



Ministry of Higher Education and  
Scientific Research - Iraq  
Al-Mansour University College  
Department of Communication Engineering



## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic II		Module Delivery
Module Type	Core		<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
Module Code	COM 24109		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	BSc – COMM	College	Al-Mansour University College
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	2024/9/1	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	COM 23104 Electronic I , 2 <sup>nd</sup> Stage	Semester	1
Co-requisites module	None	Semester	



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## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. The student learns about the basic construction and operation of a multistage amplifiers.</li> <li>2. Identify and be able to explain the characteristics and types of multistage amplifiers (cascade....etc.).</li> <li>3. Being able to identify Tuned amplifiers.</li> <li>4. The student will then be able to learn about Transformer- coupled amplifiers for a variety of configurations.</li> <li>5. Understand the Description and operation of four-layer devices.</li> <li>6. The student will also be familiar with the Oscillators kinds and applications.</li> <li>7. Learn about the Large-Signal Amplifier classifications and applications.</li> <li>8. Understand the basic operation of Integrated Circuit power amplifier.</li> <li>9. Begin to understand the electronic communication principals, types, modulation and multiplexing.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Enabling student to know the concepts of multistage amplifiers.</li> <li>2. Enabling student to know about the types of multistage amplifiers.</li> <li>3. Enabling student to understand the design concepts of Large-Signal Amplifier.</li> <li>4. Understand the basic operation of OP-AMP amplifiers.</li> <li>5. Enabling student to understand the fundamentals of electronic communication and Communication Systems.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p><b>Indicative content includes the following.</b></p> <ul style="list-style-type: none"> <li>• Course introduction (4 hrs)</li> <li>• Working with Power point (8 hrs)</li> <li>• Theoretical lectures (32 hrs)</li> <li>• Lap (16 hrs)</li> </ul>



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<p><b>Description</b></p>	<p><b>Multistage amplifier:</b> Analysis of multistage amplifiers (voltage gain, current gain, etc.), and types of multistage amplifiers (cascade....etc.).</p> <p>Tuned amplifiers: Transformer- coupled amplifiers; signal- tuned, and tapped and double tuned amplifiers.</p> <p><b>Introduction to four-layer devices:</b> Description and operation of silicon control rectifier, disc, thyrister, GTO, and triac. Feedback Amplifier, Op-Amp and Application.</p> <p><b>Oscillators:</b> Positive feedback and oscillation, Stability of Oscillation, Sinusoidal oscillator, Phase-shift Oscillator, Wien Bridge Oscillator, LC-Oscillator, Crystal Oscillator.</p> <p><b>Large-Signal Amplifier:</b> Amplifier classification, Class A, Class B, Class AB, Class C, Power field-effect Transistor, Integrated Circuit power amplifier, Push-pull. OP-AMP amplifiers, Integration using OP-AMP, differentiation using OP-AMP. Oscillators using OP-AMP, 555 timer and applications. voltage control oscillator using 555 timer.</p> <p><b>Introduction to electronic communication:</b> Communication Systems, Types of Electronic Communication, modulation and multiplexing, the electromagnetic spectrum, Bandwidth. Concept of gain and attenuation, Reactive components, Tuned circuits and Resonance, filters circuits, Fourier theory.</p>
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### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>In this course, students are guided by:</p> <ul style="list-style-type: none"> <li>• Using different examples.</li> <li>• Using different styles of discussion that aim to connect the theoretical and practical sides.</li> <li>• Asking questions and giving exercises that require analysis and conclusions related to lectures.</li> <li>• Encourage students to participate in discussions and do the practical work.</li> <li>• Encourage students to work in groups.</li> </ul>
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### Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطلاب خلال الفصل	<b>93</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	<b>5</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطلاب خلال الفصل	<b>32</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطلاب أسبوعيا	<b>2.1</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطلاب خلال الفصل	<b>150</b>		

