Ministry of Higher Education and Scientific Research
UNIVERSITY OF ANBAR
COLLEGE of COMPUTER SCIENCES AND INFORMATION TECHNOLOGY
DEPT. COMPUTER NETWORKS SYSTEMS

وزارة التعلـــيم العالـــي والبحـــث العلمي
جامـــعـــة الأنبار
كلـــية علوم الحاسوب وتكنولوجيا المعلومات
قســـم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	Logic II	**Module Delivery**
Module Type	Core	☒ Theory
Module Code	NSCE111	☐ Lecture
ECTS Credits	6	☒ Lab
		☐ Tutorial
SWL (hr/sem)	150	☐ Practical
		☐ Seminar

Module Level	First Class	Semester of Delivery	
Administering Department	NSD	**College**	CSIT
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

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

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Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The module aims to develop students' skills in designing and implementing combinational logic circuits. Students learn how to analyze and design circuits using Boolean expressions, Karnaugh maps, and logic gates.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply knowledge of combinational logic to design and implement digital circuits using Boolean expressions, Karnaugh maps, and logic gates. Develop the ability to simplify logic expressions and optimize circuit designs
Indicative Contents المحتويات الإرشادية	Introduction to Digital Logic Combinational Logic Design Arithmetic circuits Sequential Logic Design Circuit Testing and Verification

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Conceptual Understanding Problem-Solving Approach Hands-on Laboratory Experience Design Projects Simulation and Modeling Problem-Based Learning

Student Workload (SWL)

الحمل الدراسي للطالب

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Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Combinational Logic: Adder, Subtractor
Week 2	Comparators, Decoders and Encoders
Week 3	Multiplexers (Data Selectors). and DE multiplexers
Week 4	Sequential Logic
Week 5	Latches
Week 6	Flip-Flops: Operating Characteristics
Week 7	Flip-Flop: S-R and J-K Flip-Flops
Week 8	Flip-Flop: Trigger and Delay Flip-Flops
Week 9	Applied Logic
Week 10	Types of Shift Register Data IOS

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Week 11	Bidirectional Shift Registers
Week 12	Shift Register Counters
Week 13	Shift Register Applications
Week 14	Ripple Counters
Week 15	Memory and Programmable logic
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Review of propositional logic: syntax, semantics, and truth tables
Week 2	Implementation of propositional logic in a programming language
Week 3	Practice with propositional logic proofs and truth table evaluations
Week 4	Introduction to predicate logic: quantifiers, predicates, and interpretations
Week 5	Practice with predicate logic proofs and interpretation
Week 6	Advanced topics in logic: formal proofs, deduction rules, and logical equivalences
Week 7	Proof strategies and techniques for solving logic problems

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Digital fundamentals, Thomas L. Floyd, 11th edition Digital Design, Morris Mano, 4th edition An Introduction to Logic Technology and Fundamentals of logic design	

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Recommended Texts		
Websites		

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.