

CS 5332 Introduction to Artificial Intelligence

Department of Computer Science and Engineering Technology

Course Prefix, Number and Title: CS 5332 Introduction to Artificial Intelligence
Credits/Lecture/Lab Hours: 3 credit hours
Year/Semester/Class Number: Spring 2025 CRN: 23918

Instructor: Hong Lin
Office Location: S-717
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Office Hours:
Day(s)/Time(s): Wednesday 2:30pm-4:30pm. Also, by appointment
Location: S-717

Course Description

This course focuses on applications and problems in the field of modern AI techniques and algorithms for making good decisions that are widely applied on a large range of financial, biomedical, robotics, information, and industrial systems. The course covers local agents, state-space searching, computational game theory, classification problem, and knowledge representation.

Prerequisite(s)

Credit in CS 5302 (Programming Foundations), or with consent of the instructor.

Course Learning Outcomes

By successfully completing this course, students will be able to:

Course Learning Outcome	Program Learning Outcome
1. Foundation: You should build a strong foundation in classic AI techniques like game playing, search, constraint satisfaction, logic and planning, machine learning, graphical models, etc.	• Explore, prepare, and clean data. • Transfer data into machine-learning representations of unsupervised, supervised, or reinforcement learning. • Design and develop intelligent agents and expert systems that receive percepts from the environment and perform actions. • Communicate and summarize AI solutions in written, oral, and visual form.
2. Skills: You should be able to propose, evaluate, and implement solutions to problems requiring AI techniques.	The same as above
3. Integration: You should be aware of where AI intersects with other disciplines, primarily machine learning and perception.	The same as above
4. Assessment: You should have experienced different flavors of problems and solutions, and have confidence in how and where AI can be applied in problems relevant to society.	The same as above

5. Service-learning: This course is designated as a service-learning course, which consists of a service-learning project. The students are required to complete a questionnaire to reflect on the service-learning experience at the end of the semester.	Service-learning outcomes at Service Learning (uhd.edu)
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The program's PLOs can be found at [Master of Science in Artificial Intelligence \(uhd.edu\)](https://uhd.edu/master-of-science-in-artificial-intelligence).

Required Materials

Artificial Intelligence: A Modern Approach, Fourth Edition, Stuart Russell & Peter Norvig. Pearson Education Inc., May 2020, Pearson Publisher. ISBN: 978-0134610993.

Recommended Materials

Students are encouraged to read materials about the topics that are helpful in their study. There are ample resources about courses that use the same textbook, e.g., the following websites, to name a few:

- <https://www.pearson.com/en-us/subject-catalog/p/artificial-intelligence-a-modern-approach/P200000003500/9780137505135>
- <http://aima.cs.berkeley.edu/>
- <https://omscs.gatech.edu/cs-6601-artificial-intelligence>

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be purchased from an independent retailer, including an online retailer. A digital copy of the textbook may be available on the UHD library [website](https://uhd.edu/library).

Evaluation Criteria

Course grades will be determined as the weighted point average (WPA) of the following items:

Item Number	Item Description	Weight
1	2 Tests (20% each)	40%
2	Final Exam 30%	30%
3	Homework, Labs and Programming Assignments (15% weight of the coursework is designated to the service-learning project)	30%

Letter grades will be assigned per UHD's Policy.

90 =< WPA → A, 80 =< WPA < 90 → B, 70 =< WPA < 80 → C, 60 =< WPA < 70 → D, WPA < 60 → F

Note: While I will post your assignment grades in Canvas, final grades will be calculated solely on the basis of the weighting and values described on the syllabus. Final grades or point totals in Canvas may not be accurate and should not be taken as the official grade source unless confirmed by the instructor.

Course Policies

• Methods of Communication with the Instructor

Several communication methods will be used:

1. Email:
 - a) The Canvas email will be the official UHD email communication system for this class.
If you have an immediate/urgent question, please email me at my UHD email which is: linh@uhd.edu
 - b) I will be checking both my UHD email accounts and will respond to your questions in less than 48 hours (excluding weekends and holidays).
2. Class Announcements:
 - a) I will be using the Announcements feature in Canvas to communicate information to the entire class.
Please check your Canvas email and Class Announcements, frequently.
3. Phone:
 - a) You can call me or leave a voice message at 713-221-2781

• Online Course Support:

I will use the Canvas LMS (<https://canvas.uhd.edu/>) to provide you with online course material. As the semester progresses, various materials will be posted there, including lecture notes, labs, and course announcements.

- **Average Workload:** 6-10 hours/week, in addition to class time.
- **Grading and Course Evaluation**
 - **Late Work:** All coursework, including closed labs, must be submitted by the deadline. No late submissions will be accepted.
 - **Make-Up Exams:** Make-up exams will *only* be given in cases of documented emergencies. It is your responsibility to contact your instructor with documentation of your emergency at least 3 days before the exam date.
- **Class Attendance & Tardiness (if applicable)**
Student attendance in the synchronous class meetings is expected. It is strongly recommended that the students attend closed lab sessions. Attendance in exams is mandatory.
- **Lab Safety Rules (if applicable)**
N/A.
- **Course hardware and Software Requirements (if applicable)**
During the course, students will be required to do programming assignments using Python. You can choose your preferred Python IDE to edit and run your Python codes, among them, Anaconda is an integrated software that allows you to define your own Python environment. Make sure that your computers have necessary software installed.
- **Other**
N/A

UHD Common Course Syllabus Policies

<https://www.uhd.edu/academics/syllabus.aspx>

In addition to the policies specified in this course syllabus, all UHD courses also follow shared policies published on [our syllabus website](#) addressing the following areas:

- *Responses to University-Wide Disruptions*
- *Academic Honesty*
- *Accessibility and Statement of Reasonable Accommodations*
- *Attendance and Roster Certification*
- *Book Purchasing*
- *Recording of Class Sessions*
- *Religious Holy Days*
- *Safety Precautions*
- *Student Support Services*
- *Student Counseling Services*
- *Technology Requirements*
- *Testing and Final Exams*
- *Use of Blackboard, Canvas, Gatormail, and Zoom*

Course Outline and Tentative Schedule

Week	Monday (virtual)	Wednesday (face-to-face)
1	1/13 Review course syllabus; Review/learn Python	1/15 Game playing
2	1/20 Martin Luther King Jr Holiday	1/22 Game playing

3	1/27 Uninformed search	1/29 Informed search
4	2/3 Simulated Annealing and Local Search	2/5 Simulated Annealing and Local Search
5	2/10 Review for Exam 1	2/12 Exam 1
6	2/17 Constraint satisfaction	2/19 Constraint satisfaction
7	2/24 Probability	2/26 Probability
8	3/3 Bayes Nets	3/5 Bayes Nets
	3/10 Spring Break	3/12 Spring Break
9	3/17 Bayes Nets	3/19 Bayes Nets
10	3/24 Review for Exam 2	3/26 Exam 2
11	3/31 Machine learning – Bayes Learning	4/2 Machine learning – Gaussian Mixture models
12	4/7 Pattern recognition through time	4/9 Pattern recognition through time
13	4/14 Pattern recognition through time	4/16 Logic and planning
14	4/21 Logic and planning	4/23 Logic and planning
15	4/28 Review	4/30 Final Exam 7:00pm-9:30pm

Note: This is a tentative schedule, and any changes will be timely communicated to the class and posted in Canvas.

PREPARED BY

Hong Lin
01/09/2025