T.C.
FIRAT UNIVERSITY
Course Syllabus Form

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

Code and Name:	FİZ5050 NUMERICAL CALCULATION METHODS IN ATOMIC AND 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:	Atom v Physics e It is aimed to gain the ability to solve problems related to molecular systems that cannot be solved analytically or are very difficult to solve by using numerical methods.
Material:	B. H. Bransden and C. J. Joachain, Atom and Molecular Physics,1999. , B. Karaoğlu, Computational Physics, 2004.
Student Responsibility:	Conducting Research Before and After the Lecture

Weekly Lesson Plan

Week	Topic	Method
1	Schrödinger Equation	YY
2	Expansions, Processors and Operators Characteristics	YY
3	Calculation of Eigenvalues and Eigenfunctions of Operators by Matrix Method	YY
4	Central Field Approach	YY
5	Variations of The Princess	YY
6	Radial Wave Functions and Radial Integrals	YY
7	Legendre and Bessel Polynomials	YY
8	Midterm Exam	YY
9	Hartree Metodu	YY
10	Hartree- Fock- Slate Method	YY
11	Hatree-Fock Potentials	YY
12	Hückel Method	YY
13	Solution of Schrödinger's Equation for Simple Model Potentials	YY
14	Fourier Grid Hamiltonian Methods	YY

Assessment and Evaluation

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

Course Outcomes:

1	Learns the structure of atoms and molecules.
2	It can analyze the interactions that occur inside the atom in a system formed by atoms and molecules.
3	Learn the difference between classical mechanics and quantum mechanics.
4	
5	

Course-Specific Explanations:

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