MODULE DESCRIPTION FORM

Module Information					
Module Title	Electricity and Magnetism				
Module Type	Core	☒**Theory** ☐**Lecture** ☒**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**			
Module Code	Zu-Sc-MPHY1102				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	1		Semester of Delivery	1	
Administering Department	MPHY		College	College of Science	
Module Leader	Ahmed Mohsin Naser		e-mail	Msceng36@alzahu.edu.iq	
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	M.sc.	
Module Tutor			e-mail		
Peer Reviewer Name	Proff. Saleem Lateef Mohammed Asst.Proff. Dr.Ghaidaa Abdulrahman Khalid		e-mail	Saleem_lateef_mohammed@mtu.edu.iq ghaidaakhalid@mtu.edu.iq	
Scientific Committee Approval Date			Version Number	1.0	

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module	None	Semester	

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Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Understanding the electric charge and the electric field. 2. Knowing the composition of matter. 3. Knowing the types of matter. 4. Knowing the types of electrical charging. 5. Learn about Coulomb's law. 6. Identify the electric field of charges and electric field lines. 7. Identify forces, moments, and electrical potential energy. 8. Knowing the Gauss's law. 9. Identify the electric flux and the enclosed charge. Identify the electrostatic field
Module Learning Outcomes	1. For students to be able to distinguish between different types of materials and their ability to conduct electricity. 2. Student's ability to charge materials electrically. 3. Students can be able to identify what happens inside electrically charged materials and the movement of charges inside the material. 4. Distinguishing between Coulomb's, Gauss's and Ohm's laws and what students achieve in studying each law. 5. Students' ability to test whether materials are conductive or non-conductive. 6. Students' ability to distinguish between the parts of an electrical circuit while drawing this circuit. 7. Students' ability to perform many calculations such as forces, moments, potential energy, electric flux, resistance, capacitance, etc. The ability of students to apply what has been calculated theoretically in a practical way in the future.
Indicative Contents	- Electric charge, electric field, Conductors, insulators and induced charges. [15 hrs.] - Coulomb's Law, Electric field lines, electric dipole, force and potential energy. [15 hrs.] - Gauss's Law, The electrostatic field, Ohm's Law, Capacitance and resistance. [20 hrs.] - Inductive CCT and Faraday's Law. [15 hrs.]

Learning and Teaching Strategies	
Strategies	- Discussing the topics of the curriculum book and supporting references Theoretical lectures including problem solving and discussion of homework. - Asking students a set of thinking questions during the lectures for specific topics. - Giving students homework that requires finding self-solutions.

Student Workload (SWL)			
Structured SWL (h/sem)	65	Structured SWL (h/w)	4.3
Unstructured SWL (h/sem)	135	Unstructured SWL (h/w)	9
Total SWL (h/sem)	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	2, 5, 10, 12	LO #1, 2, 10 and 11
	Assignments	6	10% (10)	Continuous	All
	Projects / Lab.	7	5% (5)	Continuous	All
	Report	7	10% (10)	Continuous	All
	Seminar	1	5% (5)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	14	LO # 1-13
	Final Exam	5hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	**General Introduction**
Week 2	**Electric charge and electric field**
Week 3	**Conductors, insulators and induced charges**
Week 4	**Exercises**
Week 5	**Coulomb's Law**
Week 6	**Electric field lines, electric dipole**
Week 7	**force and potential energy**
Week 8	**Exercises**
Week 9	**Gauss's Law**
Week 10	**The electrostatic field**
Week 11	**Ohm's Law**
Week 12	**Capacitance and resistance**
Week 13	**Faraday's Law**
Week 14	**Mid Exam**
Week 15	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1-2	Lab 1: Ohm's Law
Week 3-4	Lab 2: Non Ohmic
Week 5-6	Lab 3: parallel and series connection of resistance
Week 7-8	Lab 4: Maximum power transfer
Week 9-10	Lab 5: Lenz's law
Week 11-12	Lab 6: Electromotive force (E. m. F)
Week 13	Lab 7: parallel and series connection of capacitor
Week 14	Mid Exam
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Edward M.Purcell, Electricity and magnetism, 3rd edition, 2013	YES
Recommended Texts	University physics with modern physics, 13th edition, 2011	YES
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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(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.				

Name of the Instructor:

Ahmed Mohsin Naser