



NORTH SOUTH UNIVERSITY

Department of Electrical and Computer Engineering
CSE 440 / EEE 333 / ETE 333: Artificial Intelligence

Section – 2

Course Outline – Fall 2025

Instructor: Dr. Mohammad Mahmudul Alam (MLD) Office Location: SAC 924 Email: mohammad.alam05@northsouth.edu Office hours: ST (8:30 AM – 9:30 AM, 11:20 AM – 2:30 PM) Directions: Please be prepared before coming to the office hours and notify me via email.	Class hours: MW 02:40 PM - 04:10 PM Classroom: LIB 603 Credit: 3 credit hours Prerequisites: CSE 215, MAT 361
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Course Description:

This course is about the theory and practice of Artificial Intelligence (AI). AI is the name of the collection of techniques inspired by the goal of understanding and implementing intelligence behavior via rational agents. A rational agent is one that acts to achieve the best expected outcome. This course concentrates on the general principles of rational agents and on the components for constructing them. A brief introduction to various applications of AI such as search problems, and probabilistic reasoning will be provided. Along with both theoretical and programming (python) problems will be exercised.

Course Objectives:

The objectives of this course are to:

1. Learn fundamental knowledge of artificial intelligence and its applications in different areas.
2. Formulate search problems and resolve them using techniques such as Uninformed Search, Heuristic Search, Backtracking Search, Adversarial Search, and Non-deterministic Search.
3. Learn back-tracking search to solve constraint satisfaction problems.
4. Understand the fundamentals of knowledge representation (logic-based), inference, and theorem proving in propositional logic and first-order logic.
5. Apply probabilistic reasoning to resolve problems using Bayes' Nets, Markov Models, Decision Trees, and Machine Learning methods.

Course Outcomes (COs):

1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.
2. Master classical Artificial Intelligence techniques, such as search algorithms, minimax algorithms, decision trees, and neural networks.
3. Apply Artificial Intelligence techniques for problem-solving.

Textbook(s):

"Artificial Intelligence: A Modern Approach", Stuart Russell and Peter Norvig, 4th Edition

"Artificial Intelligence Illuminated", Ben Coppin. Jones and Bartlett Publications.

Marks Distribution (tentative):

Attendance	10%
Assignments	20%
Quizzes	20%
Midterm	20%
Final Exam	30%

Quizzes: There will be a total of 4 quizzes. The **best 3** will be counted towards the final grading.

Assignments: Total 3 to 4 assignments on both theory + coding (python) problems.

Week Plan (Tentative):

Class	Lecture ID	Topics
1	Lecture 01	Introduction to Artificial Intelligence + AI Agents
2	Lecture 02	Uninformed Search
3	Lecture 03	Uninformed + Intro to Informed Search
4	Lecture 04	Informed Search
5	Exam	Quiz 1 + Discussion
6	Lecture 05	Search 03: Local Search
7	Lecture 06	Search 04: Adversarial Search
8	Lecture 07	Constraint Satisfaction Problem
9	Exam	Quiz 2 + Discussion
10	Lecture 08	Midterm Review
11	Exam	Midterm Exam
12	Lecture 09	Knowledge Representation
13	Lecture 10	Propositional Logic 01
14	Lecture 11	Propositional Logic 02
15	Lecture 12	First Order Logic 01
16	Lecture 13	First Order Logic 02
17	Exam	Quiz 3 + Discussion
18	Lecture 14	Probability & Naïve Bayes
19	Lecture 15	Bayesian Networks and Inference
20	Lecture 16	Uncertainty Over Time
21	Lecture 17	Machine Learning (Supervised): Decision Trees
22	Lecture 18	Machine Learning (Unsupervised): Clustering
23	Exam	Quiz 4 + Discussion
24	Lecture 19	Final Exam Review
		Final Exam

Grading Policy: As per NSU grading policy available in

<https://www.northsouth.edu/academic/grading-policy.html>

Academic Honesty:

Any means of unauthorized assistance in preparing materials that a student submits as original work is deemed to be cheating and constitutes grounds for disciplinary action. Instructors are expected to use reasonably practical means of preventing and detecting cheating. Any student judged to have engaged in cheating might receive a reduced grade for the work in question, a failing grade in the course, or such other lesser penalty, as the instructor deems appropriate. *Serious instances may be referred to the Disciplinary Committee in the Office of the Vice Chancellor.*