

**College of Natural Sciences & Mathematics http://nsm.uh.edu**

**COURSE TITLE/SECTION**: Artificial Intelligence (COSC 6368)

**TIME: TU/TH 2:30-4p**

**CLASS ROOM: SEC 202**

**FACULTY: Christoph F. Eick OFFICE HOURS**: TU 11:15-12:30p TH 4-4:45-

**E-mail: ceick@uh.edu Phone: 33345 (use e-mail!!) FAX: 33335**

1. **Course *Machine Learning (COSC 6368)***

**A. Catalog Description**

Prerequisite: COSC 2430 or consent of instructor. A survey of broad areas in artificial intelligence, emphasizing areas of current interest.

**B. Purpose**

This course introduces students to the basic knowledge representation, problem solving, reasoning, and learning methods of artificial intelligence. Upon completion of 6.034, students should be able to develop intelligent systems by assembling solutions to concrete computational problems; understand the role of knowledge representation, problem solving,, and learning in intelligent-system engineering and appreciate the role of problem solving, learning and reasoning in understanding human intelligence from a computational perspective. In particular students will get exposure to the following themes.

* More general themes:
	+ Search Algorithms
	+ Probabilistic Reasoning
	+ Making sense out of data/data science
* AI-specific Topics:
	+ Reasoning in uncertain environments
	+ Heuristic search, solving constraint satisfaction problems, and games
	+ Learning from examples and reinforcement learning
	+ Brief coverage of planning, game theory, evolutionary computing, and deep learning
	+ Exposure to AI tools (belief networks, decision trees, neural networks)

**II. Course Objectives**

Upon completion of this course, students

1. will know what the goals and objectives of artificial intelligence are
2. will have a basic understanding and obtain practical experience on how to build real-world intelligent systems
3. will have sound knowledge of popular classification and prediction techniques, such as decision trees, artificial neural networks, and ensemble approaches
4. will learn how to build systems that explore and act in unknown and changing environments intelligently
5. will sound knowledge of popular search algorithms and heuristic search
6. will have a basic understanding of approaches to reason in uncertain environments including Naïve Bayes, Belief Networks, and Hidden Markov Models.
7. will get some exposure to planning, evolutionary computing, game theory, and deep learning.

**III. Course Content**

1. Introduction to Artificial Intelligence
2. Problem Solving, Search and Games
3. Planning and Acting
4. Machine Learning centering on Learning from Examples and Reinforcement Learning
5. Reasoning in Uncertain Environments
6. Course Summary

**IV. Course Elements**

23 lectures

2 exams

2 course projects

1 student presentation

2 graded home works

2 review sessions

**V. Textbooks**

**Required Text:**

S. Russell and P. Norvig, *Artificial Intelligence, A Modern Approach*, Third Edition,

Prentice Hall/Allyn&Bacon, 2010,

**VII. Evaluation and Grading**

Midterm and Final Exam: 51-54%

Course Projects (2): 29-35%
Homeworks (2): 10-14%

Presentation(1); 3-4%
Class Participation: 2%

Translation number to letter grades:
A:100-90 A-:90-86 B+:86-82 B:82-77 B-:77-74 C+:74-70
C: 70-66 C-:66-62 D+:62-58 D:58-54 D-:54-50 F: 50-0

Students may discuss course material and homeworks, but must take special care to discern the difference between **collaborating** in order to increase understanding of course materials and collaborating on the homework / course project itself. We encourage students to help each other understand course material to clarify the meaning of homework problems or to discuss problem-solving strategies, but it is **not** permissible for one student to help or be helped by another student in working through homework problems and in the course project. If, in discussing course materials and problems, students believe that their like-mindedness from such discussions could be construed as collaboration on their assignments, students must cite each other, briefly explaining the extent of their collaboration. Any assistance that is not given proper citation may be considered a violation of the Honor Code, and might result in obtaining a grade of F in the course, and in further prosecution.

**Policy on grades of I (Incomplete):** A grade of ‘I’ will only be given in extreme emergency situations and only if the student completed more than 2/3 of the course work.

**Addendum:** Whenever possible, and in accordance with 504/ADA guidelines, the University of Houston will attempt to provide reasonable academic accommodations to students who request and require them. Please call 713-743-5400 for more assistance.