



Ministry of Higher Education
and Scientific Research – Iraq
Al-Mustaqbal University College
College of Sciences



MODULE DESCRIPTOR

وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	KNOWLEDGE REPRESENTATION METHODS		Module Delivery
Module Type	CORE		Theory Lecture Lab Tutorial Practical Seminar
Module Code	UOMU0304025		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	AI	College	College of Science
Module Leader	Hadi Salah	e-mail	hadi.salah.hadi@uomus.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-Expressivity: Provide a language or framework to represent a wide range of knowledge and information. 2-Efficiency: Efficiently store and retrieve knowledge for quick access and reasoning. 3-Inferencing and Reasoning: Enable logical inference and reasoning over the represented knowledge. 4-Flexibility: Handle diverse domains and problem contexts, allowing for adaptable and extensible representations. 5-Interpretability: Represent knowledge in a way that is understandable and interpretable by humans. 6-Integration: Integrate knowledge from various sources and formats for a holistic understanding.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Understanding: Gain a solid understanding of the principles and concepts underlying knowledge representation methods in artificial intelligence. 2-Knowledge Representation Techniques: Acquire knowledge and skills in various knowledge representation techniques, such as semantic networks, frames, rules, ontologies, or logic-based representations. 3-Representation Selection: Develop the ability to select appropriate representation methods based on the characteristics of the knowledge domain and problem context. 4-Expressivity and Efficacy: Learn how to effectively represent knowledge with expressivity while considering efficiency in storage and retrieval. 5-Reasoning and Inference: Gain proficiency in applying reasoning and inference mechanisms to draw logical conclusions and make inferences based on the represented knowledge. 6-Application: Apply knowledge representation methods in practical scenarios, such as intelligent systems, expert systems, or knowledge-based applications. n the represented knowledge.
Indicative Contents المحتويات الإرشادية	KR fundamentals and types. Why we need to KR? Propositional logic. Predicate logic. Resolution theorem proving. Semantic networks. Conceptual graph. Frames. Script. Production rules. The AND-OR graph. Monotonic Logic and non-monotonic logic.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	KR fundamentals and types
Week 2	Why we need to KR?
Week 3	Propositional logic
Week 4	Predicate logic
Week 5	Clause form
Week 6	Resolution theorem proving
Week 7	Resolution theorem proving

Week 8	Semantic networks
Week 9	Conceptual graph
Week 10	Frames
Week 11	Script
Week 12	Production rules
Week 13	The AND-OR graph
Week 14	Monotonic Logic and non-monotonic logic
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Knowledge Representation and Reasoning. Ronald Brachman and Hector Levesque. The Morgan Kaufmann Series in Artificial Intelligence, 2004.	Yes
Recommended Texts	First Order Logic and Automated Theorem Proving. Melvin Fitting. Texts in Computer Science.	No
Websites		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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.