

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Artificial Intelligence Algorithms		Module Delivery
Module Type	C		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	AI208		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	GII	Semester of Delivery	
Administering Department	AI	College	CIT
Module Leader	Mohammed A.S. Al-Hitawi	e-mail	al_hitawe@uofallujah.edu.iq
Module Leader's Acad. Title	Assist. Lec.	Module Leader's Qualification	Master
Module Tutor	Omar Dhafer Madeeh	e-mail	omar.dhafer@uofallujah.edu.iq
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Scientific Committee Approval Date	1/06/2026	Version Number	2.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This module aims to provide a comprehensive understanding of AI algorithms, from foundational concepts to practical applications, and to equip learners with the skills needed to apply these algorithms in real-world scenarios.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing the module Gaining a strong foundation in AI algorithms to address real-world challenges. Gaining the ability in applying in different search algorithms, such as depth-first search and breadth-first search.
Indicative Contents المحتويات الإرشادية	This indicative content aims to cover a broad spectrum of AI algorithms, providing students with a comprehensive understanding of foundational concepts, techniques, and their practical applications.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	- Online Courses and Tutorials: Utilize online courses, tutorials, and video lectures to provide structured learning materials. - Interactive Coding Exercises: Incorporate interactive coding exercises and challenges to reinforce concepts and provide hands-on practice.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation				
تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning

					Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	1	5% (5)	12	All
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Artificial Intelligence.
Week 2	General graph search algorithms and Tree structure search
Week 3	Uninformed (Blind) Search Algorithms: Depth First Search, Breadth First Search.
Week 4	Uninformed (Blind) Search Algorithms: Iterative Deepening Depth-First Search (IDDFS)
Week 5	Uninformed (Blind) Search Algorithms: Uniform Cost Search (UCS)
Week 6	Structures and Strategies for State Space Search
Week 7	Mid-term Exam
Week 8	Informed (Heuristic) Search Algorithms: Greedy Best-First Search
Week 9	Informed (Heuristic) Search Algorithms: A and A* Algorithms
Week 10	Bidirectional Search
Week 11	Dijkstra's search algorithm for Shortest Path
Week 12	Kruskal's Algorithm
Week 13	Hill Climbing
Week 14	Backtracking Search
Week 15	Review of for the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Understanding the implement for the AI code
Week 2	Understanding the theoretical and practical of AL algorithm
Week 3	Structures and Strategies for search algorithms
Week 4	Coding for the tree search and graph sorting
Week 5	Coding for the Blind search
Week 6	Coding for the Heuristic Search
Week 7	Coding for the find the Best First Search and Hill climbing search
Week 8	Coding for the Dijkstra's search algorithm to find the Shortest Path
Week 9	Coding for the Kruskal's Algorithm and prim's algorithm to find the shortest path

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1) Karumanchi, N. (2011). <i>Data structures and algorithms made easy in java</i> . CareerMonk Publications. 2) Mehlhorn, K. (2013). <i>Data structures and algorithms 1: Sorting and searching</i> (Vol. 1). Springer Science & Business Media.	No
Recommended Texts		
Websites	1) https://www.libgen.is/search.php?req=data+structure+and+algorithms+in+java&open=0&res=25&view=simple&phrase=1&column=def . 2) https://books.google.iq/books?hl=en&lr=&id=zdupCAAAQBAJ&oi=fnd&pg=PA1&dq=+Data+structures+and+algorithms+&ots=6A4Spz6ohf&sig=LIAQSrfmXUkGK1QeROJYPQtElkl&redir_esc=y#v=onepage&q=Data%20structures%20and%20algorithms&f=false .	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.