Arab Academy for Science and Technology and Maritime Transport
Computer Science Curriculum
Course Syllabus

Course Code: CS366	**Course Title:** Introduction to Artificial Intelligence	**Classification:**	**Coordinator's Name:** Dr. Essam Elfakhrany **LecturerName:**	**Credit Hours:** 3
Pre-requisites: • CS202 (Discrete Structures) • CS212 (Data Structures and Algorithms)	**Co-requisites:** None	**Schedule:** Lecture: 2 hours Tutorial-Lab: 2 hours		
Office Hours:				
Course Description: Introduction to basic methods of Artificial Intelligence (AI) such as problem solving, searching techniques, machine learning and knowledge representation. Through discussions, small projects, and examples, students learn what AI is, some of the major developments in the field, promising directions, and the techniques for making computers exhibit intelligent behavior. Students make use of available tools and explore some areas of applications.				
Textbook: RUSSELL, GEORGE, *Artificial Intelligence: A modern Approach*, PEARSON.				

References:

- Peter Jackson, *Introduction to Expert Systems*, Addison Wesley.
- Ivan Bratko*, Prolog Programming for AI*, Addison Wesley.

Course Objectives: Upon completion of this course, students should be able to demonstrate Knowledge of:	**Contribution to Program Student Outcomes:**
1. Understand the basic concepts of artificial intelligence. **2.** Understand state space representation. **3.** Compare different problem solving strategies based on algorithms and heuristics. **4.** Understand the basic concepts of Genetic Algorithm. **5.** Understand the basic concepts of machine learning using artificial neural networks. **6.** Understand different Methods for knowledge representations.	SO1 - Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. SO2 - Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of program's discipline. SO6 - Apply computer science theory and software development fundamentals to produce computing-based solutions.
Course Outline: **1.** Introduction to AI: Definition, History and Goals. **2.** State Space Representation. **3.** Blind search techniques. **4.** Heuristic search techniques. **5.** A* Algorithm. **6.** Admissibility, Monotonicity and Informedness of a heuristic function. **7.** 7th Week Examination	**8.** Game trees and Alpha Beta Pruning Algorithm. **9.** Genetic Algorithm. **10.** Introduction to Machine Learning using Artificial Neural Networks. **11.** Perceptron Learning Algorithm. **12.** 12th Week Examination **13.** Knowledge-based systems. **14.** Propositional Logic. **15.** Revision **16.** Final Examination

Grade Distribution:

7th Week Assessment (30%):
Exam (25%) + Homework Assignments 5%

12th Week Assessment (20%):
Exam (20%)

Year Work (10%):
Programming Assignments 10%

Final Exam (40%)

Policies:

Attendance:
AASTMT Education and Study Regulations (available at aast.edu)

Academic Honesty:
AASTMT Education and Study Regulations (available at aast.edu)

Late Submission:
Late submissions are graded out of 75% (1 week late), 50% (2 weeks late), 25% (3 weeks late), 0% (more than 3 weeks late)