Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ4022	**3**	**0**	**0**	**3**	**5**	**E**	**TR**	**4/SPRING**
Course Name (Turkish**)**	Kuantum Optiği							
Course Name (English**)**	Quantum Optics							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	The aim of this course is to study quantum theory of light, interaction of light with matter, quantum such as nonlinear optics to teach the basics of optics.
Course Outline	Classical molecular theory of optical phenomena, Principles of wave mechanics, Atomic spectra, Molecular Spectra
Textbook/ Material / Resources	R. Loudon, The Quantum Theory of Light, Oxford University Press, 3rd ed. 2000
Internship Status	No

Course Precedents

University Name	**Program Name**	**Course Name**	**T-P-L-C; ECTS**	**Type**
Izmir Institute of Technology	**Physics**	**Quantum Optics**	**3-0-0-3; 7**	**C**
Bogazici University	**Physics**	**Quantum Optics I**	**4-1-0-4; 10**	**C**

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	Classical Molecular Theory of Optical Phenomena	
2	Classical Molecular Theory of Optical Phenomena	
3	Quantity of Radiated Energy	
4	Quantumness of Atomic Energy	
5	Principles of Wave Mechanics	
6	Principles of Wave Mechanics	
7	Steady States and Atomic Spectra	
8	Steady States and Atomic Spectra	
9	Midterm Exam	
10	Molecular Spectra	
11	Refraction and Diffusion	
12	Anisotropy and Double Refraction	
13	Emission and Absorption of Radiation	
14	Spectrometry	
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	90
	Engineering Sciences	10
	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 CREDİTS 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) / **Learning Outcomes (LO)** *(Course Outcomes)*	1	2	3	4	5	6	7	8	9	10	11
1	To be able to explain the quantization of the electromagnetic field	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**
2	Will be able to describe the interactions of atoms and electromagnetic fields with both semi-classical and purely quantum mechanical methods.	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**
3	To be able to comprehend and apply the principles of wave mechanics	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**

Organizer: Prof. Dr. Niyazi BULUT
Preparation Date: 20.05.2024