



Ministry of Higher Education and  
Scientific Research - Iraq  
Al-Nahrain University  
College of Science  
Computer Science Department



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Discrete Structure		Module Delivery
Module Type	CORE		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	COMP1102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	Computer Science	College	Science
Module Leader	Lecturer Azhar M. Kadim	e-mail	<a href="mailto:azhar.mawlodkadim@nahrainuniv.edu.iq">azhar.mawlodkadim@nahrainuniv.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	Prof. Dr. Mohammed Sahib Mahdi	e-mail	<a href="mailto:Mohammed.sahibmahdi@nahrainuniv.edu.iq">Mohammed.sahibmahdi@nahrainuniv.edu.iq</a>
Review Committee Approval	25/5/2023	Version Number	1.0

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

<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"><li>1. Introduction to Discrete Mathematics: Introduce students to the basic concepts and techniques of discrete mathematics and their relevance to computer science.</li><li>2. To develop problem-solving skills.</li><li>3. To understand fundamental mathematical structures.</li><li>4. Logic and Proof Techniques: Develop students' understanding of propositional and predicate logic, including logical connectives and quantifiers. Teach proof techniques, such as direct proof and mathematical induction.</li><li>5. To apply concepts in computer science and information technology.</li><li>6. To enhance logical reasoning and critical thinking.</li></ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"><li>1. Understanding fundamental concepts in discrete mathematics.</li><li>2. Applying mathematical reasoning to problem-solving.</li><li>3. Analyzing algorithms using mathematical techniques.</li><li>4. Solving combinatorial problems.</li><li>5. Developing formal proofs.</li><li>6. Applying discrete mathematics to computer science.</li><li>7. Enhancing problem-solving skills.</li></ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Understanding what is discrete mathematics &amp; Propositional logic. Learning what is Truth Tables of Compound Propositions, explaining applications of Propositional Logic: Logic Circuits [25 hrs]</p> <p>Understanding Predicates, Quantifiers, Direct Proof Method [25 hrs]</p> <p>Explaining what is sets and their operations, Understanding what is function [25 hrs]</p> <p>Explaining Sequences , Summations and Understanding Relations &amp; Graphs [25 hrs]</p>
<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	<ul style="list-style-type: none"><li>• Clear organization and structure of course material</li><li>• Use of examples and illustrations to clarify concepts</li></ul>

	<ul style="list-style-type: none"> <li>• Problem-solving approach with relevant exercises</li> <li>• Interactive learning activities and group work</li> <li>• Gradual increase in difficulty level of topics</li> <li>• Highlighting practical applications of discrete mathematics</li> <li>• Regular formative assessments and timely feedback</li> <li>• Providing additional resources and references for further study</li> <li>• Encouraging critical thinking and analysis</li> <li>• Creating a supportive learning environment</li> </ul>
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<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>SSWL (Structured SWL (h/sem))</b> الحمل الدراسي المنتظم للطالب خلال الفصل	78	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	5.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	3.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	15% (15)	5, 10	All
	<b>Assignments</b>	2	15% (15)	2, 12	All
	<b>Projects / Lab.</b>				All
	<b>Report</b>	1	10% (10)	13	All
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	7	All
	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الأسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	What is discrete mathematics & Propositional logic
<b>Week 2</b>	Conditional statement , Truth Tables of Compound Propositions

<b>Week 3</b>	Applications of Propositional Logic: Logic Circuits
<b>Week 4</b>	Propositional Equivalences
<b>Week 5</b>	Predicates, Quantifiers, Direct Proof Method
<b>Week 6</b>	Mid-term Exam I
<b>Week 7</b>	Sets
<b>Week 8</b>	Sets operations
<b>Week 9</b>	Functions
<b>Week 10</b>	composition of functions
<b>Week 11</b>	Sequences
<b>Week 12</b>	Summations
<b>Week 13</b>	Relations & Graphs
<b>Week 14</b>	Mid-term Exam II
<b>Week 15</b>	Preparatory Week
<b>Week 16</b>	Final Exam

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

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	“Discrete Mathematics Applications and Its Kenneth H.	Yes

	Rosen Eighth Edition”, Kenneth H. Rosen, 2019.	
<b>Recommended Texts</b>		
<b>Websites</b>		

**APPENDIX:**

<b>GRADING SCHEME</b> مخطط الدرجات				
<b>Group</b>	<b>Grade</b>	<b>التقدير</b>	<b>Marks (%)</b>	<b>Definition</b>
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 - 49)</b>	<b>FX – Fail</b>	مقبول بقرار	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required
<b>Note:</b>				
<p>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.</p>				



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي.