



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Geometric Optics							
Course Code		FİZ331		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	6	Workload	147 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		To gain an insight of geometric optics by using light beam phenomenon							
Course Content		Reflection, refraction and dispersion of light							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

### Recommended or Required Reading

1	Fundamentals of Optics, Francis Jenkins and Harvey White, Volume I, 2001
2	Optics, Hecht, E., and A. Zajac, 2nd Edition. Reading, Massachusetts: Addison Wesley, Publishing Company, 1987.
3	Geometric Optic, Selma Karaali, Ege Üniversitesi Yayınları, 1971

Week	Weekly Detailed Course Contents	
1	Theoretical	History of light
2	Theoretical	Geometric optics approximation
3	Theoretical	Wave surfaces and light beams
4	Theoretical	Reflection and refraction of light
5	Theoretical	Reflection and refraction laws
6	Theoretical	Huygens principle
7	Theoretical	Fermat principle
8	Intermediate Exam	Midterm
9	Theoretical	Reflective optic systems
10	Theoretical	Mirrors
11	Theoretical	Refractive optic systems
12	Theoretical	Prisms
13	Theoretical	Lenses
14	Theoretical	Optic devices
15	Theoretical	Eye

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	15	2	2	60
Midterm Examination	1	40	4	44
Final Examination	1	40	3	43
Total Workload (Hours)				147
[Total Workload (Hours) / 25*] = ECTS				6

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	To differentiate the difference between light beam and light wave
2	To represent reflection laws and plot the proper figures of reflection of light beams from plane and spherical surfaces
3	To represent refraction laws and plot the proper figures of reflection of light beams from plane and spherical surfaces



4	To define refractive index and say the characteristic values for glass, air and water
5	To define critical angle between two media interface and total reflection case
6	To define the dispersion of light and show the dispersion of white light in prism

### 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
P1	4	3	3			
P4		4	4			
P5	5					4
P13	4			5		
P14	3				5	
P16		5	5			

