Arab Academy for Science and Technology & Maritime Transport
College of Computing & Information Technology

University/Academy:	Arab Academy for Science and Technology & Maritime Transport		
Faculty/Institute:	College of Computing &Information Technology	Course title	**Introduction to Artificial Intelligence**
Program:	B. Sc. In Computer Science	Course code	**CS366**

Form no. (11A) : **Knowledge and skills matrix for a course**

Course content	Week	Knowledge	Intellectual skills	Professional skills	General skills
Introduction to AI : Definition - History – Goals	1	• Define what is AI. • Show the AI model • List the application of AI			
AI as Representation and Search. State Space. Search Strategy.	2	• Define what is a state space • Know how to build a state space		• Solve some example problems using state space	
Blind search techniques.	3	• Define Blind Search • List blind search techniques	• Differentiate between depth and breadth search • Show the state space generated nodes using different blind search algorithms	• Implement searching techniques	• Show the use of general computing facilities.
Informed (Heuristic) search techniques : Hill Climbing – Best First	4	• Explain the need for heuristic search. • List the different heuristic search algorithms	• Compare the search space between blind and heuristic search • Apply the heuristic search on an example problem • Detect the correct path to the solution based on the heuristic values.	• Implement searching techniques	• Acquire analysis and presentation skills.
A* Algorithm	5	• Know the A* algorithm search strategy	• Apply the A* on an example • Detect the shortest path		

			to the goal		
Admissibility – Monotonicity – Informedness of a heuristic function	6	• Define Admissibility – Monotonicity – and Informedness	• Show that A* is admissible • Show the informedness effect based on different heuristic functions		
7th Week Exam + Revision	7				
Game trees	8	• Know the min-max game playing algorithm • Show the game strategy for three players game.	• Apply the min-max algorithm on a sample game tree.		
Alpha Beta Pruning Algorithm	9	• Demonstrate the alpha beta pruning algorithm.	• Calculate the alpha beta values at different levels of the tree. • Detect the branches to be pruned • Analyze the effect of the pruning algorithm • Compare the results to results of the min-max algorithm	•	
Knowledge Representation	10	• List the different knowledge representations. • Define the production rules	• Apply forward and backward reasoning on a set of production rules.		
Expert systems & knowledge-based systems.	11	• Define what an expert system is.	• Construct a decision tree for an expert system.	• Develop an expert system	• Demonstrate skills in group working, team management, time management and organizational skills. • Acquire analysis and presentation skills.
12th Week Exam +	12				

Revision				
Propositional Logic : Syntax – Semantic – Proof by resolution refutation.	13	• Define what propositional logic is • List the advantages and disadvantages of propositional logic	• Apply resolution on a set of propositional expressions.	
First Order Logic : Syntax – Semantic –	14	• Define what first order logic is. • List the advantages and disadvantages of the first order logic		
First Order Logic : Resolution - Soundness – Completeness	15	• show the resolution in FOL • define the soundness and completeness in FOL	• Detect the Soundness and completeness in FOL • Apply resolution on a set of FOL expressions.	

<u>**Course Instructor**</u>   <u>**Head of Department**</u>

Name: Name:

Signature: Signature: