Artificial Intelligence: Principles and Techniques
Hanyang University, School of Computational Intelligence

Course Information
Course #: ITG-6002
Spring 2021
Tue 9am-12pm
International Building (108), Room 307
Course Management System: https://learn.hanyang.ac.kr/

Instructor Information
Instructor: Casey Bennett
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Course Description
Goal of this course is to provide a graduate-level introduction to artificial intelligence (AI) principles and methods, to lay the foundation for students to take more advanced courses on specific AI topics in the future, as well as other graduate Data Science courses. Course topics will include: intelligent agents, search algorithms, knowledge representation, classical planning techniques, machine learning principles, AI decision-making under uncertainty, robotics, cyber-physical systems, explainable AI, and AI ethics. The course will cover theory, but primarily focus on understanding the fundamental mechanics necessary to build real-world AI systems and machines that "think".

Course Learning Goals
At the end of the course, students should be able to:

- understand the methods behind each AI topic, and how they interconnect to each other in modern artificial intelligence applications
- understand the history of artificial intelligence, and its development from computer science, philosophy, mathematics, cognitive science, etc. into its own separate field
- understand principles of intelligent agents, and how we design and build them
- understand principles around search algorithms, classical planning techniques, and AI decision-making
- understand how information about the world can be represented inside AI systems using logical structures and ontologies, i.e. knowledge representation
- understand the role of ethics in AI, and the growing need for "explainable AI"
- understand the connection of AI to modern data science, machine learning, robotics, and cyber-physical systems
- have a foundational understanding of all the above AI topics, with proficiency to engage in more advanced courses in the future

Required Books

- *Artificial Intelligence: A Modern Approach, 4th Edition* by Russell & Norvig, ISBN 978-0134610993
  - Primary textbook
- Other readings will be assigned and provided as PDFs

Prerequisites

Students should have some basic knowledge of Python, programming, and probability theory.

Grading

The grading scheme for the course listed below, along with descriptions of each component. The summary of the weights of each assignment for contributing to the final grade is as follows:

Assignment	Weight in final grade
Homework Assignments	35%
In-Class Quizzes	10%
Final Exam	35%
Participation/Attendance	20%

Final Grades: A: 90% - 100%
B: 80% - 90%
C: 70% - 80%
D: 60% - 70%
F: less than 60
(+/- will be given for borderline grades)

Assignments

Homework assignments:

There will be 4 homework assignments during the semester. Students should plan to submit a written answer to assignment questions as a PDF, as well as any additional analysis files that were part of the completed homework (python code, excel). Make sure you completely answer all questions. Work will be graded based on thoroughness and quality. Late submissions are allowed for 2 days (up to 48 hours after the due date/time), with a penalty of -10% per day. No late work will be accepted after one days since the assignment was due.

The assignments must be submitted online on the class Blackboard at https://learn.hanyang.ac.kr. Only legible, organized homework which shows your work will be graded. Include your name, section number, date, and homework number on the first page of your assignment. It is your responsibility to check that your files are uploaded correctly to Blackboard.

Readings/Quizzes:

Throughout the semester, the students will be also provided with an assigned reading related to the class topics for that week. A "reading schedule" will be maintained on the class Blackboard at https://learn.hanyang.ac.kr. It is students' responsibility to make sure you pay attention to which readings are due, and when.

Reading is fundamental to this course, as the book is considered one of the best in the world on this

subject matter. In lieu of having papers or assigned reading reviews, there will be 4 "pop quizzes" during class sessions related to the readings, to encourage students to keep up with the weekly readings.

Final Exam:
The purpose of the final exam is to demonstrate students' ability to apply the knowledge and the techniques learned during this course. The final exam will contain a mix multiple-choice, open-response, and essay questions.

Participation
Students will also be graded based on their participation in in-class discussion and regular attendance. There will be a number of in-class group activities. The belief is that students learn better when they engage their own curiosity, rather than just engage in rote memorization. So bring your curiosity to class.

Software
The use of Python will be a component of the class, and some prior knowledge is a prerequisite for the course. Outside of that, there will be some tasks using in MS Excel to manipulate data.

Course Schedule
The course schedule will be maintained on the course website on Blackboard.

Attendance
It is expected that you will attend every class and remain for the duration; it is the single most important action you can take in mastering the course objectives. Coming 5 minutes late or leaving 5 minutes constitutes an absence for the student. You are responsible for all material covered, assignments delivered or received, and announcements made in class sessions that you miss. For distance learning students, this means viewing the classes in a timely manner, participate in the discussion forum, and being sure to email or call in any questions that you have.

Email
Email is the primary means of communication between faculty and students enrolled in this course outside of class time. Students should be sure their email listed in Hanyang's system is correct.

Attitude
A professional and academic attitude is expected throughout this course. Measurable examples of nonacademic or unprofessional attitude include but are not limited to: talking to others when the instructor is speaking, mocking another's opinion, cell phones ringing, emailing, texting or using the internet whether on a phone or computer. If any issues arise a student may be asked to leave the classroom. The professor will work with the Office of Student Affairs to navigate such student issues.

Civil Discourse
Hanyang University is a community that thrives on open discourse that challenges students, both intellectually and personally. It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student to become leaders. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in the course

Cell Phones/On Call
If you bring a cell phone to class, it must be off or set to a silent mode. Should you need to answer a call during class, students must leave the room in an undisruptive manner. Out of respect to fellow students

and the professor, texting is never allowable in class. If you are required to be on call as part of your job, please advise me at the start of the course.

Course Policies

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, and an announcement will be posted on Blackboard and sent via email.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at the Office of Academic Affairs: https://academic.hanyang.ac.kr/home

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 More information can be found at the Office of Academic Affairs: https://academic.hanyang.ac.kr/home

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and the Associate Dean. Only exceptions cases will receive such approval. More information can be found at the Office of Academic Affairs: https://academic.hanyang.ac.kr/home