MORGAN STATE UNIVERSITY
School of Computer, Mathematical and Natural Sciences
Computer Science Department

Course Number:	COSC 470.001
Course Title:	Artificial Intelligence
Instructor:	Abdollah (Iman) Dehzangi
Class time:	T-R 3:00pm-4:30pm
Office Hours:	M-T-W 9:00am-12:00noon
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Blackboard:	http://morgan.blackboard.com

Course Learning Goals:

To become familiar with the concept of Artificial Intelligence, Machine Learning, and Pattern Recognition. In this course you will learn who an intelligent system can be designed and how it works. You will also learn how to design algorithms (intelligent agents) that learns from their environment and incorporate that learning to the environment by their actions.

Suggested Textbook:

Artificial Intelligence: A Modern Approach (3rd Edition) by Stuart Russell, Peter Norvig

Note: This book is available in Blackboard in PDF. The course concept and assignments are mostly from the book. Therefore, reading and referring to the book will be mandatory.

Supplementary Materials:

Python Programming Language:
Related resource and materials are provided in a separated file

C++ Programming Language:
Related resources and materials are provided in a separated file

Grading Components:

- Class Participation & Activities 20%
Presentations, article review, Q/A, Presence in the class, Individual project

- Project 20%
Group project (programming)

- **Midterm Exam** 25%
- **Final Exam** 35%

Attendance and Punctuality:

- Attendance and punctuality are extremely important. Attendance will be taken during each class period.
- Please make sure you are on time on class. Class exactly starts at 3:00pm. Delay on attendance to class will impact on class participation grade.
- Attendance will also be counted as part of your class participation grade (see Grading Components section). You will be allotted no more than two misses without any penalty. On the third absence (unless excused by the instructor), you will lose at least 15 points off of your class participation grade. You will also lose at least 15 additional points per miss beyond the third absence.

Participation:

- Students are required to participate in class discussions. It is considered a basic element of this class for every student to actively participate in the discussion of the materials presented in this course. If you are absent from class, it is your responsibility to find out what occurred during your absence and to "catch up" with the rest of the class.
- Class participation including article presentation has a high impact on your class participation grade. You can get the article for presentation from me and during the office hours.
- Presentation (10 to 15 minutes) is required for students as their class participation. The subject should be related to Artificial Intelligence, pattern recognition, Machine learning and their applications.

Cell Phone usage:

- Cell phone usage is prohibited during class. If you need to use your cell phone, please step outside to do so. Do not answer the phone or text during class. If you are found doing so, you will dismissed from class and will be docked 10 points from your class participation grade.

Computer Usage:

- Computer usage for unrelated materials to the class curriculum is prohibited during class. If you are found doing so, you will dismissed from class and will be docked 10 points from your class participation grade.

Examination:

- Exams will be closed book and closed-notes, unless instructed otherwise.

Academic Dishonesty:

- Cheating, plagiarism, copying, and unauthorized collaboration are unacceptable and are subject to disciplinary actions, including a grade "F" for the course and a letter of fact in the student's record, according to the rules of the University and the Department of Computer Science.

Prohibited Conduct in the Classroom/lab:

- Disruptive, disorderly or reckless behavior in educational settings (e.g., classrooms, labs, libraries, clinics, etc.) interferes with the teaching and learning process. The Morgan State University Code of Student Conduct (available at www.morgan.edu) prohibits such behavior.
- Prohibited conduct includes, but is not limited to, the use of wireless communication devices, bringing unregistered persons to class, smoking, persistently speaking without being called upon, refusing to be seated, or disruptions caused by leaving and entering without authorization from the instructor for this course. Students are instructed to refrain from such prohibited conduct.
- Depending on the nature of the disorderly conduct sanctions may include removal from the classroom or other educational setting, suspension, expulsion and/or referral to appropriate state or federal agencies. All cellular phones, beepers, etc must be turned off before entering the classroom/lab. TEN points per instance will be deducted from your grade for anyone who disrupts the class with one of these devices.

Changes to syllabus:

- The instructor reserves the right to make changes to the syllabus as necessary. You will be notified in writing if and when a change is made to the syllabus.

Course Syllabus:

- Introduction to Artificial Intelligence (AI)
    - What is AI?
    - The foundation and history of AI
- Intelligent Agents
    - Agents and environments
    - The concept of rationality
    - The nature of environment
    - The structure of agents
- Problem Solving by searching
    - Problem solving agent
    - Uniformed search strategies

    - Informed (heuristic) search strategies
    - heuristic function
- Beyond Classical searching
    - Adversarial Search
    - Games
    - Alpha-Beta pruning
- Logical Agents: Propositional Logic
- First Order Logic
- Uncertainty/Probability
- Bayes' Rule
- Machine Learning
    - The concept of prior probability, posterior probability. Likelihood
    - Brief introduction of learning algorithm
        - K-Nearest Neighbour as sample