Wentworth Institute of Technology

College of Engineering and Technology

COMP3770 – Introduction to Artificial Intelligence
Spring 2016

Instructor	Nate Derbinsky
Office	Dobbs 140 MWF 10AM-11AM and by appointment
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Credits/Hours	3/2/4

COURSE DESCRIPTION:

Covers introduction to the symbolic computation, knowledge representation, search strategies, and expert systems.

COURSE PREREQUISITES/COREQUISITES:

COMP2070 (Object-Oriented Programming)

REQUIRED TEXTBOOK(S):

- Russell, Stuart and Norvig, Peter. *Artificial Intelligence: A Modern Approach*, 3rd ed. Pearson, 2009 (ISBN-13: 978-0136042594)

THE COLLEGE BOOKSTORE:

Location:	103 Ward Street Boston MA 02115
Telephone:	(617) 445-8814

RECOMMENDED LEARNING MATERIALS:

- UC Berkeley CS188 Intro to AI (`http://ai.berkeley.edu`)

COURSE LEARNING OUTCOMES:

At the completion of this course, the student should be able to:

- Represent a real-world problem using an appropriate formalism (e.g. state space, MDP, Bayes Net).
- Select, implement, and apply an appropriate search method.
- Implement and execute the minimax algorithm with alpha-beta pruning.

INSTRUCTIONAL METHODOLOGIES:

This course will combine traditional lecturing with problem-based assignments that reinforce the lecture material. In particular, lectures will focus on concepts and ideas while the assignments will provide concrete experience and skills. Students are expected to read the textbook, and participate by asking and responding to questions during class. There will be regular homework assignments and quizzes. For individual attention, students are encouraged to attend office hours. This syllabus and other relevant course handouts will be posted on Blackboard[1].

ATTENDANCE POLICY:

Your attendance is expected at every class. Please arrive on time to every class: attendance will be taken at the beginning of class and late arrivals will be recorded as absences. If you have a legitimate reason for missing a class, send the instructor an email, preferably ahead of time, in order to be excused for that class. If you do have to miss a class, then it is your responsibility to learn the material covered and to check on any announcements that were made.

Students are expected to attend classes regularly, take tests, and submit work at the times specified by the instructor. Students who are absent repeatedly from class will be evaluated by faculty responsible for the course to ascertain their ability to achieve the course objectives and to continue in the course. Instructors may include, as part of the semester's grades, marks for the quality and quantity of the student's participation in class. At the discretion of the instructor, a student who misses 15 percent of class may be withdrawn from the course by the instructor. A grade of `WA` will appear on the student's official transcript as a result.

GRADING POLICY:

Homework	40%
Quizzes	40%
Final Project	20%

Homework will be posted and submitted via Blackboard. You will turn in a combination of source code and worked-out problems (preferably LaTeX; must be PDF), and you will typically have about 2 weeks to work on multiple problems. The intent is for you to gain hands-on experience working with AI problems and algorithms.

Homework 0: Mandatory! Schedule (via e-mail) and attend a 5-minute, one-on-one appointment with the instructor by the end of the second week of class.

[1] `http://bb.wit.edu`

Quizzes will be given typically once every 1-2 weeks. Unless otherwise specified, quizzes will be closed-book, closed-notes. The intent is to make sure you keep up with the reading, know the vocabulary, understand applicability of the methods, and grasp the concepts of lectures/labs. There will be no midterm or final exam.

Final Project components (see the specification document) will be submitted via Blackboard. The intent is for you to get in-depth experience with an algorithm, a paper, and/or the theory/application of AI.

WENTWORTH GRADING SYSTEM:

Grade	Definition	Weight	Numerical
A	Student learning and accomplishment far exceeds published objectives for the course/test/assignment and student work is distinguished consistently by its high level of competency and/or innovation.	4.00	96 - 100
A-		3.67	92 - 95
B+	Student learning and accomplishment goes beyond what is expected in the published objectives for the course/test/assignment and student work is frequently characterized by its special depth of understanding, development, and/or innovative experimentation.	3.33	88 - 91
B		3.00	84 - 87
B-	Student learning and accomplishment meets all published objectives for the course/test/assignment and the student work demonstrates the expected level of understanding, and application of concepts introduced.	2.67	80 - 83
C+		2.33	76 - 79
C		2.00	72 - 75
C-	Student learning and accomplishment based on the published objectives for the course/test/assignment were met with minimum passing achievement.	1.67	68 - 71
D+		1.33	64 - 67
D		1.00	60 - 63
F	Student learning and accomplishment based on the published objectives for the course/test/assignment were not sufficiently addressed nor met.	0.00	< 60

ADD/DROP:

Students should check the academic calendar to confirm the add/drop deadline. Dropping and/or adding courses is done online. Courses dropped in this period are removed from the student's record.

