

Course Title:	<i>Artificial Intelligence</i>
Course Code:	CSC-411
Credit Hours Theory:	3
Credit Hours Lab (If Applicable):	0
Instructor Name with Qualification:	Dr Awais Majeed – PhD (Informatics)
Course Objectives:	Artificial intelligence is the science that studies and develops methods of making computers more intelligent. The focus of this course is on basic AI techniques for knowledge representation, search, reasoning, learning and designing intelligent agents. The course also aims to give an overview of other related topics within AI, such as historical, philosophical, and logical foundations of AI.
Learning Outcomes:	<ol style="list-style-type: none"> 1. Analyze and solve problems by a suitable AI method (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem, etc.) to improve efficiency 2. Design and carry out an empirical evaluation of different algorithms on a problem formalization and state the conclusions that the evaluation supports. 3. Make use of methods from artificial intelligence in the analysis, design and implementation of computer programs 4. Ability to work in groups to apply intelligent techniques to complex computing problems
Contents (Catalog Description):	Artificial intelligence is the science that studies and develops methods of making computers more intelligent. The focus of this course is on basic AI techniques for knowledge representation, search, reasoning, learning and designing intelligent agents. The course also aims to give an overview of other related topics within AI, such as historical, philosophical, and logical foundations of AI.
Recommended Text Books:	Stuart Russel, Peter Norvig, “Artificial Intelligence: A modern Approach” 3 rd Edition, Pearson.
Reference Books:	
Helping Web Sites:	

General Instructions for students:

There is 0 tolerance for plagiarism. Attendance is mandatory. You must meet all deadlines and there will be penalties for missing the deadlines. Students are required to take all the tests. No makeup tests will be given under normal circumstances. 75% attendance is mandatory. Latecomers will be marked as absent.

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Sixteen Week Lesson Plan	Week	Topics Covered
	1	Introduction to AI Definitions, history, application areas, other knowledge areas concerned with the domain, agents.
	2	Introduction to Problem Solving & Agents Problem Solving agents, types of problems, Problem formulations, searching for solutions.
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	4	Uninformed search algorithms Breadth first search, uniform cost search, depth first search, depth limited search, iterative deepening depth-first search, bidirectional search
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	6-7	Informed search algorithms Greedy-best first search, A* search, memory bound heuristic search
	7	Logical Agents Knowledge based agents, introduction to logic, propositional logic, First Order Logic, Syntax and Semantics.
	8	First Order Logic Using FOL, Examples and exercises
	9	Adversarial search and CSP Games, Optimal decisions in games, Alpha-Beta Pruning, Types of games,
	10	Constrain Satisfaction Problem Definitions and basics, Inference in CSP, backtracking and local search in CSP
	11	Reasoning Types of reasoning, Deductive reasoning, Inductive reasoning, Analogical reasoning, Common-sense reasoning, Non-Monotonic reasoning
	12	Inference in first order logic-I
	13	Inference in first order logic-II
	14	Planning
	15	Expert Systems
	16	Introduction to Artificial Neural Networks

