	Ministry of Higher Education and Scientific Research - Iraq Al-Naji University College of Engineering Department of Cybersecurity Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Physics			**Module Delivery**	
Module Type	S			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	CE1105				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UG I		**Semester of Delivery**	1	
Administering Department	ICE		**College**	College of Engineering	
Module Leader	Ghassan Salem Abdullah		**e-mail**	ayad.a@nahrainuniv.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**	ghassan.salem@alnaji-uni.edu.iq	
Peer Reviewer Name	Hind Subhi		**e-mail**		
Scientific Committee Approval Date	11/06/2023		**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives **أهداف المادة الدراسية**	The Objectives of this Module is to provide the students the Mathematics and Physics of Vectors. Also, the Physics and Mathematics of the Oscillation Motion and Waves motion, including Electromagnetic waves and Sound Waves. Moreover, The Basic Concepts of Physical Optics, including the Physics and Mathematics of Interference and Diffraction. Finally, the physics of nature of light and interaction of wave with matter.
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	Knowledge and Understanding the: 1. Mathematically Description of the Physics theories 2. Basic Concept of the Oscillation Motion and Waves 3. Basic Concept of the Electromagnetic waves 4. Basic concept of the Sound waves 5. Basic Concept of the Diffraction, interference. 6. Basic concepts of the nature of light 7. Basic concepts of electrical concept and components
Indicative Contents **المحتويات الإرشادية**	Indicative content includes the following: 1. Definition of Vectors mathematically 2. Definition of oscillation motion, Type of oscillation motion, derivation of Oscillation motion, energy of oscillation motion 3. Wave motion definition, type of waves, derivation of wave equation, energy of wave 4. Sound wave, definition, Doppler effect, beat, ultrasonic wave, mach's no. 5. Electromagnetic wave (EMW), definition, EM spectrum, energy of EMW, transport od EMW, 6. Interference of EMW, Constructive & Destructive Interference 7. Diffraction of EMW, definition, type of diffraction, equation of diffraction pattern 8. Interaction of wave with matter 9. Report 15 hrs

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	The main strategy will be adopt in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their thinking skills. This will be achieve through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا**

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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**	3	10% (10)	2, 8, 12	1,5,6
	Assignments	3	10% (10)	3, 9, 12	3, 6
	Projects / Lab.	1	10% (10)	13	
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	6, 11	1-5
	Final Exam	3hr	50% (50)	16	All
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Introduction
Week 2	Vectors and scalars, Component of Vectors, Vector Arithmetic
Week 3	Oscillation Motion - Part 1 Simple Harmonic Motion, The Force Law for Simple Harmonic Motion
Week 4	Oscillation Motion - Part 2 Energy in Simple Harmonic Motion, Pendulums, Damped Simple Harmonic Motion
Week 5,6	Waves motion: Types of waves, Transverse and Longitudinal waves, Wavelength and Frequency, The Speed of Traveling wave, The wave Equation, The Principle of Superposition For waves, Interference of waves
Week 7, 8	Wave Motion: Sound waves, The Speed of Sound, Traveling Sound Waves, Intensity and Sound level, The Doppler Effect, Supersonic Speed, Shock Waves
Week 9	Electromagnetic Waves: definition, traveling of electromagnetic waves, properties, speed electromagnetic waves, energy transport and pointing vectors, variation of intensity, radiation pressure
Week 10	Electromagnetic Waves: polarization, reflection and refraction, chromatic dispersion, total internal reflection
Week 11	Electromagnetic Waves Interference
Week 12	Electromagnetic Waves Diffraction
Week 13	**Electric Potential:** Electric charges and electric fields, Conductors and Insulators, Coulomb's law, The Electric Field Due to a Point Charge, The Electric Field Due to a Charged Disk

Week 14	**Capacitance:** Calculating the Capacitance, Capacitors in Parallel and in Series, Energy Stored in an Electric Field, Capacitor with a Dielectric, Dielectrics: An Atomic View
Week 15	**Current and Resistance:** Direct current circuits: Electric Current, Current Density, Resistance and Resistivity, Ohms Law, Power in Electric Circuits

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Physics, By: David Halliday and Robert Resnick, 9th edition, John Wiley & Sons, 2011	Yes
Recommended Texts	Physical Science, By: Bill W. Tillery, 9th edition Copyright © 2012 by The McGraw-Hill Companies	No
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	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.