Code and Name:	**FİZ5280 ADVANCED QUANTUM MECHANICS**
Unit:	Graduate School of Natural and Applied Sciences
Detail:	**Period:** 2023-2024 **Status:** Optional **Class:** 1 **Credits:** 3 0 0 3 **ECTS:** 6 **Language:** Turkish

INSTRUCTOR

Title, Name and Surname:	-
Phone:	-
Email:	-
Social Account:	-
Student Day and Time:	-

COURSE ASSISTANT

Title, Name and Surname:	.....
Phone:	.....
Email:	.....
Social Account:	.....
Student Day and Time:	.....

Lessons Weekly Program:	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			-			

Rendering: **Face-to-face lessons per week 3 It will be done on an hourly basis.**
Place: **YY:** - **UE:** -

Purpose: **To have knowledge about quantum mechanics and to develop the ability to solve the physical problems of quantum mechanics at a high level.**

Material: **Gasiorowicsz, S., Quantum Physics, New York, John Wiley, 1996.; Cansoy, Ç., Quantum Mechanics, Istanbul, Istanbul University, Faculty of Science; Bohm, D., Quantum Theory, Prentice-Hall, 1956; Powel J., Crasemann B., Quantum Mechanics, New York, McGraw-Hill, 1968.**

Student Responsibility : **Conducting Research Before and After the Lecture.**

Weekly Lesson Plan

Week	Topic	Method
1	Waves and particles, basic concepts, postulates of quantum mechanics, .	YY
2	Wave function of free particle, Schrödinger's equation, physical meaning of wave function	YY
3	Operator Concept in Quantum Mechanics, Defined of Expected Value, Eigenvalue and Eigenfunctions	YY
4	Matrix Representation, Symmetry Property and Approximation Methods of Quantum Mechanics	YY
5	One-Dimensional Solutions of Schrödinger's Equation	YY
6	Harmonic Oscillator and Hydrogen Atom	YY
7	Solution of Schrödinger's Equation for Multi-Particle Systems	YY
8	Hilbert and Momentum Space	YY
9	MIDTERM EXAM	YY
10	Hermitic Operators, Eigenvalues and Eigenvectors of Hermitic Operators	YY
11	Commutators and the Uncertainty Principle	YY
12	Unitary Transformations	YY
13	Relative Wave Equations	YY
14	Perturbation Theory and Applications, Introduction to Field Quantization .	YY

Assessment and Evaluation

	Method		Number	Weight
Break Exam	Exam	Face	1	% 50
	Quiz	-	-	
	Homework	-		
	Project	-	-	-
General Exam	Face		1	% 50

Course Outcomes:

1	Develop knowledge of quantum mechanics at the level of expertise.
2	Critically evaluate the information related to quantum mechanics.
3	Have an in-depth understanding of the relationship between quantum mechanics and other subjects of physics and its impact on them
4	K will be able to use the knowledge gained in quantum mechanics in other areas of physics such as Nuclear Physics, Solid State Physics, Atomic and Molecular Physics.
5	It will develop the ability to solve the physical problems of quantum mechanics at a high level.

Course-Specific Explanations:

UE: Distance Education; **YY:** Face-to-Face Education

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