



The City University of New York
Artificial Intelligence

CSCI 350/CSCI 761
Spring 2020

Instructor: Anita Raja, Ph.D., Professor of Computer Science

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Office hours: Tuesdays 2:00-3:00pm, Friday 11:30-12:30pm or by appointment

Course Meeting Time: Tuesday 5:35pm-8:15pm

Meeting Location: HN C109

Prerequisites: CSCI 235, MATH 150 with a grade of C or better. Background in Boolean logic, basic probability theory and combinatorics, big-O complexity analysis, algorithm design, and data structures is expected.

Course Credits: 3

Course webpage: Blackboard; visit it regularly.

Textbook:

Required: [Artificial Intelligence A Modern Approach, Third Edition by Russell and Norvig](#), Prentice Hall, 2009. ISBN 0137903952. Book's website has links to many useful online AI resources. Available through the Hunter bookstore: <http://hunter.textbookx.com/institutional>

Catalog Description and Topics:

A survey of artificial intelligence including search and control, knowledge representation, logic and theorem proving, learning, natural language, and AI programming.

Specifically I plan to cover most of these topics: Agents, Uninformed Search, Heuristic Search, A*, IDA* Algorithms, Adversarial Search, Games, Logical Agents, Propositional Logic, First Order Logic, Planning and Knowledge Representation, Reasoning under uncertainty, Decision Making, Machine Learning Basics, KNN, NN, Bayesian, Markov Decision Processes, Reinforcement Learning, Distributed AI: Multiagent Systems, AI Applications, AI and Ethics.

Graduate section of the course will have additional assignment, exam and project requirements.

Course Credits: 3 units

This 3-credit course requires 3 hours of classroom or direct faculty instruction and on average 2-6 hours of out-of-class student work each week for approximately 15 weeks. Out-of-class work may include but is not limited to: Required Reading, Coding

assignments, Written assignments, and studying for quizzes and exams. Class participation will include occasional pop quizzes on the blackboard.

Learning Goals:

This class partially satisfies the following learning goals:

(1d) Display knowledge of at least two area disciplines within computer science (for example: artificial intelligence, computer theory, formal methods, etc.)

(2a): Be proficient in writing and reading programs sufficient to implement and study algorithms.

(2b) Be able to apply principles of design and analysis in creating substantive projects involving programs and algorithmic design, and have experience working in teams on projects of moderately realistic scope.

(3a) Be able to communicate technical ideas effectively, both in writing and in oral presentations.

(3b) Demonstrate an understanding of the ethical concerns typically arising in the context of computing.

How to Succeed in this Course:

Plan on doing *all* of the following:

- Do the assigned readings *before* the lecture, *not after* it.
- Make a list of questions before the class.
- Give yourself enough time to complete assignments and the project. Each will need significant amount of effort.
- Submit all assignments on time.
- Solve a set of problems at the end of each chapter.
- Check the blackboard for updates.
- Study for exams.
- Adhere to assignment requirements and the College's Academic Integrity policy.

Syllabus and Readings:

The topics covered and tentative schedule are listed in the schedule document on the blackboard. You are responsible for everything in the listed chapters regardless of how much time we spend on them in class. As noted above, you should read ahead so that you can ask questions in class to clear up anything you find confusing.

Course Grading Rubric

There will be one midterm exam and one final exam. The final exam is not comprehensive (i.e. it will only cover material taught after the midterm). Exams will cover class readings, notes and discussions. Your final grade will be calculated as follows:

