

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Circuits I		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	MIET2102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	MIET	College	AL-safwa University
Module Leader	Murtadha Mohamed Ali	e-mail	Mortada.Muhammad@alsafwa.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	16-9-2024	Version Number	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives اهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. The graduate gets scientific and applied skills of electronic circuits.2. The graduated students will gain the ability of knowledge of different parts of electronic circuits.3. Development and training the engineering technical staffs on the electronic circuits.4. Preparation the research and studies to improve and develop the action of electronic circuits.5. Prepare application engineers in technical and electronic engineering.6. Put the proposals and alternatives for the electronic devices.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Become aware of the general characteristics of electronic devices.2. Be able to describe the difference types of electronic categories.3. Develop a clear understanding of the basic operation and characteristics of electronic devices.4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks.5. Be able to predict the output response of an electronic networks.6. Become familiar with the analysis of and the range of applications for electronic devices.7. Become familiar with the basic construction and operation of the various types of electronic categories.8. Be able to test a various type of electronic terminals.9. Be able to determine the dc levels for the variety of important electronic circuits.10. Understand how to measure the important voltage levels of electronic circuits.11. Begin to understand the troubleshooting process as applied to electronic configurations.12. Develop a sense for the stability factors of an electronic circuits.13. Learn to use the equivalent model to find the important ac parameters for an amplifier.14. Develop some skill in troubleshooting ac amplifier networks.

<p style="text-align: center;">Indicative Contents محتويات ارشادية</p>	<p>Indicative content includes the following.</p> <p>Part A Electronic Theory</p> <p>Semiconductor Materials: Ge, Si, and GaAs 2, Covalent Bonding and Intrinsic Materials, n -Type and p -Type Materials , Semiconductor Diode , Transistor Construction ,Transistor Operation , Construction and Characteristics of JFETs ,Transfer Characteristics, Important Relationships ,Depletion-Type MOSFET Enhancement-Type MOSFET [10 hrs]</p> <p>Diode Applications -Load-Line Analysis, Series Diode Configurations, Parallel and Series-Parallel Configurations, Sinusoidal Inputs; Half-Wave Rectification Full-Wave Rectification , Clippers , Clampers Networks with a dc and ac Source, Zener Diodes , Voltage-Multiplier Circuits [12 hrs]</p> <p>Revision problem classes [6 hrs]</p> <p>Part B - DC Electronic Circuits</p> <p>BJT Transistor - Operating Point, dc bias configurations of a BJT transistor, Miscellaneous Bias Configurations of a BJT transistor 4.11 Design Operations of a BJT transistor, Multiple BJT Networks, Current Mirrors. [13 hrs]</p> <p>FET Transistor - biasing arrangements for the n and p channel JFET, 7.7 Depletion-Type MOSFETs, Enhancement-Type MOSFETs, Combination Networks, Universal JFET Bias, Practical Applications. [10 hrs]</p> <p>Part C - AC Electronic Circuits</p> <p>BJT Transistor - Amplification in the AC Domain, BJT Transistor Modeling, the re Transistor Model, Effect of RL and Rs, Determining the Current Gain, Cascaded Systems, Darlington Connection, Feedback Pair, The Hybrid Equivalent Model. [17 hrs]</p>
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Learning and Teaching Strategies	
Strategies	The main strategy will be encourage active participation and engagement of students through activities such as group discussions, hands-on experiments, problem-solving tasks, and case studies. This approach promotes critical thinking, collaboration, and knowledge application and encourages students to explore and discover knowledge through inquiry and investigation. Pose open-ended questions or problem scenarios that require learners to research, analyze, and draw conclusions independently.

Student Workload (SWL)			
Structured SWL (h/sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	46	Unstructured SWL (h/w)	3
Total SWL (h/sem)	125		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				LO #1,2,10 and 11
	Assignments				LO # 3,4 ,6,7 and 14
	Projects / Lab.				
	Report				LO # 5,8 and 10
Summative assessment	Midterm Exam				LO # 1,2,5,9,10 and 13
	Final Exam				All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction
Week 2	Semiconductors materials
Week 3	Diode Configurations
Week 4	Diode Networks with a dc and ac Source
Week 5	Zener Diodes
Week 6	Bipolar junctions transistor
Week 7	Mid-Exam
Week 8	DC biasing BJTS
Week 9	Multiple BJT Networks

Week 10	Field effect transistor and MOSFET
Week 11	Depletion-Type MOSFET
Week 12	Enhancement type MOSFET
Week 13	BJT AC Analysis
Week 14	BJT Transistor Modeling
Week 15	Effect of RL and Rs

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: Diode characteristics
Week 2	Lab 2: Half-wave Rectifier
Week 3	Lab 3: full wave Rectifier
Week 4	Lab 4: Filter for Halve-wave and full wave Rectifiers
Week 5	Lab 5: Voltage Doubler
Week 6	Lab 6: Voltage Tripler
Week 7	Lab 7: Positive Series Clipper
Week 8	Lab 8: Negative Series Clipper
Week 9	Lab 9: positive parallel Clipper
Week 10	Lab 10: Negative parallel Clipperneering

Week 11	Lab 11: Clamper
Week 12	Lab12: Zener Diode
Week 13	Lab13: Fixed Vi, Variable RL Zener Diode
Week 14	Lab14: Fixed RL, Variable Vi Zener Diode

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Electronic devices and circuit theory 11th edition, Robert L. Boylestad , Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جداً	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.