	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Computer Science	

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	KNRM125				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	None		**e-mail**	None	
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	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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.