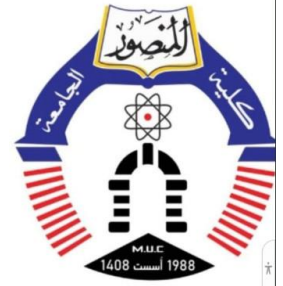
### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6 and 12	LO #1 to #3 and #4 , #5
	Assignments	2	10% (10)	2 and 13	LO #3 to #5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3, #4 and #5
Summative assessment	Midterm Exam	1hr	10% (10)	9	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
<b>Total assessment</b>			<b>100% (100 Marks)</b>		



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### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	<b>Overview</b> and history of Electronics types and Applications.
Week 2	<b>Multistage amplifier:</b> Analysis of multistage amplifiers (voltage gain, current gain, etc.)
Week 3	Types of multistage amplifiers (cascade....etc.)
Week 4	Tuned amplifiers: Transformer- coupled amplifiers; signal- tuned, and tapped and double tuned amplifier
Week 5	<b>Introduction to four-layer devices:</b> Description and operation of silicon control rectifier, disc, thyrister, GTO, and triac
Week 6	Feedback Amplifier, Op-Amp and Application
Week 7	<b>Oscillators:</b> Positive feedback and oscillation, Stability of Oscillation Sinusoidal oscillator
Week 8	Phase-shift Oscillator, Wien Bridge Oscillator, LC-Oscillator, Crystal Oscillator
Week 9	<b>Large-Signal Amplifier:</b> Amplifier classification, Class A, Class B, Class AB, Class C, Power field-effect Transistor
Week 10	<b>Integrated Circuit power amplifier</b> , Push-pull. OP-AMP amplifiers, Integration using OP-AMP, differentiation using OP-AMP.
Week 11	<b>Oscillators</b> using OP-AMP, 555 timer and applications. voltage control oscillator using 555 timer.
Week 12	<b>Introduction to electronic communication:</b> Communication Systems, Types of Electronic Communication, Modulation and multiplexing, the electromagnetic spectrum, Bandwidth. Concept of gain and attenuation, Reactive components, Tuned circuits and Resonance, filters circuits, Fourier theory
Week 13	<b>Amplitude Modulator and Demodulator Circuits:</b> Basic principles of amplitude modulation, Amplitude Modulators, Amplitude Demodulators, Balanced Modulators, SSB Circuits. Angle modulation Circuits: Frequency Modulators, Phase Modulators, Frequency Demodulators.
Week 14	<b>Digital Modulation Circuits:</b> BPSK Modulator, Coherent Detector for BPSK, QPSK Transmitter and Coherent Receiver, Non coherent BASK Receiver.



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	DPSK Transmitter and Receiver.
Week 15	<b>PowerPoint:</b> Prepare to deliver your presentation
Week 16	<b>Preparatory week before the final exam</b>

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to the lab and get started with use of tools which uses in the experiments.
Week 2	Introduction to the devices uses in the lab and and how to use it.
Week 3	An overview of the experiments that will be carried out in the laboratory and using some of the available programs.
Week 4	Oscillators: Implementation this experiment in the laboratory
Week 5	Amplifiers: Implementation this experiment in the laboratory
Week 6	OP-AMP applications: Implementation this experiment in the laboratory
Week 7	555-timer applications: Implementation this experiment in the laboratory
Week 8	Voltage control oscillator: Implementation this experiment in the laboratory
Week 9	Gain analysis: Implementation this experiment in the laboratory
Week 10	Linear and angle modulations' different types of modulation and demodulation circuits: Implementation this experiment in the laboratory
Week 11	Linear and angle modulations' different types of modulation and demodulation circuits: Implementation this experiment in the laboratory
Week 12	Digital modulation and demodulation circuits: Implementation this experiment in the laboratory
Week 13	Digital modulation and demodulation circuits: Implementation this experiment in the laboratory
Week 14	Review and discussion
Week 15	Preparatory week before the final exam



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### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ul style="list-style-type: none"> <li>Electronic Devices and Circuit Theory Robert L. Boylestad Louis Nashelsky/ Eleventh Edition .</li> <li>Electron Flow Version Ninth Edition Thomas L. Floyd</li> </ul>	Yes
Recommended Texts	<ul style="list-style-type: none"> <li>Fundamentals of Microelectronics Second Edition Behzad Razavi, University of California, Los Angeles</li> </ul>	No
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.