MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Discrete Structure 1			**Module Delivery**	
Module Type	Supportive			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	TUCS112				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Computer Science		**College**	CCSM	
Module Leader	Salwa Khalid Abdulateef		**e-mail**	Khalid.salwa@tu.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	MSc.	
Module Tutor	None		**e-mail**		
Peer Reviewer Name	Maytham Mustafa		**e-mail**		
Scientific Committee Approval Date	07/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Discrete Structure 2	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Discrete structures provides the mathematical foundations for many courses including data structures and algorithm, Compilers, Automata theory and formal languages, operating systems theory and many other subjects. 2- Discrete structures are the abstract mathematical structures used to represent discrete object and relations lies between those objects. 3- Students' realization of the basic concepts of discrete structure, such as mathematics logic, graphs. 4- Knowing the models of discrete structures and how to create them. 5- Developing students' ability to deal with transformations and their applications in constructing structures. 6- Giving the student the necessary experience to deal with the relations and applications Giving students the necessary experience to solve some of the functions as linear and factorials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1** Subject-specific skills: - Learn to prove the correctness and accuracy of the given issue, whether it is solvable or not, before starting to think about solving it. **2** Thinking skills :Giving the learner the skill to use logical hypotheses in building accurate software. **3** Giving the learner the skills to have the ability to build relationships between components, models and theoretical structures with algorithms and computer programs. **4** Enabling students to continue self-development after graduation. **5** Making the learner well acquainted with all types of logical deductive proof and types of proof by other methods. **6** Build basic causal skills in creating and validating algorithms and programs. - **7** Building skills to analyze and solve some important issues and the approximate time to solve them. - **8** Build skills on how to choose the appropriate solutions for some issues and designate the best algorithms to solve them
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A – Mathematics Logic: Foundations of Logic: Overview Proposition, compound proposition, How to Built a Truth Table,

	Logical operators, Bit operators and Translation English Sentences into Propositional Logic and Vice Versa with some examples. [16 hours] Part B- Set theory Definition of sets, Sets of numbers such as standard numerical , power set, cardinality, cartesian products of set, Venn Diagram, set operations, Algebra of sets with some examples [16 hours] Part C- Relations Definition of Relation, Graphical Representation of Relation, Properties of relations such as reflexive, symmetric and transitive with examples. [12 hours] Part D- Functions Definition of Function and examples, Types of function as one to one, onto, representation of function , application of functions with exampes. [16 hours)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The teacher gives detailed theoretical lectures • The teacher requests periodic reports on the basic topics of the subject • The student is also assigned to self-read and to give the student a certain period to inquire and discuss the topics he has read. • Solve practical examples Evaluation modalities 1-Daily exams with practical and scientific questions. 2- Participation scores for difficult competition questions among students. 3- Setting grades for homework and the reports assigned to them. 4- Quarterly exams for the academic curriculum in addition to the mid-year exam and the final exam.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4, 10	LO #1-4 , LO# 5-7
	Assignments	2	10% (10)	2, 12	LO #1-4 , LO# 5-7
	Seminar	1	10% (10)	9	LO #1-7
	Report	1	10% (10)	12	LO # 4 - 7
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Mathematical logic
Week 2	Logical operators
Week 3	Logical operators
Week 4	Logical Equivalences, Compound Propositions Classification:
Week 5	Examples, Set of theory, Properties of set
Week 6	Sets of Number, Sets and elements, subsets
Week 7	**Mid Exam**
Week 8	Set's Algebra,
Week 9	Set's Algebra with examples
Week 10	relations
Week 11	Properties of relations

Week 12	Properties of relations with examples
Week 13	Review of Functions
Week 14	Types of Functions
Week 15	mathematics functions
Week 16	**Preparatory week before the final exam.**

Delivery Plan (Weekly Lab. Syllabus): There is no Lab activities المنهاج الاسبوعي للمختبر: لا توجد فعاليات مختبرية	
	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	Theory and problems of Discrete mathematics, by Seymour Lipschutz & Marc Lars Lipson, Schaum's	Yes

	Outline Series, third edition 2007 Discrete Mathematics and Its Applications, Seventh Edition, Kenneth H. Rosen, AT&T Laboratories, 2012	
Recommended Texts	• Mathematical foundation of computer science, Y.N. Singh, 2005 • Discrete structures, Amin Witno, Revision Notes and Problems 2006, www.witno.com • Discrete mathematical structures for computer science by Bernard Kolman & Robert C. Busby	No
Websites	• http://en.wikibooks.org/wiki/Discrete_mathematics/Set_theory	

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.