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	44 *(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 and Teaching Methods		Explanation (Presentation), Experiment, Demonstration					
Name of Lecturer(s)		Lec. Şerife Gökçe ÇALIŞKAN					

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70
Quiz	10	10

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	Fiziğin Temelleri Yazarları: David Halliday, Robert Resnick, and Jearl Walker
5	Ohanian Physics Yazarı: Hans C. Ohanian

Week	Weekly Detailed Course 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	Intermediate Exam	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	13	1	1	26
Quiz	10	1	0.5	15
Final Examination	1	1	2	3
			Total Workload (Hours)	44
		[Total Workload (Hours) / 25*] = **ECTS**		2

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

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
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies
18	To be able to tell the relations between symmetry and conservation laws in laws of physics

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		