



Module Information

Module Title	Sound and wave motion		
Module Type	Basic	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Semina	
Module Code	MIET2104		
ECTS Credits	5		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	2
Administering Department	Medical Physics	College	Faculty of Science
Module Leader	Ghsoon shakir mohsun	e-mail	Ghsoonshakir@alzahu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.sc.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	4/3/2026	Version Number	1.0

MODULE DESCRIPTION FORM

Relation with other Modules

Prerequisite module	Integral Mathematics	Semester	UGI-S2
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

<p>Module Objectives</p>	<p>Students will gain knowledge of wave motion and acoustics. The properties of waves will be discussed, in addition to studying the effect of the medium on wave properties.</p>
<p>Module Learning Outcomes</p>	<p>Upon successful completion of this unit, students will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate knowledge and understanding of physical laws and principles and their application to diverse areas of physics (including the laws of motion, electromagnetism, wave phenomena, and properties of matter), with the necessary mathematics covered in the modules. 2. Understand the concepts of oscillatory motion, wave superposition, sound, and electromagnetic waves. 3. Be proficient in using common mathematical and experimental tools, including problem-solving specific to this course. 4. Possess skills in collecting and analyzing experimental data. 5. Demonstrate the ability to use appropriate texts or other learning resources as part of their own learning management.
<p>Indicative Contents</p>	<p>Indicative content includes the following. Vector analysis, Vector fields, Linear algebra: The basics, and vector calculus. [19 hrs] Scalars and vectors-unit, Orthogonal vectors, Dot Product, Cross Product, Infinite series, and power series. [19 hrs] Convergence and divergence series, and Differential equations: Differential equations of the first order. [15 hrs]</p>



Learning and Teaching Strategies

Strategies	The core approach to delivering this unit is to foster student engagement through active participation in homework exercises, with the aim of enhancing and expanding their critical thinking skills. This will be facilitated through interactive classroom sessions and lessons, as well as exploring simple experiments designed to include sampling activities tailored to students' interests.
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Student Workload (SWL)

Structured SWL (h/sem)	102	Structured SWL (h/w)	7
Unstructured SWL (h/sem)	98	Unstructured SWL (h/w)	6.2
Total SWL (h/sem)	200		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5% (5)	5 and 10	LO #2, #3, and #4
	Assignments	2	10% (10)	2 and 12	LO #5, #6, #7 and #8
	Tutorial	1	15% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #4
	Final Exam	2hr	50% (10)	16	All
Total assessment			100% (100Marks)		



Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	the introduction
Week 2	Mechanical waves: wave properties
Week 3	Wavelength and frequency
Week 4	Speed and energy in a traveling wave
Week 5	Standing waves
Week 6	Speed of sound
Week 7	Intensity of sound waves
Week 8	Superposition of sound waves (interference and pulses)
Week 9	Doppler effect
Week 10	Simple Harmonic Motion
Week 11	Midterm Exam
Week 12	Harmonic and Circular Motion
Week 13	Formula of Force and Energy in Simple Harmonic Oscillators
Week 14	Harmonic motion and circular motion
Week 15	Final Exam



Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	<u>Vibrations, Waves and Sounds, 2nd Edition, 2013, ANYAEGBUNAM F.N.C.</u>	No
Recommended Texts	Physics of Vibrations and Waves, 6th Edition 2005, H. J. Payne, formerly Department of Physics, Imperial College of Science and Technology, John Wiley & Sons Ltd., London, United Kingdom.	
Websites	file:///C:/Users/MICROSOFT/Downloads/Book5VibrationsWavesandSounds.pdf http://fizica-c-11.phys.uaic.ro/Pain%20PHYSICS%20OF%20VIBRATIONS%20AND%20WAVES%206-th%20Edition.pdf	

Grading Scheme

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

Name of the Instructor:

Ghsoon Shakir Mohsun

