

<b>Module Information</b> معلومات المادة الدراسية			
<b>Module Title</b>	<b>Electronic Circuits II</b>		<b>Module Delivery</b>
<b>Module Type</b>	<b>Core</b>		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
<b>Module Code</b>	UOMU024042		
<b>ECTS Credits</b>	<b>5</b>		
<b>SWL (hr/sem)</b>	<b>125</b>		
<b>Module Level</b>	UG11	<b>Semester of Delivery</b>	
<b>Administering Department</b>	MIET	<b>College</b>	EETC
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<b>Module Leader's Acad. Title</b>	Lecturer	<b>Module Leader's Qualification</b>	MSc
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<b>Peer Reviewer Name</b>		<b>e-mail</b>	
<b>Scientific Committee Approval Date</b>	19/11/2023	<b>Version Number</b>	1.0

<b>Relation with other Modules</b> العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	Electronics Circuits I-MIET2102	<b>Semester</b>	UGII-S3
<b>Co-requisites module</b>	None	<b>Semester</b>	

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. The graduate get scientific and applied skills of electronic circuits</li> <li>2. The graduated students will gain the ability of knowledge of different parts of electronic circuits.</li> <li>3. Development and training the engineering technical staffs on the electronic circuits.</li> <li>4. Preparation the research and studies to improve and develop the action of electronic circuits.</li> <li>5. Prepare application engineers in technical and electronic engineers.</li> <li>6. Put the proposals and alternatives for the electronic devices.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Become aware of the general characteristics of electronic devices.</li> <li>2. Be able to describe the difference types of electronic categories.</li> <li>3. Develop a clear understanding of the basic operation and characteristics of electronic devices.</li> <li>4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks.</li> <li>5. Be able to predict the output response of an electronic networks.</li> <li>6. Become familiar with the analysis of and the range of applications for electronic devices.</li> <li>7. Become familiar with the basic construction and operation of the various types of electronic categories!</li> <li>8. Be able to test a various type of electronic terminals.</li> <li>9. Be able to determine the dc levels for the variety of important electronic circuits.</li> <li>10. Understand how to measure the important voltage levels of electronic circuits.</li> <li>11. Begin to understand the troubleshooting process as applied to electronic configurations.</li> <li>12. Develop a sense for the stability factors of an electronic circuits.</li> <li>13. Learn to use the equivalent model to find the important ac parameters for an amplifier.</li> <li>14. Develop some skill in troubleshooting ac amplifier networks.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A Electronic Theory</u></p> <p>JFETs: n -channel, p -channel, TRANSFER CHARACTERISTICS, Shockley's Equation , Shorthand Method [10 hrs]</p> <p>FET Biasing -Fixed-bias configuration, self-bias configuration, voltage-divider bias arrangement; common gate configuration , depletion-type MOSFETs , enhancement-type MOSFET [10 hrs]</p>

	<p>Revision problem classes [6 hrs]</p> <p><u>Part B – Frequency response</u></p> <p>Decibels- General Frequency Considerations, Low-Frequency Analysis—Bode Plot, Low-Frequency Response—BJT Amplifier with RL, Low-Frequency Response—FET Amplifier, High-Frequency Response—BJT Amplifier, High-Frequency Response—FET Amplifier [12 hrs]</p> <p>Operational Amplifiers - Differential Amplifier Circuit, BiFET, BiMOS, and CMOS Differential Amplifier Circuits, Op-Amp Basics, Practical Op-Amp Circuits, Op-Amp Specifications—DC Offset Parameters. [12 hrs]</p> <p><u>Part C - Power Amplifiers</u></p> <p>Series-Fed Class A Amplifier- Transformer-Coupled Class A Amplifier, Class B Amplifier Operation, Class B Amplifier Circuits, Amplifier Distortion.[10 hrs]</p> <p>Power Supplies (Voltage Regulators) [ 12 hrs]</p>
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<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	<p>The main strategy that 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 encourage 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.</p>

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	5
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	16% (16)	5,10	LO #1,2,10 and 11
	<b>Assignments</b>	2	8% (8)	2,12	LO # 3,4 ,6,7 and 14
	<b>Projects / Lab.</b>	1	8% (8)	continuous	
	<b>Report</b>	1	8% (8)	13	LO # 5,8 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	8	LO # 1,2,5,9,10 and 13
	<b>Final Exam</b>	4hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
<b>Week 1</b>	FET Amplifiers.
<b>Week 2</b>	JFET Small-Signal Model
<b>Week 3</b>	General Frequency Considerations
<b>Week 4</b>	BJT frequency response
<b>Week 5</b>	JFET frequency response
<b>Week 6</b>	Power amplifier.
<b>Week 7</b>	Mid- Exam
<b>Week 8</b>	Series-Fed Class A Amplifier
<b>Week 9</b>	Class B,C and D amplifiers
<b>Week 10</b>	Feedback and Oscillator Circuits
<b>Week 11</b>	PNPN and Other Devices

<b>Week 12</b>	Operational amplifier
<b>Week 13</b>	Operational amplifier applications
<b>Week 14</b>	Power Supplies Voltage Regulators
<b>Week 15</b>	<b>Preparatory week before final exam</b>

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Common emitter transistor characteristics
<b>Week 2</b>	Lab 2: Common collector transistor
<b>Week 3</b>	Lab 3: Common emitter amplifier
<b>Week 4</b>	Lab 4: Transistor biasing (part 1)
<b>Week 5</b>	Lab 5: Transistor biasing (part 2)
<b>Week 6</b>	Lab 6: common collector amplifier
<b>Week 7</b>	Lab 7: Common base amplifier
<b>Week 8</b>	Lab 8: Collector feedback amplifier circuit
<b>Week 9</b>	Lab 9: Voltage divider biasing circuit
<b>Week 10</b>	Lab 10: Emitter follower
<b>Week 11</b>	Lab 11: JFET characteristics
<b>Week 12</b>	Lab12: JFET amplifier
<b>Week 13</b>	Lab13: operational amplifier (part1)
<b>Week 14</b>	Lab14: operational amplifier (part 2)

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	electronic devices and circuit theory 11th edition, Robert L. Boylestad , Louis Nashelsky	Yes
Recommended Texts		No
Websites	<a href="https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering">https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering</a>	

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.