



Code and Name: FİZ5730 THEORETICAL ATOMIC PHYSICS

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 of theoretical atomic physics

Material: B. H. Bransden, C. J. Joachain Atom and Molecular Physics, 1999.

Student Responsibility: Preparation before and after class

Weekly Lesson Plan

Week	Topic	Method
1	Atomic Nature of Matter, Black Body Radiation	YY
2	Photoelectric Event Compton Event, Nucleated Atom	YY
3	Atomic Spectra and Hydrogen Bohr Models, Stern- Gerlach Experiment, Angular Momentum ve Spin	YY
4	Also Broglie The Hypothesis and the Birth of Wave Mechanics, Waves and Particles, Wave Packets and Schrödinger's Equation	YY
5	Single Electron Atom and Schrödinger's Equation,	YY
6	Atomic Orbitals and Atomic Quantum Numbers	YY
7	Spin Motion, Spin-Orbital Interactions	YY
8	Fine Structure, Extreme Fine Structure	YY
9	MIDTERM EXAM	YY
10	Multielectron Atoms and Schrödinger's Equation	YY
11	Independent Particle Model and Variation Methods	YY
12	Central Field Approach	YY
13	Interaction of Atoms with External Electric Field and Magnetic Field; Zeeman and the Stark Effect	YY
14	Hunt Rules and Atomic Term Symbols	YY

Assessment and Evaluation

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

Course Outcomes:

- Can improve their knowledge of issues related to atomic physics at the level of expertise.
- The energy levels of atoms learns about fine structure and learns the methods by which fine structure decompositions are examined.
- Develop the ability to solve problems related to atomic systems using their knowledge of theoretical atomic physics.
- Learn the effects of the interaction of atoms with the electromagnetic field.
- Comprehend the relationship of atomic physics with other subjects of physics and its effect on them.

Course-Specific Explanations:

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



T.C.
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Course Syllabus Form

Document No	EGTM - 0001
Publication Date	13.09.2021
Revision Date	-
Revision No	0