MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Physics**			**Module Delivery**	
Module Type	**Basic**			☑ **Theory** ☑ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**COE122**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial intelligence Eng		**College**	College of Engineering	
Module Leader	Hanaa.m.hadad		e-mail	hanaa.m.hadad@alayen.edu.iq	
Module Leader's Acad. Title	Msc.		Module Leader's Qualification	Ph.D.	
Module Tutor	Hanaa.m.hadad		e-mail	hanaa.m.hadad@alayen.edu.iq	
Peer Reviewer Name					
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Understand fundamental physical quantities, units, and properties of matter. Apply principles of motion and Newton's laws to analyze physical systems. Explain basic concepts of fluids, waves, and thermal physics. Describe heat transfer and thermodynamic laws. Solve physics problems using appropriate equations and scientific reasoning.

Module Learning Outcomes	Knowledge	A2	A2.1 Define key physical concepts and principles. A2.2 Describes interference, diffraction, and polarization.. A2.3 illustrate of Coulomb's Law and Gauss's Law.
	skills	B2	B1.1 Function efficiently as an individual. B1.2 Function as a member of multidisciplinary and multicultural teams.
	Ethics	C1	C1.1Define professional and ethical responsibilities. C1.2 Demonstrate diversity in their commitment to ethical responsibilities.
Indicative Contents	Part A- Electricity and Magnetism Electricity and Magnetism: Charge and matter, electric field, Coulomb's law, electric flux, Gauss's law, electric potential, capacitors and dielectrics, current, resistance and electromotive force, Ohm's laws and simple circuits, magnetic induction, and the Biot–Savart law. (6 hrs) Part B- Modern Physics Modern Physics: Light, wave nature of light, wave structure, interference and diffract0ion, polarization of light, thermal radiation, photoelectric effect, Bohr's theory, quantum mechanics, lasers, and relativity theory. (6 hrs) Part C- Mechanics and Properties of Matter Properties of matter, physical quantities, standard units and dimensions, linear motion, velocity, properties of fluids, viscosity, surface tension, and waves in elastic media. (6 hrs) Part D- Heat and Thermodynamics Heat and Thermodynamics: Heat transfer, kinetic theory of gases, first law of thermodynamics, second law of thermodynamics, temperature scales and thermometers, and thermal expansion. (6 hrs)		

Learning and Teaching Strategies	
Strategies	•Presentations • Discussions • Tutorial and graphics • Problem solving • Brain storming • Research and reporting • Problem Solving

Student Workload (SWL) for 14 weeks			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5.5
Unstructured SWL (h/sem)	22	**Unstructured SWL (h/w)**	1.57
Total SWL (h/sem)	100		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري		
	Material Covered	**LOs**
Week 1	Physics Definitions and Applications ,Vector ,Physical Quantities Units and conversion	A2 B1C1
Week 2	Mechanics: Motion in one Dimension , velocity acceleration, Free falling bodies ,Motion in two dimention ,Project motion ,Circular motion.	A2 B1 C1
Week 3	Force The Newtons law of motion and Application , Energy ,work,power, Impulse, Momentum ,torque and Collisions .	A2B1 C1
Week 4	Rotational Motion ,torque ,Rotational Equilibrium and the Law of Gravity , Equation of rigid body ,Periodic motion.	A2 B1 C1
Week 5	Thermodynamics:Heat transver ,heat capacity ,mechansum of heat transver , The Laws of Thermodynamics.	A2B1 C1
Week 6	Electric charge, Coulomb's law, and electric field	A2 B1 C1
Week 7	Electric flux, Gauss's law, and electric potential	A2 B1 C1
Week 8	apacitors, current, resistance, EMF, and Ohm's laws	A2 B1 C1
Week 9	Magnetic induction and Biot–Savart law	A2 B1C1
Week 10	Nature of light, interference, diffraction, polarization	A2 B1 C1
Week 11	Thermal radiation and photoelectric effect	A2 B1 C1
Week 12	Lasers and their use in physics	A2 B1 C1
Week 13	Classification of types of lasers.	A2 B1 C1
Week 14	Final Exam	A2 B1 C1

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	A2
	Assignments	2	10% (10)	4 and 6	A2
	Projects	1	10% (10)	10	A2
	Report	1	10% (10)	13	A2 B1 C1
Summative assessment	**Midterm Exam**	1	10 % (10)	8	A2
	Final Exam	1	50% (50)	16	A2
Total assessment			100% (100 Marks)		

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Physics for Scientists and Engineers, R.A. Serway and J.W. Jewett, 6th Edition, Thomson Brooks/Cole, 2014. Paul A. Tipler, Physics for Scientists and Engineers, Sixth Edition, 2008.	Yes
Recommended Texts		
Websites	https://eng.alayen.edu.iq//colleges/e/42	

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.