

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electromagnetic Fields		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MIET 3103		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	
Administering Department	MIET	College	EETC
Module Leader	Hussein F. Hamdan	e-mail	eng.hussain.fadhle@uobabylon.edu.iq
Module Leader's Acad. Title	professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name	Hussein F. Hamdan	e-mail	eng.hussain.fadhle@uobabylon.edu.iq
Scientific Committee Approval Date	26/10/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents
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أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To learn about electromagnetic transmission 2. To learn about Maxwell's equations 3. To know the types of electromagnetic wave transmission media. 4. To recognize the types of signals and systems. 5. To recognize the Guided Waves 6. To recognize transmission lines 7. To recognize Electromagnetic Radiation and Antennas
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn about General review in electrostatic. 2. Learn about Gauss's law. 3. Learn about Steady magnetic field. 4. Learn about Time varying magnetic field. 5. Learn about Maxwell's equations in electric fields. 6. Learn about Maxwell's equations in magnetic fields. 7. Recognize types of electromagnetic wave transmission media. 8. Recognize the types of signals and systems for electromagnetic waves. 9. Recognize the introduction Guided Waves. 10. Recognize the applications Guided Waves in medical device. 11. Recognize transmission lines. 12. Recognize Electromagnetic Radiation and Antennas.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1- Electrostatic, Electric charge, Coulomb's law, Electrical field intensity, and examples [4 H]. 2- Electric Flux Density and Gauss's Law with examples [4 H]. 3- Steady Magnetic Field, Magnetic Field in life's human with examples [4 H]. 4- Time varying - magnetic field and Maxwell's equations, FARADAY'S LAW, Moving Conductor in a Magnetic Field, Displacement Current and Conduction Current (Ampere's Law), Maxwell's equations in pointing form, Wave equations with examples [12 H]. 5- Uniform plane wave, Wave velocity, Characteristic impedance, Wave propagation in media, Skin effect, The pointing vector and power consideration with examples [8 H]. 6- Guided Waves with examples [12 H]. 7- Transmission lines with examples [8 H]. 8- Electromagnetic Radiation and Antennas with examples [12 H].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم	
Strategies	Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10 %(10)	3,5,7,9,11,13	LO # 1, 2 LO # 3, 4 LO # 5, 6 LO # 7, 8 LO # 9, 10 LO # 11, 12
	Assignments	2	10 %(10)	5,13	LO # 3-6, and 6-9
	Projects / Lab.	10	15 %(10)	Continuous	
	Report	1	5 %(10)	14	LO # 1-12
Summative assessment	Midterm Exam	2hr	10 %(10)	7	LO # 1-7
	Final Exam	4hr	50 %(50)	16	ALL
Total assessment			100 % (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7	Midterm exam
Week 8	Plane Wave Propagation and Reflection
Week 9-11	Guided Waves
Week 12-13	Transmission lines
Week 14-15	Electromagnetic Radiation and Antennas Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7-8	Plane Wave Propagation and Reflection
Week 8-10	Guided Waves
Week 11-12	Transmission lines
Week 13-14	Electromagnetic Radiation and Antennas

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Engineering Electromagnetic (fifth edition – by William H. Hayt. JR)	NO
Recommended Texts	Introduction to Communication Systems (second edition- by Ferrel. G. Stremler)	YES
Websites	1. https://www.coursera.org/search?query=Electromagnetic%20Fields&=null&index=prod_all_launched_products_term_optimization . 2. www.tallguide.com 3. www.ainfoinc.com 4. www.millitech.com 5. www.rfcafe.com 6. www.globalspec.com	

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.				



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التاريخ : 2026 / 3 / 15



رئيس القسم : أ.د. محمود شاكر نصر

التاريخ : 2026 / 3 / 15



اسم التدريسي : أ.د. حسين فاضل حمدان

التاريخ : 2026 / 3 / 15