

AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Vibrations and Waves Laboratory								
Course Code		FİZ252		Couse Level		First Cycle (Bachelor's Degree)				
ECTS Credit	2	Workload	50 (Hours) Theory 0 Practice 0 Laboratory				3			
Objectives of	the Course	The aim of this, to strengthen the knowledge gained in from vibrations and waves and to observe wave motion in the laboratory								
Course Content		Periodic motion, oscillations, harmonic oscillators								
Work Placement		N/A								
Planned Learning Activities a		and Teaching	Methods	Explan	ation	(Presentat	ion), Experime	ent, Demonsti	ration	
Name of Lecturer(s)		Lec. Işıl BAŞA	RAN ÖZ							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Final Examination	1	60
Quiz	8	40

Recommended or Required Reading

1	Dalgalar: Berkeley Fizik Dersleri Frank S,-Crowford. Jr.
2	Üniversite Fiziği Cilt I Yazarları: H.D.Young, R.A.Freedman
3	Fizik 1 (Mekanik) Yazarları: R.A. Serway, R.J. Beichner
4	4. Ohanian Physics Yazari: Hans C. Ohanian

Week	Weekly Detailed Cours	e Contents					
1	Theoretical	Introduce laboratory, demonstrate how using the measuring apparatuses					
2	Theoretical	Wave velocity measurements					
	Laboratory	Wave velocity measurements					
3	Theoretical	Diffraction of water waves					
	Laboratory	Diffraction of water waves					
4	Theoretical	Concave and convex lenses					
	Laboratory	Concave and convex lenses					
5	Theoretical	Longitudinal oscillations of mass and spring system					
	Laboratory	Longitudinal oscillations of mass and spring system					
6	Theoretical	Coupled oscillators					
	Laboratory	Coupled oscillators					
7	Theoretical	Reflection of high frequency sound waves from a plane surface					
	Laboratory	Reflection of high frequency sound waves from a plane surface					
8	Theoretical & Practice	Subject repeat (Midterm)					
9	Theoretical	Reflection of high frequency sound waves from a plane surface					
	Laboratory	Reflection of high frequency sound waves from a plane surface					
10	Theoretical	Refraction of microwaves					
	Laboratory	Refraction of microwaves					
11	Theoretical	Refraction of microwaves					
	Laboratory	Refraction of microwaves					
12	Theoretical	Coupled LC circuits					
	Laboratory	Coupled LC circuits					
13	Theoretical	Compensation experiments					
14	Theoretical	Compensation experiments					

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	6	0	2	12



Laboratory	8	0.5	2	20				
Quiz	8	0.5	0.25	6				
Final Examination	1	10	2	12				
Total Workload (Hours)								
[Total Workload (Hours) / 25*] = ECTS 2								
*25 hour workload is accepted as 1 ECTS								

Learning Outcomes

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1	Student must understand the concept of conserved force, work-energy theorem
2	Can apply the laws of Newton easily
3	Student must understand the concepts of wavelength and frequency which are the main concepts of waves.
4	Student must understand the concept of transverse and longitudinal wave
5	Student must know the differences between the moving waves and standing waves
6	Student must understand the fact that the vibrating model has a vital importance in physics
7	There must occur more than one model in student's imagination when harmonic motion is to be discussed
8	Student can imagine the effects of external forces acting on the system on the harmonic behaviour of the system
9	Student can observe the physical fundamentals underlying the linear dependance of the force acting on the harmonic motion on the change of position
10	Student can observe the secret underlying the equation of wave in terms of the knowledge of the form of that equation
11	Student can be aware of the fact that the knowledge gained is applicable during the eduation.

Programme Outcomes (Physics)

1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
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Contribution of Learning Outcomes to Programme Outcomes 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
P1	4	5	5	5	5					
P2	1	5						5		
P3	5									
P4	5									
P5	5									
P8		5								



P13	5	5	5	5	5
P14	4	4	4	4	4
P15					1
P16	5	5	5	5	5
P17			3		

