

Course Information								
Course Code	T	P	L	C	ECTS	Type C/E	Language TR/ENG etc.	Year/Semester
FİZ3016	3	0	0	3	5	E	TR	3/SPRING
Course Name (Turkish)	Dalga Optiği							
Course Name (English)	Wave Optics							

Unit/Program	Physics Department/Undergraduate Program			
Course Prerequisite	No			
Course Objectives	Students' understanding of the causes and consequences of light behaviors			
Course Outline	To study the properties of light based on wave behavior and using Maxwell's Equations			
Textbook/ Material / Resources	WAVES (chapters 8.9) (Berkeley Physics Lectures Volume-3)			
Internship Status	No			
Course Precedents				
University Name	Program Name	Course Name	T-P-L-C; ECTS	Type
The instructor who proposed the course (Title, Name and Surname)			Signature	
Instructors who can teach the course (Title, Name and Surname)			Signature	

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)
Face-to-face courses will be taught under the supervision of the relevant faculty member.

External Stakeholder Opinions About the Course (It is expected that the opinions to be obtained from the business world that will employ your graduates or from real or legal persons outside the University who have expertise on the subject of the course will be specified. Proof documents must be attached to this form.)	
Stakeholder Name	Opinion (It should be given as a summary, it should not exceed two lines.)

Weekly Course Content Distribution		
Week	Theory	Application/Laboratory
1	Introduction theories about light	
2	According to particle theory, Laws of reflection, Laws of refraction, absorption, radiation pressure	
3	Light behaviors that particle theory cannot explain, the coloration of the refraction interference membranes, the passage of beams through each other	
4	Propagation of waves, refraction, interference, reflection, refraction, Hugens' principle, examples of wave behaviors explaining light behavior, anti-reflective layer coating. Phenomena in which the wave model of light is insufficient and the binary structure of light, the radiation of the black body and the photoelectric phenomenon	
5	Investigation of light behavior according to Maxwell's equation	
6	Linear polarization of electromagnetic waves, elliptical polarization, energy, linear. angular momentum transport and radiant pressure	
7	Radiance of point charge, Polar light generation, Malus' law	
8	Fresnel equations, Brewster's angle, Brewster window and non-reflective transition	
9	Midterm Exam	
10	Specification of retarding plates: double break, quarter wave and half wave sheets	
11	Investigation of the interference and the event of the countryside depending on its sources	
12	The expansion of the beam of light, the resolving power of the human eye is the Fraunhofer and Fresnel diffraction.	
13	He-Ne lasers and diode lasers	
14	Basic principles of holography and some examples	
15	Final Exam	
16		

Assessment			
Evaluation Criteria	Activity	Custom	Contribution to Success Grade (%)
	Midterm Exams	1	40
	Quizzes		
	Assignments		
	Projects		
	Term Paper		
	Laboratory		
	Other		
	Final Exam	1	60
	Sum:		100
Remarks			

Content Design and Subject Weight (%)	Mathematics and Basic Sciences	60
	Engineering Sciences	40
	Social Sciences	
	Health Sciences	
	Educational Sciences	

	Culture and Art Sciences	
	Design Information	

Workload (ECTS) Calculation			
Events	Number	Duration (Hours)	Total workload (Hours)
Fieldwork			
Midterm Exam Application	1	2	2
Self-Study (including pre-class and exam preparation)	14	2	28
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	3	42
Homework			
Final Exam Practice	1	2	2
Laboratory			
Article Review			
Writing an Article			
Reading			
Case Study			
Performance			
Problem Solution			
Project Preparation			
Project Submission			
Quiz			
Report Preparation			
Submitting Reports			
Role/Drama Work			
Seminar			
Oral Exam			
Team/Group Work	12	3	36
Argument	14	1	14
Application/Practice			
Other			
TOTAL WORKLOAD:			126
ECTS CREDITS OF THE COURSE: (The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)			5

Program Outcomes (PO)		1	2	3	4	5	6	7	8	9	10	11
Learning Outcomes (LO) (Course Outcomes)												
1	Learning the wave-particle dilemma of light	5	5	5	4	3	3	4	5	5	1	1
2	Examine light behavior with Maxwell's equations	5	5	5	4	3	3	4	5	5	1	1
3	Learn the basic principles of holography	5	5	5	4	3	3	4	5	5	1	1

Organizer: Prof. Dr. Fahrettin YAKUPHANOĞLU

Preparation Date: 20.05.2024