

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Digital Electronics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MIET2203			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		4
Administering Department	MIET	College	EETC	
Module Leader	Hussein F. Hamdan		e-mail	eng.hussain.fadhle@uobabylon.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D	
Module Tutor			e-mail	
Peer Reviewer Name	Hussein F. Hamdan	e-mail	eng.hussain.fadhle@uobabylon.edu.iq	
Scientific Committee Approval Date	8/11/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I (MIET2102)	Semester	S3
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents
--

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To learn the basics of logical circuits which are used in computers. 2. To understand how the logical medical instrumentations to work 3. To program the logical medical instrumentations 4. To design the logical medical instrumentations 5. To learn how to use logical tables to perform the logical medical instrumentations 6. TO maintain the logical medical instrumentations 7. To suggest how to build modern the logical medical instrumentations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At ending of course, student will: 1-know the numbers systems, and conversion between them. 2-know binary codes. 3-design binary gates, and use Boolean algebra. 4-design and simplify the arithmetic circuits. 5- define Karnaugh maps. 6- know how flip-flops works RS, JK. 7- design flip-flops D, T. 8-define the work principles of counters and its types. 9-know the shift registers and types. 10-principles of decoders. 11-identify the Multiplexers and De-Multiplexers. 12-conversion of analog to digital circuits.
Indicative Contents المحتويات الإرشادية	Numbers systems, Binary, Octal, Hexadecimal [4 H]. Codes numbers [4 H]. Arithmetic circuits [10 H]. De Margan's theorems [4 H]. Karnaugh map [8 H]. Flip – Flop: RS, RST, JK, D, FF [8 H]. Asynchronous counter and synchronous [10 H]. Shift registers [10 H]. Multiplexer, De multiplexer [4 H]. Decoder [8 H]. Analog conversion [4 H].
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	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
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)	3, 9	LO #1, 2, 4, 11 and 12
	Assignments	2	10% (10)	3, 13	LO # 4, 5, 7 and 8
	Projects / Lab.	1	10% (10)	Continuous	
	Report	13	10% (10)	13	LO # 6, 8 and 11
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-8
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Number system: Binary numbers, Octal numbers, Hexadecimal numbers,
Week 2	Binary codes
Week 3	Logic gates, De Morgan's theorems, Laws and theorem of Boolean algebra
Week 4	Arithmetic circuit, Simplifying logic circuits:

Week 5	fundamentals products, sum of products, algebraic simplification
Week 6	Truth table to Karnaugh map
Week 7	Flip – Flop: RS, RST, JK, D, FF
Week 8	Counters: Asynchronous counter
Week 9	Counters: synchronous counter
Week 10	Shift registers: Serial in -Serial out shift register Serial in -Parallel out shift register
Week 11	Shift registers: Bidirectional Shift Register
Week 12	Multiplexer and De multiplexer
Week 13	Decoder
Week 14	Digital to Analog converter
Week 15	Final Exam (Practical)
Week 16	Final Exam (Theoretical)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Logic Gates (NOT, AND)
Week 2	Lab 2: Logic Gates (OR, NAND, NOR)
Week 3	Lab 3: Logic Gates (XOR, XNOR)
Week 4	Lab 4: Exercises
Week 5	Lab 5: Universal Gates (NAND, NOR)
Week 6	Lab 6: Flip-Flop
Week 7	Lab 7: Adder (Half and Full Adder)
Week 8	Lab 8: Subtractor (Half and Full Subtractor)
Week 9	Lab 9: Comparator
Week 10	Lab 10: Asynchronous Binary Counter Up
Week 11	Lab 11: Asynchronous Binary Down Counter
Week 12	Lab 12: Asynchronous Binary Decade Counter
Week 13	Lab 13: Asynchronous MOD Counter
Week 14	Lab 14: Asynchronous Binary Counter (count from number to another)

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	DIGITAL FUNDAMENTALS / FLOYD	YES
Recommended Texts	Digital Logic Design - 4th Edition	NO
Websites	https://www.udemy.com/course/digital-electronics-logic-design/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catchall_la.EN_cc.ROW&utm_content=deal4584&utm_term=._ag_88010211481._ad_535397282061._kw._.de_c._dm._.pl._.ti_dsa-52949608673._li_1007949._pd._.&matchtype=&gclid=CjwKCAjwp6CkBhB_EiwAlQVyxcuQ427tsVehXbetXE4NUFlekP4rqq-PrCWgQflucPuo7Mqz8SXRvxoC5asQAvD_BwE	

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.				

HF Hamdan

عميد الكلية : أ.د. هارون عبد الكاظم شهد

رئيس القسم : أ.د. محمود شاكر نصر

اسم التدريسي أ.د. حسين فاضل حمدان