



48. Course Plan of Artificial Intelligence

I. Information about Faculty Member Responsible for the Course						
Name of Faculty Member	Prof. Dr. Abdul Raqib Abdo Asaad	Office Hours				
Location & Telephone No.		SAT	SUN	MON	TUE	WED
E-mail						

II. Course Identification and General Information						
1.	Course Title:	Artificial Intelligence				
2.	Course Number & Code:	CCE326				
3.	Credit hours:	C.H				Total
		Th.	Tu.	Pr.	Tr.	
		2	-	2	-	
4.	Study level/year at which this course is offered:	Level 4- Semester 2				
5.	Pre –requisite (if any):	Data Structure and Algorithms (CCE246)				
6.	Co –requisite (if any):	None.				
7.	Program (s) in which the course is offered	B.Sc. of Computer and Control Engineering				
8.	Language of teaching the course:	Arabic & English				
9.	System of Study:	Semesters				
10.	Mode of delivery:	Collective and individual learning				
11.	Location of teaching the course:	Class Room (Faculty of Engineering)				

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III. Course Description

This course aims to provide students with basic principles and problem-solving techniques in Artificial Intelligence (AI), which become the dominant branch in information technology field with its wide applications. Course topics cover the foundation of AI, AI programming language, AI problems, problem solving and searching algorithms, knowledge representation, reasoning, planning, and applications. This course depends on lectures and computer-based lab. In addition, it depends on Data Structure and Algorithms as prerequisite which expected to develop student's problem-solving skills related to AI and its wide applications in IT field. This course depends on lectures and practical parts. In addition, it depends on Data Structure and Algorithms as prerequisite.

IV. Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop:
 1. Explain the concepts and problem-solving techniques in AI.
 2. Recognize the connection between problem solving and searching algorithms.
 3. Solve IT-based problems using AI techniques.
 4. Justify the problems solve according to the demand requirements.
 5. Apply AI software & programming languages in solving problems related to AI applications.
 6. Write AI programs using AI programing languages to different applications in the field of AI.
 7. Work in a group to achieve final course's project or during laboratory activities.
 8. Follow the standards to achieve his reports and presentations.

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V. Course Content:				
<ul style="list-style-type: none"> Distribution of Semester Weekly Plan of Course Topics/Items and Activities 				
A – Theoretical Aspect:				
Order	Topics List	Sub Topics List	Week Due	Contact Hours
1.	AI Overview	<ul style="list-style-type: none"> What is AI? Foundations of AI AI problems Introduction to AI languages AI techniques Intelligent agents Agent structure Nature of environment 	1 st , 2 nd	4
2.	Problem-Solving & Search	<ul style="list-style-type: none"> Problem-solving (with example problems) Searching for solution uninformed search strategies Heuristic search strategies Heuristic functions Local search algorithms and optimization problems Searching with nondeterministic action Searching with partial observation 	3 rd , 4 th , 5 th , 6 th , 7 th	10
3.	Midterm Exam	<ul style="list-style-type: none"> All previous topics 	8 th	2
4.	Game Playing Overview	<ul style="list-style-type: none"> Optimal decisions in games (the minimax algorithm, optimal decision in multiplayer games) 	9 th , 10 th	4

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		<ul style="list-style-type: none"> Alpha-beta pruning 		
5.	Knowledge, Reasoning, and Planning	<ul style="list-style-type: none"> Logical agents First-order logic Inference in first-order logic Planning and acting in the real world Classical planning Knowledge structure Knowledge representation paradigms 	11 th , 12 th , 13 th , 14 th , 15 th	10
6.	Final Exam	<ul style="list-style-type: none"> All topics 	16 th	2
Number of Weeks /and Units Per Semester			16	32

B - Practical Aspect			
Order	Topics List	Number of Weeks	Contact hours
1.	AI programming language: Basic concepts	1 st	2
2.	AI programming language (cont.)	2 nd , 3 rd	4
3.	Using the AI prog. language in Machine Learning	4 th , 5 th	4
4.	Using the AI prog. language in Logic Programming	6 th , 7 th	4
5.	Using the AI prog. language in Heuristic Search	8 th , 9 th	4
6.	Using the AI prog. language in Gaming	10 th , 11 th	4
7.	Review	12 th	
8.	AI Projects Presentations	13 th , 14 th	4
9.	Final Lab. Exam	15 th	2
Number of Weeks /and Units Per Semester		15	30

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VI. Teaching strategies of the course:	
	<ul style="list-style-type: none"> • Active Lectures, • Interactive class discussions, • Laboratory, • Assignments, • Use of Information Technology Tools • Projects.

VII. Assignments & Reports:			
No.	Assignments	Week Due	Mark
1.	<ul style="list-style-type: none"> • Homework on Problem Solving and AI Searching Techniques, • Searching web and prepare short report on AI's Problem-solving. 	3 rd to 5 th	3
2.	<ul style="list-style-type: none"> • Homework and Report on Game Playing, Knowledge Reasoning & Planning 	9 th to 14 th	3
3.	<ul style="list-style-type: none"> • Laboratory Reports 	2 nd to 11 th	9
Total			15

VIII. Schedule of Assessment Tasks for Students during the Semester:				
No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1.	Assignments & Reports	3 rd to 14 th	15	10%
2.	Quizzes	5 th , 10 th & 14 th	7.5	5%

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3.	Midterm Exam (Theory)	8 th	18.75	12.5%
4.	Final Lab. Exam (including Course Project Evaluation)	13 th , 14 th & 15 th	33.75	22.5%
5.	Final Exam (Theory)	16 th	75	50%
Total			150	100%

IX. Learning Resources:	
1- Required Textbook(s)	
1. Stuart Russell and Peter Norvig (2009), “Artificial Intelligence: A Modern Approach”, Third Edition, Pearson. 2. Elaine Rich and Kevin Knight (2010), “Artificial Intelligence”, Third Edition, McGraw-Hill.	
2- Essential References	
1. Zsolt Nagy (2018), “Artificial Intelligence and Machine Learning Fundamentals”, Packt Publishing, ISBN 978-1-78980-165-1. 2. Winston (1992), “Artificial Intelligence”, Third Edition, Pearson. 3. George F. Luger (2008), “Artificial Intelligence: Structures and Strategies for Complex Problem Solving”, Sixth Edition, Pearson.	
3- Electronic Materials and Web Sites etc.	

X. Course Policies:	
1.	Class Attendance: -A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring an approved statement from university Clinic
2.	Tardy:

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	- For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3.	Exam Attendance/Punctuality: - A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	Assignments & Projects: - The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5.	Cheating: - For cheating in exam, a student will be considered as failure . In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6.	Plagiarism: Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proved a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7.	Other policies: - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. Lecture notes and assignments my given directly to students using soft or hard copy

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