Participation	5%
Assignments	40%
Midterm Exam	15%
Final Exam	20%
Project	20%

Assignments, Projects and Participation

- Assignments will be composed of both written and programming components. Each assignment will require several days of work.
- All submissions must be uploaded to the blackboard on time. Only electronic submissions will be accepted. Any handwritten and scanned components must be neat and legible.
- Assignments are individual submissions. You may discuss the assignments but the solution and code must be your own. Sharing and/or receiving solutions is not allowed. Please read academic integrity notes further below.
- It is imperative that all submitted program listings and executions be thoroughly documented. You are allowed to use the source code that is provided by the book. Acknowledge all code that you use from the textbook.
- All programs must compile and run. Zero credit will be given for programs that do not compile or do not run. Usually the homework assignments will only state the major objectives of the program to be written; it will be often up to you to make design decisions regarding I/O, efficiency, error handling, and so on. Make sure you test the code adequately to indicate the correctness and robustness of your approaches.
- All programming projects must be submitted by **11pm on the due date**.
 - For each late day, 10% is deducted (i.e. ϵ to 24 hours late results in 10% penalty; 24-48 hours late means 20% penalty and so on). After three late days, the assignment **will not be accepted**.
- The final project will be a group project with 3-4 students with diverse backgrounds on each team. A set of topics and project specifications and criteria will be shared mid-semester. In accordance to Departmental requirements for electives, the final project will include a written component of at least 500 words.
- Students are encouraged to ask questions in class. The class participation grade will be evaluated using the following criteria:
 - Relevance and intellectual depth of questions.
 - Accurate responses to questions posed in class.
 - Initiating and/or Engaging in discussions in class and via online board that help further understanding of course topics among students.
 - Innovative and neat solution approaches to problems posed in class.

Course Material and Communication

All course material (i.e. slides or other sources) will be uploaded on *blackboard*. Homework assignments will be uploaded on *blackboard*. We will also use *blackboard email and discussion board* for communication.

If you have a question about the class, topics covered, homework, etc. please first check the posts in the Q & A section. If you did not find an answer, please post your question there. That will make it easier for all students to see answers. You can also answer questions of fellow students. Do not post any code solutions. For questions involving personal matters you can email me – please make sure your subject line in your emails to me should begin with “CSCI 350: <topic>”. Talk to me if there are questions or concerns about the course. I also welcome feedback on the course progress through out the semester.

The standards and requirements set forth in this syllabus serve as the course policy. Notice of any modifications/changes to the syllabus will be by announcement in class or by changes to this syllabus posted on the course website along with the change date.

Make-up Policy

All exams must be taken on time. Failure to take an exam counts as a zero grade on that exam. **There will be no make-up exams.** In case you must miss an exam or a homework for a valid medical/family emergency, your exam grade composition will be adjusted. In case of such a documented emergency, contact me as soon as possible.

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. More details in the programming rules document on the blackboard.

I take academic integrity very seriously to ensure fairness in grading to all students in the class and to ensure that the grade you get reflects the value of your degree and quality of the institution you will graduate from.

1. While you are encouraged to discuss project assignments with others, **all work submitted must be your own.** You MAY NOT show your solution to a classmate or ask another student to see their solution. You may not ask another student to debug your code.
2. You may not use code from the Internet (e.g. StackOverflow). You can use code from the textbook unless otherwise specified in the assignment. You should properly attribute the code (add a comment citing in detail the source of the code — NOTE: you must always do this whenever you find yourself using others' code).
3. You may not post your code where it is accessible to others, and you may not seek help from online forums. Contract cheating is a form of academic dishonesty in which students get others to complete their coursework for them. Please read more information on Contract cheating from http://en.wikipedia.org/wiki/Contract_cheating
4. As a rule of thumb, **you must type and debug your code without directly copying someone else's code.** For the first incident of cheating or plagiarism your grade will be a 0 and it will not be dropped as the lowest. For the second incident, you will fail the class. We report all incidents to the Office of Student Affairs.

ADA Compliance

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 medical conditions. It is recommended that all students with documented disabilities (Emotional,

Medical, Physical and / or Learning) consult the Office of Accessibility located in Room E1124 to secure necessary academic accommodations. For further information and assistance please call (212-772-4857)/TTY (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.

a. 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).

b. 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. CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

Thank you for abiding by these policies. Doing so will ensure the experience is fair to everyone taking this class and/or the future offerings of this course.

Acknowledgements:

Some of the materials for this course were adapted from the textbook, online materials <http://aima.cs.berkeley.edu/> and materials designed by and discussions with Professor Ansaf Salleb-Aouissi.