Syllabus for Artificial Intelligence (CSCI 350 Section 001)

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Office hours: Mondays and Wednesdays, 3–4 PM and by appointment   **Telephone:** 212-772-5210
Class meets: Mondays and Wednesdays, 4:10 -5:25pm in 502 TH   **Mode of instruction: P** (in person)
Course website: On Blackboard, accessible through the CUNY Portal with Chrome, Firefox, Safari
Department office: 1008 Hunter North   **Department telephone:** 212-772-5213

Course description

This course is an introduction to the major concepts and techniques in the field of artificial intelligence (AI). The material is organized around three significant questions:

- What is a problem and how can a program solve one?
- How can we define a computational intelligence?
- How can such an agent contend with the real world?

Course work blends theory with practice. You will learn to program in LISP so that you can understand the computational challenges AI confronts, and have the opportunity to come up with some clever responses to it. Ultimately, this combination will change forever your ideas about programming and intelligence.

Prerequisites

Making the future is fun, but it also takes knowledge. You should have *completed* CSCI 150, 235 and MATH 150 with a grade of C or better. If you do not satisfy these requirements, see the instructor *immediately* after the first lecture, and bring a current transcript. Background in Boolean logic, basic probability theory and combinatorics, big-O complexity analysis, algorithm design, and data structures is important.

Required course materials

Text #1: *Artificial Intelligence: A Modern Approach*, ***third edition****,* by Stuart J. Russell and Peter Norvig. Prentice Hall, 2009. ISBN: 0137903952. This book's website has links to many useful online AI/Lisp resources. Available through the Hunter bookstore: http://hunter.textbookx.com/institutional

Text #2: *Practical Common LISP* by Peter Seibel, **free** at http://www.gigamonkeys.com/book/
Text #3: *Reinforcement Learning: An Introduction* by Sutton and Barto, **free** at
http://www.incompleteideas.net/book/bookdraft2016sep.pdf

Tutorial: The introductory tutorial at http://art2.ph-freiburg.de/Lisp-Course forms part of your first homework assignments. It takes several hours and a good deal of concentration. Start anytime!

Additional reading material will be posted on the course website.

All programming in this course requires LISP. You are expected to use Clozure Common Lisp, available from https://ccl.clozure.com/. Installation recommendations are posted on the course website.

Required code and data will be distributed through your CSCI departmental Linux account.

Students' responsibilities

Come to all classes on time and well prepared. The text is a necessary resource, but lectures will go far beyond it. You are responsible for all material in the reading, whether or not it is covered during class time. Be ready to ask, and to answer, questions on the reading. Detailed notes are highly recommended.

Maintain a Linux account with the Department and abide by the rules for the Department's labs. **If you do not have a CSCI Linux account, contact me immediately. If you already have one you must reclaim it by noon February 22.**

Read all email sent by the instructor to your registered Hunter Blackboard address. Changes in assignments, clarifications, and instructions will often come by email.

Keep pace with the course. The course schedule, required reading, and all assignments and the project are posted on the Blackboard website. Be sure to **check it regularly for changes** as the semester progresses.

Acknowledge any help received from other people, and reference in full any material used (e.g., book, paper, journal, web site) to prepare assignments. **Be sure to read "How to avoid plagiarism" on the class website.**

Form your project team through our Google doc. Enter your information at
https://docs.google.com/spreadsheets/d/1Zi-
4dfHsa2ayvIudOuFKxPOk4Zo6kfUV9lnbAfwll2o/edit?usp=sharing

Assignments = reading + written homework + project

All assignments are designed to increase your understanding of the material, and must be done as the course progresses. Often, one will build upon the next, so **skipping an assignment is *not* an option**. *It is not possible to do well in this course without submitting the assignments thoroughly and on time*.

• **Reading assignments** require hours of careful study. Classes are organized by topic; some topics will span several classes. If you do not do the reading *regularly and thoroughly*, you will find the course extremely difficult. Reading is either from the texts or posted on the class website. Exams will cover both reading and class discussions.

• **Written and programming assignments** require *hours* of thought and effort. You may discuss your ideas with each other, but you must do your own work. **Only machine-printed assignments will be accepted. Plan on spending time on each written assignment *over several days*.**

• **Project.** Your project is a team-based competition. How much fun you have with it and how ambitious you are will determine how much time it will take. The ideal team is a diverse group of four people.

Assignments are due at the beginning of class on their respective due dates. Written assignments must be delivered to the instructor in class. If you must miss class (never a good idea), get your homework *to me* before class. Otherwise, you must have your homework *time-stamped by the Department office and left in my mailbox there*. Please do not put it near or under my office door.

