



Ministry of Higher Education and
Scientific Research - Iraq
University of Diyala
College of Engineering
Department of Materials Engineering



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Insulating materials		Module Delivery
Module Type			<input type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	MAE435		
ECTS Credits	2		
SWL (hr/sem)	30		
Module Level	4	Semester of Delivery	
Administering Department	Materials Engineering	College	College of Engineering
Module Leader		e-mail	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Scientific Committee Approval Date	19/10/2023	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

Module Objectives أهداف المادة الدراسية	<p>This module aims to</p> <ol style="list-style-type: none">1. To develop an understanding of the fundamental laws and elements of electrical circuits.2. To learn the energy properties of electric elements and the techniques to measure voltage and current.3. To develop the ability to apply circuit analysis to DC and AC circuits.4. Another objective is to prepare students to take some more advanced courses in the area of circuits and electronics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Knowledge of basic terms in electrical engineering.2. Learn about Ohm's law and the relationship of current with voltage3. Learn about Kirchhoff's laws4. Learn about the properties of conductors and insulators5. Apply the knowledge of basic circuit laws and simplify the dc and ac networks using reduction techniques.6. analyse the dc and ac circuits using mesh and nodal analysis and network simplification theorems.
Indicative Contents المحتويات الإرشادية	<p>This course description provides a summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the learning opportunities available. It must be linked to the program description</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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 seminars and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>
-------------------	---

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	5% (5)	2, 4, 6, 8, 10, 12	LO #1 to #11
	Assignments	3	5% (5)	3, 7, 13	LO #1 to #10
	Projects / Lab.	/	/	/	/
	Group Presentation	1	10% (10)	15	LO #1 - #14
Summative assessment	Midterm Exam	2hrs.	20% (20)	6 and 12	LO #1 - #14
	Final Exam	3hrs.	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Principle and theory of Insulating materials
Week 2	Principle properties of Insulating materials
Week 3	Classification of Insulating materials
Week 4	Introduction to insulating materials
Week 5	Effect of frequency on dielectric constant, effect of temperature on polarization
Week 6	Ferroelectric materials ,paraelectric materials , hysteresis curve.
Week 7	Pizelectricity, important requirements of good insulating materials
Week 8	Frequency dependence of electronic polarization ,Ionic polarization
Week 9	Dielectric loses, significance of the loss tangent, depending of the loss tangent on temperature and frequency
Week 10	Frequency and temperature depending of the dielectric constant of polar dielectric properties of polymeric systems
Week 11, 12	Atomic origin of magnetism materials, magnetic permeability , magnetic

	susceptibility Classification of magnetic materials
Week 13	Magnetization and Saturation, Domain theory of ferromagnetism, effect of temperature
Week 14	Hysteresis curves , Hard and Soft magnetic materials
Week 15	Applications of magnetic materials / Final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1) Insulation materials science and application, SoLAs, 2014 2) The complete guide to electrical insulation, Megger, 2006	Yes
Recommended Texts	1) Radiation shielding for clinics and small Hospitals, Hanson G.,2013	

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 -	متوسط	60 - 69	Fair but with major shortcomings

	Satisfactory			
	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
<p>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.</p>				