%
D+ 50-54%
D 45-49%
D- 40-44%
F 0-39%

Final grades will be available at the end of the semester based on performance of the students.

SAFETY POLICY:
This course will be conducted in a safe and respectful environment. You are expected to treat all classmates and staff with respect.

FIRE SAFETY:
Fire safety equipment is available in all common areas. In case of fire, please follow the instructions provided by the fire marshall and leave the building immediately.

EXIT SIGNS:
Exit signs are located in strategic places throughout the building.

TEXTBOOK:
No textbook is required for this course. We will be using a course created by our instructors.

ENROLLMENT:
Students are encouraged to enroll in this course as soon as they can. Any student enrolling in this course after the initial enrollment period will be subject to special enrollment procedures. Please contact the course staff for more information.