• **Penalty for late assignments:**
  • ε to 24 hours late: 25% penalty
  • 24 to 48 hours late: 50% penalty
  • More than 48 hours late: **no credit**
The instructor may grant a brief extension on an individual basis, *if requested in advance*. Repeated or last-minute requests for extensions will be denied in other than extraordinary circumstances.

Grading

This course includes both theory and practice. You must be able to define important terms in clear English and to explain ideas. Course grades are based on written and programming assignments, a team project in LISP, two exams, and thoughtful, well-prepared class participation. Grades will not be curved.
  • Assignments   35%
  • Exams   40%
  • Project   20%
  • Class participation (asking questions counts!)   5%

Learning goals

This course partially fulfills Departmental learning goals 1D, 2A, and 3 A.

Intelligent agents communicate

Talk to me

Everyone is expected to participate in class. Ask questions. Express opinions. In return, I am happy to answer questions, listen to concerns, and talk to any student about topics related to the class (or not). I actually *enjoy* student visits during office hours. You can also make an appointment to see me at other times. I also welcome your feedback throughout the semester about how the course is progressing.

Write to me

You can also reach me by email almost every day, but not late at night or very early in the morning.

Course website

The course website is available on Blackboard, and used in a variety of ways. Check it regularly for updates.

Be clear and correct
Homework and exam answers must be *legible and unambiguous*. If a question is of the "yes or no" type, you must justify your answer.

Share
There are some terrific AI web pages out there. If you find a good resource (not a page with broken links), please send it to me and I'll post it on the course website.

Writing
In accordance with Departmental requirements for elective courses, the final project includes (but is not limited to) a written analysis of at least 500 words.

Project teams and study groups
The class project is intended for teams. If you enter your information on our Google doc (described above) before 4 PM on Wednesday January 30, you will earn 10 extra credit points on assignment 1. Plan on finding and staying with a group of people who can meet together regularly. Although study groups are not required, students who work together typically learn much more than those who work alone. You are encouraged to form study groups to discuss your answers to the practice problems, which are intended to increase your understanding of the material. Practice problems are necessary, but not sufficient, preparation for the exams; if you do not do them *regularly and thoroughly*, you will find the exam questions extremely difficult.

Course policies
Attendance: Students are expected to attend all classes.

Lateness: See the Assignments section above for the lateness policy on assignments.

Missed exams: No makeup exams will be given.

Extra credit: Any extra credit opportunities will be specified in the assignments and/or project and due at the same time as the required material. No late extra credit will be accepted.

Blackboard: Students are expected to check the class website daily.

Email: Students are expected to read their Hunter email daily for clarifications and changes in reading and other assignments.

Time commitment: The amount of time devoted to this course will depend upon your interest, your ability to read technical material, and your coding skill.

For rules, guidance, and instructions for the Linux lab, including remote log in:
http://www.geography.hunter.cuny.edu/tbw/CS.Linux.Lab.FAQ/department_of_computer_science.faq.htm
If you need help, *first* look at the Linux lab FAQ there.
Access to the Linux lab is through your OneCard.
No eating or drinking in the Linux lab.

Remote login access is a privilege, not a right.
You must successfully log in using your account information while sitting in 1001B. Only then can you attempt a remote login.
If you *still* need help logging in after that, send email to cstechsp@hunter.cuny.edu. Your request must:
• Originate from your MyHunter.cuny.edu email account
• Include the exact command you are trying to execute
• Include the exact error message(s)
• Include the name of the machine you're trying to log into
• Include your Linux account user name and your full name as it appears in CUNYfirst

Hunter College Policy on Academic Integrity: Hunter College regards acts of **academic dishonesty** (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the

CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

Clarification: You may discuss your ideas with each other, but **you must run your own experiments and write your own assignments**. (The project is a within-team effort.) *Giving and receiving output or answers are equally reprehensible*

ADA policy: In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and or/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/or Learning) consult the Office of AccessABILITY located in Room E1214B to secure necessary academic accommodations. For further information and assistance please call 212-772-4857 or 212-650-3230.

Hunter College Policy on Sexual Misconduct: In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

http://www2.cuny.edu/wp-content/uploads/sites/4/page-assets/about/administration/offices/legal-affairs/POLICY-ON-SEXUAL-MISCONDUCT-10.1.2015-with-links.pdf

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How to do well in this course:

- **Allot *substantial* time from your life to this course.**
- **Do the assigned reading *before* the lecture, and ask informed questions.**
- **Attend class faithfully and take detailed notes.**
- **Ask questions in class when you don't understand something.**
- **Study your lecture notes, the reading, and the practice problems.**
- **Submit all assignments ON TIME.**
- **Abide by the College's Policy on Academic Integrity.**

Except for changes that substantially affect implementation of the grading policy, this syllabus is a guide for the course and is subject to change.

Acknowledgements

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