MODULE DESCRIPTOR FORM

Module Information					
Module Title	ELECTROMAGNETIC WAVES			**Module Delivery**	
Module Type	CORE				
Module Code	MPH2201				
ECTS Credits	5 ECTS				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	2	
Administering Department	MPH		**College**	College of Sciences	
Module Leader	Ayman Mohammed Jaber		**e-mail**	ayman.mo@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer Assistant		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Ayman Mohammed Jaber		**e-mail**	ayman.mo@uowa.edu.iq	
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Review Committee Approval	2025-01-20		**Version Number**	1.0	

Relation With Other Modules			
Prerequisite module	Electricity and Magnetism	**Semester**	UG I, 2nd Semester
Co-requisites module	No	**Semester**	No

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	.1 Introducing the student to the concept of electromagnetic waves, how they are transmitted, the phenomena that occur to them, and their difference from longitudinal waves. .2 Introducing the student to the basic theories of electromagnetic waves. .3 Introducing the student to the types of vectors and how to deal with them. .4 Providing the student with knowledge of how to calculate the electromagnetic force and the electromagnetic field. .5 Introducing the student to the types of shapes affected by the electromagnetic field. .6 Study of Ampere's law and its applications, and study of Faraday's law and the induced electric field. .7 To explain the unknown by analogy with the known counterpart. .8 Identify the nature of the propagation of electromagnetic waves. .9 Study of the characteristics of the electromagnetic spectrum. .10 Introducing the student to applications of electromagnetic waves in the medical field.
Module Learning Outcomes	.1 The student understands the basic concepts of wave science. .2 To describe the mathematical relationships related to the electromagnetic field. .3 Connecting different wave vectors. .4 For the student to devise solutions and explanations for physical phenomena, with some modernity and creativity. .5 Explain the general characteristics of an electromagnetic wave .6 Enabling students to obtain knowledge of the parts of the magnetic spectrum and the basis for its division .7 Analyze, investigate, and collect information systematically and scientifically to establish facts and principles
Indicative Contents	Theory Lectures Learning concepts of each theoretical lecture or groups of lectures. [SSWL=28 hrs] Total hrs = ∑SSWL + (Mid Exam hrs+ Final Exam hrs) Total hrs=28+1+3=32

Learning and Teaching Strategies	
Strategies	Lecture .1 Problem-based learning (PBL) .2 Peer teaching and collaborative learning .3 Reflective practice .4 Student groups. .5 Discussion. .6 Asking questions to the student using a brainstorming method. .7 Giving students assignments to solve problems. .8 Assigning students to prepare reports related to the course. .9

Student Workload (SWL)			
Structured SWL (h/sem)	45	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	77	**Unstructured SWL (h/w)**	5.133
Total SWL (h/sem)	122 + final3 = 125		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	4,7,10	5,7
	Project	1	10%(7)	All Weeks	10
	Home Work	3	10%(10)	4,7,12	3,5,7
	Report	3	10%(8)	4,6,13	All Outcomes
	Circal Learn	1	10%(5)	All Weeks	All Outcome
Summative assessment	**Midterm Exam**	1	10% (10)	7	3,4
	Final Exam	1	50% (50)	16	1,2,3,4,5,6,7
Total assessment			100%		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Vector analysis and vector algebra
Week 2	Coordinate system
Week 3	Applications of coordinate systems
Week 4	Static electric field in the presence of coordinates
Week 5	Coulomb's Law and Electric Field Intensity
Week 6	Vector Form of Coulomb's Law
Week 7	Mid. Exam
Week 8	Force Due to n Number of Charges
Week 9	Electric Field Intensity
Week 10	Electric Field at a Point Due to n Number of Charges
Week 11	Types of Charge Distributions
Week 12	Electric Field Intensity Due to Various Charge Distributions
Week 13	Electric Field Due to Infinite Line Charge
Week 14	Electric Field Due to Charged Circular Ring
Week 15	Electric Field Due to Infinite Sheet of Charge

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Engineering Electromagnetic, 8th edition, 2010, William Hyatt.	No
Recommended Texts	Electromagnetic waves and Transmission lines, 2007, Bakshi U. A. and Bakshi A. V.	No
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D -Satisfactory	Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	Fail	(45-49)	More work required but credit awarded
	F – Fail	Fail	(0-44)	Considerable amount of work required
Note:				

NB 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.