

# Syllabus for CSC 380: Foundations of Artificial Intelligence, Winter 2020

## Overview

An in-depth survey of important concepts, problems, and techniques in artificial intelligence, including search, knowledge representation, logical reasoning, and reasoning with uncertainty. A particular focus and a unifying theme of the course will be the concept of intelligent agents. No prior knowledge of AI is required. The course is particularly suitable for graduate and advanced undergraduate students who want to gain the technical background necessary to build intelligent systems, or who want to prepare for more advanced work in AI. The concepts and techniques learned in this course will be directly applicable to many other areas of computer science including software design, distributed systems, databases, and information management and retrieval.

## Learning Outcomes

By the end of this course you should be able to:

- describe the central concepts and approaches in agent-based artificial intelligence,
- describe how an agent-oriented approach helps conceptualize what is needed to produce intelligent behavior,
- implement AI techniques using search, logic, and constraint satisfaction approaches to solve challenging problems.

## Prerequisites

CSC 301 or CSC 393

## Textbooks

**Required:** Artificial Intelligence: A Modern Approach, THIRD EDITION, by Stuart Russell and Peter Norvig. PrenticeHall.

## Attendance

Class attendance is strongly encouraged, but if you're sick, please stay home and catch the COL video which will be available soon after class. You are responsible for getting any announcements which you miss in the class session. Online students are expected to view the class videos in a timely manner, participate in the discussion forums and/or email or call in any questions that you have.

## Class Plan

The following class plan is tentative and subject to change as the course progresses.

- **Class 1:** (1/7) Introduction to AI

- **Class 2:** (1/14) Search
- **Class 3:** (1/21) Heuristic and adversarial search
- **Class 4:** (1/28) Constraint satisfaction
- **Class 5:** (2/4) Logic
- **Class 6:** (2/11) Planning
- **Class 7:** (2/18) Probabilistic reasoning
- **Class 8:** (2/25) Learning
- **Class 9:** (3/3) Natural Language Processing
- **Class 10:** (3/10) Perception / Advanced topics
- **Class 11:** (3/17) Final exam

### Instructor Information

Email	<a href="mailto:peterh@cdm.depaul.edu">peterh@cdm.depaul.edu</a>
Home Page	<a href="http://reed.cs.depaul.edu/peterh/">http://reed.cs.depaul.edu/peterh/</a>
Phone	312-362-5736
Office Hours	Tuesdays and Wednesdays 3:30-5:00PM (except for 1/15, 2/5, 3/4) or by arrangement. Please email beforehand.
Address	CDM Center 717

### Assessment

Your final grade will be based on:

Item	Pct
Weekly warm-ups*	16
4 programming assignments	48
Final exam	36
<b>Total possible</b>	<b>100</b>

The grading scale will be:

Pct	Grade
93.3	A
90	A-
86.6	B+
83.3	B
80	B-
76.6	C+
73.3	C
70	C-
66.6	D+

<b>Pct</b>	<b>Grade</b>
60	D
< 60	F

### **Weekly Warm-ups**

I use a "Just In-Time Teaching" methodology which is intended to help students by lining up what's done in and outside of class. So each week (after the first), you will be given some "warm-up questions" based on the assigned readings to help you come to grips with what you've read, and to help me see what you're getting and what you're not. (That way the class time can be tailored to your needs.) The warm-ups must be completed before noon (i.e. by 11:59 AM) on the day of the class. (This applies to both in-class and online students.) The lowest score will be dropped. These will be worth a maximum of 5 point each.

### **Extra participation credit**

You can get up to 2 extra credit points by participating in the [CDM subject pool](#). Each hour of participation will earn 1 point, up to a max of 2 points.

### **Assignments**

There will be four assignments during the quarter. The assignments are due via D2L at the time indicated on the course homepage. All submissions must be submitted in pdf (preferred) or docx format. To allow for emergencies, late assignments will be accepted for up to three days, with a 15% penalty per day. If you are not done by then, submit what you have for partial credit, and indicate what works and what does not.

### **Forums**

The D2L discussion forum is the preferred place to ask questions about the class. If you have questions about a quiz question, the exams or lecture notes, please post them there. I read these frequently. All students should subscribe to the forums so that you receive email updates.

### **Final Exam**

The final exam is a written exam held during week 11. It is closedbook and closednotes. Calculators are not allowed.

Online students may take the final exam 1) in class, 2) on campus in the OL office or 3) with a proctor. OL students must take the exam in the allotted window. Exams may not be rescheduled except under extreme extenuating circumstances. Registration begins on D2L by using the "Proctored Exam" widget.

### **Workload**

This is an advanced class. Students should plan on devoting at least 10 hours per week to the readings, warm-ups, and assignments.

### **On Plagiarism**

You are encouraged to *discuss* all homeworks and projects with your classmates. You are, however, required to complete (write) them on your own. In particular, this means that you are not allowed to

"cut and paste" code or text from anywhere *or anyone* else for the assignments.

## **Incompletes**

An incomplete grade is given only for an exceptional reason such as a death in the family, a serious illness, etc. Any such reason must be documented. Any incomplete request must be made at least two weeks before the final, and approved by the Dean of the College of Computing and Digital Media. Any consequences resulting from a poor grade for the course will not be considered as valid reasons for such a request. Moreover, in my experience, no student – including myself – has ever completed an incomplete. So don't even consider. Just buckle down and get the work done.

## **Changes to Syllabus**

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

## **Online Course Evaluations**

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect. Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/> If you have any questions be sure to consult with your professor.

## **Academic Policies**

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at [http://www.cdm.depaul.edu/Current Students/Pages/PoliciesandProcedures.aspx](http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx).

## **Students with Disabilities**

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at:

Lewis Center 1420, 25 East Jackson Blvd.  
Phone number: (312)362-8002  
Fax: (312)362-6544  
TTY: (773)325.7296