Non-attendance does not constitute dropping a course. If a student has registered for a course and subsequently withdraws or receives a failing grade in its prerequisite, then the student must drop that course. In some cases, the student will be dropped from that course by the Registrar. However, it is the student's responsibility to make sure that he or she meets the course prerequisites and to drop a course if the student has not successfully completed the prerequisite. The student must see his or her academic advisor or academic department chair for schedule revision and to discuss the impact of the failed or withdrawn course on the student's degree status.

MAKE-UP POLICY:

All assignments have a specific due date and time. Submissions will be accepted *up to one day* after the deadline with a 50% penalty. The assignment will be graded and returned as normal, but the grade will be recorded as half of what was earned. For example, an on-time submission might receive a grade of 90 points. The same assignment submitted after the deadline would receive 45 points (90×0.5).

Students who miss scheduled quizzes will not, as a matter of course, be able to make up those quizzes. If there is a legitimate reason why a student will not be able to complete an assignment on time or not be present for a quiz, then they should contact the instructor beforehand. Under extreme circumstances, as decided on a case-by-case basis by the instructor, students may be allowed to make up assignments or quizzes without first informing the instructor.

ACADEMIC SUPPORT:

The Learning Center (TLC) assists all Wentworth students in the areas of math, science, technical courses specific to majors, and writing. In this student-based learning environment, students can receive individual help with their studies, meet and work in study groups, attend workshops on a wide variety of subjects and find resources to assist them in meeting their goals for academic success. It includes tutors in many subjects, writing assistance and workshops focused on helping good students become great students. Make appointments at `http://www.wit.edu/tlc` or through LConnect.

ACADEMIC HONESTY STATEMENT:

"Students at Wentworth are expected to be honest and forthright in their academic endeavors. Academic dishonesty includes cheating, inventing false information or citations, plagiarism, tampering with computers, destroying other people's studio property, or academic misconduct" (Academic Catalog). See your catalogue for a full explanation.

STUDENT ACCOUNTABILITY STATEMENT:

Behavior unbecoming a student is any violation of a published Wentworth policy in an academic environment, and/or any behavior that individual faculty or staff determines is unacceptable in his or her classroom, laboratory, or other academic area or function. Behavior unbecoming a student in an academic environment will not be tolerated. Violations of behavioral expectations may be forwarded to the Office of Community Standards for disciplinary action.

Wentworth takes violations of academic dishonesty and misconduct very seriously. Sanctions for such violations include, but are not limited to, a grade of "F", removal from a course, Institute suspension, or Institute expulsion.

DISABILITY SERVICES STATEMENT:

Any student who thinks s/he may require a disability-related accommodation for this course should contact Disability Services privately to discuss their specific needs. Disability Services coordinates reasonable accommodations for students with documented disabilities. They are located in Watson Hall 003 (the Center for Wellness and Disability Services) and can be contacted at 617-989-4390 or counseling@wit.edu. For more information on acceptable documentation and the Disability Services process, visit the Disability Services website at `http://www.wit.edu/disabilityservices`.

COLLEGE OF THE FENWAY STUDENTS:

If you are enrolled in this course through COF Cross Registration, notify your course instructor. Please provide her/him with your email address to be sure that you receive course information in a timely way. You should also discuss how to access online applications that might be used in the course.

WEEKLY SCHEDULE:

The following schedule is tentative and subject to change (including topics, assignments, and quizzes). It will benefit you greatly to complete the assigned reading *before* attending the lecture.

Week	Topic	Reading	Assignments/Notes
1	Introduction to AI	1, 26	
2	Agents and Environments	2	Quiz 1, HW0 Due
3	Problem Solving and Search	3.1 – 3.4	HW1 Due
4	Informed & Local Search	3.5 – 3.6, 4.1 – 4.2	Quiz 2 PRJ: Interest Statement
5	Adversarial Search	5	HW2 Due
6	Constraint Satisfaction Problems	6	Quiz 3
7	Logical Agents	7	HW3 Due
8	First-Order Logic, Inference	8, 9	Quiz 4 PRJ: Proposal
9	**Spring Break**		
10	Uncertainty	13	HW4 Due
11	Bayesian Networks	14	Quiz 5
12	Temporal Probability Models	15	HW5 Due PRJ: Update
13	Rational Decisions	16	Quiz 6
14	Learning	18, 20, 21	HW6 Due
15	Project Presentations		PRJ: Packet Due