Code and Name:	**FİZ5470 MOLECULAR 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: **Basic knowledge about molecular physics, vibrational and rotational energies of diatomic and polyatomic molecules, electronic properties of polyatomic molecular systems and the ability to interpret the spectra of various molecules.**

Material: **Prof. Dr. Sevim Akyüz, Molecular Physics Lecture Notes; G. Herzberg, Diatomic Molecules , 1979; G.W. King, Spectroscopy Anad Molecular Structure, 1964;**

Student Responsibility : **Doing research before and after class**

Weekly Lesson Plan

Week	Topic	Method
1	Molecular Binds Born Oppenheimer yaklaşımı	YY
2	Molecular Bonding Method, Valence Bonding Method, Molecular Orbitals and Bond Energies	YY
3	Hybrid Orbitals and Bond Angles, Molecular Pauli Principle	YY
4	Vibration and Rotational Motions in Molecules, Angular Momentum	YY
5	Electronic Structure of Diatomic Molecules and Vector Model ,	YY
6	Hartree Fock Approach, Constrained and Unconstrained Hartree Fock Hesaplamaları	YY
7	Harmonic Vibrator, Harmony Vibrator	YY
8	obtaining molecular orbitals from atomic orbitals; LCAO/MO approximation, bond and Antibond Orbitals	YY
9	MIDTERM EXAM	YY
10	Energy Levels and Self-functions of Hydrogen Molecule	YY
11	Obtaining Energy Levels and Eigenfunctions of Hydrogen Molecular Ion	YY
12	Franck - Condon Principle and Electronic Transitions in Diatomic Molecules	YY
13	Electronic Structure of Polyatomic Molecules, Hybrid Orbitals and Bond Forces	YY
14	Electronic Spectroscopy of Multielectron Molecules and Electronics Band Spectrum	YY

Assessment and Evaluation

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

Course Outcomes:

1	Learns the basic concepts about the properties, movements and energy levels of molecules.
2	Learns the basic concepts of molecular bonding
3	Hand of diatomic and polyatomic molecules and Have information about their chronic placements and energy levels.
4	Learns the electronic transitions of molecules and methods of calculating molecular energies.
5	Improves the ability to solve physical problems of molecular physics subjects at a high level.

Course-Specific Explanations:

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