Boston University Metropolitan College

Artificial Intelligence

MET CS 664 A1
Course Format - Learn from Anywhere, Offered Simultaneously On Campus and Remote
Fall 2020

Vic Berry
vberry@bu.edu
Office hours: by appointment or after class

Class Time: Wednesday - 6:00 p.m. – 8:45 p.m.
Class Location: CAS 208

Course Description

This course is an intensive look at Artificial Intelligence and its applications. The course will cover many facets of AI including (but not limited to) Search, constraint propagations, and reasoning, Knowledge representation, natural language, learning, question answering, inference, visual perception, and/or problem solving. An emphasis is placed on the implementation of the techniques covered.

Lisp & Prolog are the languages of AI, we will cover them briefly, the programming assignments can be done in any modern programming language.

Text

- Stuart Russell, Peter Norvig, "Artificial Intelligence A modern Approach", 4th Edition, Prentice Hall, 2020 (*Required Text Book, available at BU Bookstore*)

Courseware

http:// learn.bu.edu

Fall 2020 COVID-19 Policies

Classroom Rotations: Classrooms on campus have new capacities that follow guidelines issued by state and local health and government authorities related to COVID-19 and physical distancing. Before the beginning of the class, and throughout the semester, I will be reaching out to students who have indicated that they want to attend the classroom in-person. Our classroom holds 11 students, and therefore we may have two rotations of students that come to class on campus alternate weeks. If needed you will be asked to attend remotely on the week that you have rotated out the classroom.

Compliance: All students returning to campus will be required, through a digital agreement, to commit to a set of Health Commitments and Expectations including face coverings, symptom attestation, testing, contact tracing, quarantine, and isolation. The agreement makes clear that compliance is a condition of being a member of our on-campus community.

You have a critical role to play in minimizing transmission of COVID-19 within the University community, so the University is requiring that you make your own health and safety commitments. Additionally, if you will be attending this class in person, you will be asked to show your Healthway badge on your mobile device to the instructor in the classroom prior to starting class, and wear your face mask over your mouth and nose at all times. If you do not comply with these rules you will be asked to leave the classroom. If you refuse to leave the class, the instructor will inform the class that they will not proceed with instruction until you leave the room. If you still refuse to leave the room, the instructor will dismiss the class and will contact the academic Dean's office for follow up.

Boston University is committed to offering the best learning environment for you, but to succeed, we need your help. We all must be responsible and respectful. If you do not want to follow these guidelines, you must participate in class remotely, so that you do not put your classmates or others at undue risk. We are counting on all members of our community to be courteous and collegial, whether they are with classmates and colleagues on campus, in the classroom, or engaging with us remotely, as we work together this fall semester.

Class Format and Grading Policy Policies

New material will be presented in weekly lectures. Reviews, exercises, and homework solutions will be covered during lectures. Student participation is highly recommended, although not mandatory, and it is possible for participation to lead to extra credit. Frequent in class labs will be utilized to assist students in their understanding of the material.

Students will be required to submit a semester project. This project will take approximately 8-10 weeks and should be of sufficient magnitude to cover a specific facet of Artificial Intelligence in depth. The student will submit a proposal for the project. On acceptance of this proposal the student may begin work. A list of potential projects will be covered in class.

Periodic Homework problems will be assigned, in addition to the Semester Project. Homework will be due the week following assignment. Late homework and projects will not be accepted unless permission by the instructor was granted prior to the due date. In class team and individual projects will also be implemented. A mid-term and final exam will be completed in class, and the breakdown of grading for the course is as follows:

Homework:	10%
Semester Project:	40%
In Class Work	10%
Mid-term Exam:	15%
Final Exam:	25%

This course is an intensive analysis of "Artificial Intelligence". The student should be prepared to spend sufficient time and energy on this course to allow for successful completion of the course work.

Academic Conduct Code – Work handed in by students should be of that student's design. Discussion of approach to problems with other students is encouraged, but the actual work on a project should be of an individual nature. Cheating and plagiarism will not be tolerated in any Metropolitan College course. It will result in no credit for the assignment or examination and may lead to disciplinary actions. Please take the time to review the Student Academic Conduct Code:
http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html.

Class Meetings, Lectures & Assignments

Lectures, Readings, and Assignments subject to change, and will be announced in class as applicable within a reasonable time frame.

Boston University Metropolitan College

Week	Date	Topic	Reference
(1)	**2 Sep 20**	Welcome, Administrative Issues, Introduction to Artificial Intelligence – Foundations, History, State of the Art	Chapter 1
(2)	**9 Sep 20**	Intelligent Agents, Solving problems by searching – Rationality, Search Agents, Heuristics	Chapters 2-3
(3)	**16 Sep20**	More Searching, Adversarial search, Local Search, Unknown Environments, Games, Stochastic Games	Chapters 4-5
(4)	**23 Sep 20**	Satisfying Constraints – Defining Constraints, Propagation, Backtracking, Local Search	Chapter 6
(5)	**30 Sep 20**	Logical Agents – Knowledge Based Agents, Propositional Logic	Chapter 7
(6)	**7 Oct 20**	First Order Logic – Representation, Syntax & Semantics, Usage	Chapter 8
(7)	**14 Oct 20**	Inference in First Order Logic – Propositional vs. FOL, Unification, Chaining, Resolution	Chapter 9
(8)	**21 Oct 20**	**Midterm Exam**	
(9)	**28 Oct 20**	Knowledge representations, Automated Planning – Definitions, Algorithms, Graphs, Planning Analysis	Chapters 10-11
(10)	**4 Nov 20**	Quantifying Uncertainty – Acting Under Uncertainty, Basic Probability, Inference, Bayes' Rule	Chapter 12
(11)	**11 Nov 20**	Learning from Example – Forms, Supervised, Decision Trees, Evaluating Hypotheses	Chapter 19
(12)	**18 Nov 20**	Deep Learning, reinforcement learning – feed forward networks, learning from rewards.	Chapter 21 & 22
(13)	**25 Nov 20**	Thanksgiving Recess	Turkey
(14)	**2 Dec 20**	Future of Artificial Intelligence, Project Presentations.	
(15)	**9 Dec 20**	Project Presentations, Battleship Tournament, Final Exam review.	
(16)	**16 Dec 20**	Final Exam.	