

MODULE DESCRIPTION FORM

Module Information			
Module Title	Introduction Artificial Intelligence		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	AIE413		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	1
Administering Department	Artificial Intelligence Eng.	College	College of Engineering
Module Leader	Husham Hadi Nghamish	e-mail	Hisham.Hadi@alayen.edu.iq
Module Leader's Acad. Title	Asst .Lec	Module Leader's Qualification	Msc
Module Tutor	Husham Hadi Nghamish	e-mail	Hisham.Hadi@alayen.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
Prerequisite module	None	Semester	1
Co-requisites module	None	Semester	



ا.م.د. محمد علي خضير
 [Signature]

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	a comprehensive understanding of the fundamental principles of Artificial Intelligence, including its ethical dimensions and the potential societal risks associated with its misuse. It seeks to develop students’ ability to understand and interpret key terminology related to intelligent systems and embedded systems, while enabling them to apply AI techniques in practical fields such as healthcare and decision-making. Furthermore, the module focuses on enhancing students’ analytical skills in evaluating the use of AI in hazardous applications and assessing associated risks and safety considerations. It introduces core concepts such as reinforcement learning, data mining, and algorithm implementation, allowing students to analyze data and extract meaningful insights using intelligent approaches. The module also emphasizes practical skills by guiding students to design and develop simple intelligent systems, simulate human-like behavior, and explore generative AI applications, particularly in areas such as gaming. In addition, it aims to strengthen students’ critical thinking by comparing human intelligence with artificial intelligence and evaluating the impact of AI across various domains, including education and business. Finally, the module encourages students to communicate technical knowledge effectively through reports and multimedia presentations, and to identify modern applications that contribute to the advancement and activation of intelligent systems in real-world environments.			
	Knowledge	A2	A2.1 Define the fundamental concepts of Artificial Intelligence, including intelligent systems, machine learning, data mining, and reinforcement learning. A2.2 Explain the principles and procedures of AI techniques such as decision-making systems, generative models, data analysis methods, and algorithms used in intelligent and embedded systems. A2.3 Apply AI techniques to develop simple intelligent systems, analyze data, simulate intelligent behavior, and implement practical applications in areas such as healthcare and decision-making using computational tools. A2.4 Analyze the performance and behavior of AI systems, evaluate different algorithms and models, and interpret results in terms of accuracy, efficiency, and real-world applicability.	
Module Learning Outcomes	Skills	B1	B1.1 Communicate effectively B1.2 Students will have developed problem solving and	



			reasoning abilities that will serve them well in many important petroleum engineering aspects as well as their lives.	
		B2	B2.1 Communicate effectively – graphically with a range of audiences using contemporary tools. B2.2 Communicate verbally and in writing with a range of audiences using contemporary tools.	
		Ethics C2	C2.1 Recognize professional and ethical responsibility. C2.2 Adhere and respect diversity.	

Indicative Contents	Principles to AI (12 hrs) Data analysis (12 hrs) Data mining(4 hrs) Practical application of AI(2 hrs)
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Learning and Teaching Strategies

Strategies	• presentations •Discussions •Tutorial and graphics •Problem solving •Brainstorming
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Student Workload (SWL) for 15 weeks

Structured SWL (h/sem)	64	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	36	Unstructured SWL (h/w)	1.8
Total SWL (h/sem)	100		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	A2
	Assignments	7	10% (10)	2, 4,6,8,10,12 and 14	A2
	Projects				
	Report	1	10% (10)	13	A2
Summative assessment	Midterm Exam	1	10% (10)	7	A2
	Final Exam	1	50% (50)	16	A2
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered	LOs
Week 1	Theoretical explanation and practice of AI principles, and clarification of the risks of not committing to them in society.	A2-1, B1.1, C2-1
Week 2	Theoretical explanation of intelligent systems vocabulary and embedded systems.	A2-1, B2.1, C2-3
Week 3	Practical application of AI techniques in healthcare.	A2-3, A2-1, C2-1
Week 4	Theoretical explanation of AI skills in hazardous applications.	A2-2, A2-1
Week 5	Simple explanation of reinforcement learning.	A2-4, A2-3, A3-1, B2.2
Week 6	Theoretical and practical explanation of AI applications in decision-making.	A2-1, A2-3, A2-1, B2.2
Week 7	Using algorithms in intelligent systems.	A2-1, A2-1, C2-2
Week 8	Mid Term	



Week 9	Practical application to design an intelligent system.	A2
Week 10	Theoretical explanation comparing human intelligence with computers.	A2-3, B2.1, C2-1
Week 11	Presenting a video idea.	A2.4
Week 12	Simulating humans in intelligent systems.	A2-2, A2-3, A2-2, B1.2, C2-3
Week 13	Presenting a report on the impact of AI in education.	A2-2, A2-3, B1.1
Week 14	Data Mining – presenting an idea on how to analyze data.	A2-4, A2-3, A2-2
Week 15	Final-Exam	A2-2, A2-2, B1.1

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Artificial Intelligence: A Modern Approach	Yes
Recommended Texts	MECH6028 - Mechanical Workshop Practice	NO
Websites	https://eng.alayen.edu.iq//colleges/e/42	

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

