	Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Forensic Science	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Physics of Waves and Sound**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits	5				
SWL (hr/sem)	**150**				
Module Level	2nd		**Semester of Delivery**	2	
Administering Department			**College**		
Module Leader	Dr.Soror Ali Mahdi		**e-mail**	Soror.a.mahdi@nahrainuniv.edu.iq	
Module Leader's Acad. Title	Ass. Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. The course aims to provide 2nd stage students with basic knowledge of waves and sound. 2.To understand that everything related to waves and understand the concepts such as types of waves ,Simple harmonic motion, position ,velocity ,acceleration and energy and its applications. 3. To enable students to access the science of waves by understanding how to analysis sound waves and how to deal with laws, equations, illustrations and other data. 4. Enabling the student to be able to analyze, devise and draw conclusions. theory through the application of techniques 5. Follow-up of scientific development through the Internet and keeping pace with scientific development by setting up experiments synchronized with theoretical topics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning the basic concepts of waves and the properties of substances using property tables or property relations. 2. Understanding the different types of waves, position ,velocity,acceleration and energy . 3. Understanding the Superposition principle, damped harmonic oscillation and Forced vibration (force oscillation) 4. Defining Resonance ,Sound,and Doppler effect 5. Performing Sound and its characteristics 6. Analyzing some basic applications of sound and waves in forensic science fields.

Indicative Contents المحتويات الارشادية	Providing the student with general information about: - Identifying the science of waves and its importance in understanding the various branches of physics such as sound - Being able to understand and interpret the various wave phenomena and solve their practical problems - Identifying vibrations, their types, interference, and analysis, as well as the types of waves and their equations - Their propagation in different media - The basic concepts of sound and knowing the conditions of its emission and transmission - Making a comparison between simple harmonic motion and uniform circular motion - Deriving the general equations of simple harmonic motion - Identifying applications in forensic science - Understanding the superposition of waves in media - Understanding the interference of sound waves of equal amplitude and frequency, whether they are equal or different in phase - Understanding the phenomena of reflection and diffraction in sound - Identifying ultrasonic waves and their most important applications

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy in delivering this course is to encourage students to participate in analysis of waves sound problem solving, while simultaneously improving and expanding their critical thinking skills through training in the correct way of thinking to solve complex problems. This is achieved through classes and practical experiments matched with theoretical studies and by thinking about the type of scientific experiments that include some applications of sound waves laws that are of interest to studentsin forensic science field.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of wave ,types of waves Properties of wave
Week 2	Simple harmonic motion,position ,velocity ,acceleration and energy
Week 3	Examples in forensic science
Week 4	Superposition principle
Week 5	Interference, diffraction and standing waves
Week 6	The damped harmonic oscillation
Week 7	Midterm exam
Week 8	damped harmonic oscillation
Week 9	Damping scale. examples
Week 10	Forced vibration (force oscillation)
Week 11	Resonance and its application
Week 12	Sound and its characteristics
Week 13	Sound and its characteristics
Week 14	Doppler effect ,examples
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Vibration and wave By : W.W.Norton and company	Yes
Recommended Texts	Wave phenomena By: Akira Hirose	No
Websites	All books and global sites in the internet	

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.