Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ4001	**4**	**0**	**0**	**4**	**6**	**C**	**TR**	**4/FALL**
Course Name (Turkish**)**	**Kuantum Mekaniği**							
Course Name (English**)**	**Quantum Mechanics**							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	To teach the basic techniques of quantum mechanics
Course Outline	In this course, the basic principles of quantum mechanics, quantum mechanical notations and quantum mechanical solution techniques are explained
Textbook/ Material / Resources	Quantum Physics I, II, A. Karabulut, G. Budak, Nobel Publication Distribution, 2007
Internship Status	No

Course Precedents

University Name	**Program Name**	**Course Name**	**T-P-L-C; ECTS**	**Type**
Gebze Technical University	**Physics**	**Quantum Mechanics-I**	**4-0-0-4; 8**	**C**
Sakarya University	**Physics**	**Quantum mechanics**	**4-2-0-5; 6**	**C**
Istanbul Technical University	**Physics**	**Quantum Mechanics-I**	**3-2-0-4; 8**	**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	Fourier Series and Fourier Transform	
2	Wave Function, Probability and Probability Flow	
3	Operator Concept and Eigenvalue Equation	
4	Expected Value and Uncertainty	
5	Linear and Hermitian Operators	
6	Commutivity Properties of Operators, Schwartz Inequality	
7	Solution of Eigenvalue Equation in Matrix Form, Variation Technique and Secular Equations	
8	Relativistic and Non-Realistic Schrödinger Equations	
9	Midterm Exam	
10	One-Dimensional Model Potentials	
11	Three-Dimensional Potential Well	
12	Harmonic Oscillator	
13	Central Field Problem, Angular Momentum Operator, Raise and Fall Operators	
14	Interaction with Electro-Magnetic Field	
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	100
	Engineering Sciences	
	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	3	42
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	6	64
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			
Argument	13	3	39
Application/Practice			
Other			
TOTAL WORKLOAD:			**151**
ECTS CREDİTS OF THE COURSE: *(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)*			**6**

	Program Outcomes (PO) / **Learning Outcomes (LO)** *(Course Outcomes)*	1	2	3	4	5	6	7	8	9	10	11
1	Learn the basic principles of quantum mechanics and analyze the connections between them and classical mechanics	**5**	**5**	**5**	**4**	**3**	**3**	**5**	**5**	**5**	**1**	**1**
2	Develop the ability to understand advanced physics topics	**5**	**5**	**5**	**4**	**3**	**3**	**5**	**5**	**5**	**1**	**1**
3	To be able to follow new technologies using quantum mechanics	**5**	**5**	**5**	**4**	**3**	**3**	**5**	**5**	**5**	**1**	**1**

Organizer: Assoc. Prof. Dr. Seda HEKİM
Preparation Date: 20.05.2024