MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Discrete Structures**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☒**Lecture** ☐ **Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**COM-122**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		1	**Semester of Delivery**		2
Administering Department		com	**College**	cos	
Module Leader	Khalid M.S. Al Zaidi		**e-mail**	dr.khaledmoh@uodiyala.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	COM-112	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. The principal objective of this course is to develop the analytic skills need to learn mathematics. 2. Studying basic mathematical concepts to solve problems. 3. To understand analyze systems in a mathematical manner. 4. This course deals with the basic concept of discrete mathematical. 5. This is the basic subject for most computer science subjects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize the basic concepts in a discrete mathematical structure. 2. To understand the fundamental properties of modeling computation. 3. Identify the finite state machines. 4. To study an optimistic approach principle. 5. Recognize the finite automata. 6. To studies properties deterministic finite state automata. 7. Recognize the propositions and truth values 8. To understand the logical connectives 9. To study tautologies and contradictions principle 10. To studies properties of logical equivalence 11. Recognize the algebra of propositions 12. Identify of the mathematical Induction 13. To studies methods of proofs by mathematical induction 14. To studies properties of matrices, types, and an operations on matrices
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Modeling Computation • Finite state machines • An Optimistic Approach • Finite automata • Deterministic Finite State Automata 2. Logic and Proofs • Propositions and Truth Values • Logical connectives • Tautologies and Contradictions • Logical Equivalence • The Algebra of propositions • Mathematical Induction 3. Matrices • Types of Matrices • Operations on Matrices

Learning and Teaching Strategies استراتيجيات التعلم والتعليم

Strategies	Discrete mathematics is foundational material for computer science: Many areas of computer science require the ability to work with concepts from discrete mathematics, specifically material from such areas as set theory, logic, graph theory, combinatorics, and probability theory. The main strategy that will be adopted in delivering the discrete mathematical structures module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. The module will include a combination of classes, and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	20% (20)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Modeling Computation

Week 2	Finite state machines
Week 3	An Optimistic Approach
Week 4	Finite automata
Week 5	Deterministic Finite State Automata
Week 6	Logic and Proofs
Week 7	Mid-term Exam
Week 8	Propositions and Truth Values
Week 9	Tautologies and Contradictions
Week 10	Logical Equivalence
Week 11	The Algebra of propositions
Week 12	Mathematical Induction
Week 13	Matrices
Week 14	Types of Matrices
Week 15	Operations on Matrices
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Discrete mathematical structures for computer science by Bernard Kolman & Robert C. Busby	Yes

Recommended Texts	- Theory and problems of Discrete mathematics, by Seymour Lipschutz & Marc Lars Lipson, Schaum's Outline Series, third edition 2007. - Mathematical foundation of computer science, Y.N. Singh, 2005. - Discrete Mathematics and Its Applications, Seventh Edition, Kenneth H. Rosen, AT&T Laboratories, 2012.	Yes
Websites	- http://www.math.uvic.ca/faculty/gmacgill/guide	

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.