



Ministry of Higher Education and
Scientific Research - Iraq
University of Warith Al-Anbiyaa
College of Sciences
Department of Medical Physics



MODULE DESCRIPTION FORM

Module Information					
معلومات المادة الدراسية					
Module Title	Analog and Digital Electronics		Module Delivery		
Module Type	Basic		Method	h/week	Frequency
Module Code	MPH23013		Theory	2	14
ECTS Credits	6 ECTS		Lecture	Choose an item.	Choose an item.
SWL (hr/sem)	150		Lab	2	15
			Tutorial	Choose an item.	Choose an item.
			Practical	Choose an item.	Choose an item.
			Seminar	Choose an item.	Choose an item.
Module Level	UG II	Semester of Delivery	3ed Semester		
Administering Department	MPH	College	CoS		
Module Leader	Ahmed Yahya Awad Kazem		e-mail	ahmed.ya@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer Doctor	Module Leader's Qualification	Ph.D.		
Module Tutor	Mowafaq Mohammed Bakr Saja Basim Ali Ibrahim Uday Mohsen		e-mail		
Peer Reviewer Name		e-mail			
Scientific Committee Approval Date	Click or tap to enter a date.	Version Number	1.0		

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. To provide the student with the fundamental skills to understand the basics of semiconductors and components like diodes, transistor2. to get experience and a fundamental comprehension of electronics.3. The student will be able to perform the theoretical calculations necessary for analysis and design.4. The course aims to study the basic principles of the operation of electronic circuits that contain electronic elements such as diodes of their types, transistors of their types, and methods of connection in terms of bias and arrangement.5. the student will learn how to draw equivalent circuits for these electronic elements using different methods,6. the student will learn how the differences between the approved methods so that the student can analyze electronic circuits.7. To acquaint the students with the fundamental principles of two-valued logic and various devices to implement logical operations on variables.8. Developing the student's abilities and practical skills to operate digital devices, and benefiting from them to increase individual productivity.9. Introducing the student to the aspects of the digital electronics environment and the environment of the various devices attached to it.10. Introducing the student to applications for multiple digital devices and information in the medical field
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. To give knowledge of some basic electronic components and circuits.2. Identification of the structure of diode and transistor circuits.3. Identification of NPN, PNP, JFET, and MOSFET amplifiers4. Able to identify and describe different analog modulation techniques5. Describe and explain the operation of fundamental digital gates6. Design and operate practical digital logic circuits7. Use the basic logic gates and various digital logic circuit reduction techniques in detail.8. Design combinational circuits.9. Able to design and describe analog and digital logic circuits
<p>Indicative Contents المحتويات الإرشادية</p>	<p><u>Theory Lectures</u> Learning concepts of each theoretical lecture or groups of lectures. [SSWL=28 hrs]</p> <p><u>Lab. Lectures</u> Learning concepts of each laboratory lecture or groups of lectures. [SSWL= 30 hrs]</p> <p>Total hrs = \sumSSWL + (Mid Exam hrs+ Final Exam hrs)</p> <p>Total hrs=28+30+1+3=62</p>

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, Insulators, conductors, semiconductors
Week 2	Intrinsic semiconductors, extrinsic semiconductors, PN-junction and applications
Week 3	Transistor, PNP, NPN, common emitter dc-analysis
Week 4	Biasing circuits, Common collector circuits, common base circuit
Week 5	FET, JFET, Output characteristic curves of JFET, JFET small signal parameters
Week 6	MOSFET
Week 7	Mid. Exam
Week 8	Introduction to digital electronics
Week 9	NUMBER SYSTEMS: Decimal & Binary system
Week 10	Binary Arithmetic
Week 11	Logic Gates and Logic Circuits
Week 12	Boolean Algebra
Week 13	Boolean Algebra and Logic Simplification
Week 14	Sequential Logic: Latches
Week 15	Flip-Flops

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Static characteristic of crystal diode
Week 2	Zener diode characteristic
Week 3	Light emitting diode characteristic
Week 4	Transistor common emitting npn
Week 5	Transistor common base npn
Week 6	Half wave rectifier
Week 7	Full wave rectifier
Week 8	Introduction to Gates digital electronics
Week 9	AND Gate
Week 10	OR Gate
Week 11	NOT Gate
Week 12	NAND Gate
Week 13	NOR Gate
Week 14	The Exclusive-OR Gate
Week 15	Exclusive-NOR Gate

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ELECTRONIC PRINCIPLES, 8 th Edition, 2016, McGraw-Hill Education.	No
Recommended Texts	Digital fundamentals Thomas, 11 th Edition, 2015, Pearson Education.	No
Websites	https://www.talkingelectronics.com/Download/Malvino_Electronic-Principles.pdf	

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.