AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Classical Mechanics								
Course Code	FZK507		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	9	Workload	225 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To teach the Basic Concepts and Theorems of Classical Mechanics								
Course Content	Lagrange Equations. Hamilton Equations. Conservation Laws. Integration of Equations of motion. Scattering Problem.								
Work Placement									
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Individual Study, Problem Solving								
Name of Lecturer(s)	Assoc. Prof. Fatih ERSAN								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	30
Quiz	2	8
Attending Lectures	14	28
Assignment	14	14

Recommended or Required Reading	
1	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko
2	Classical Mechanics. T.W. Kibble, F.H. Berkshire
3	Mechanics. L.D. Landau and E.M.Lifshitz
4	Variational Principles of Mechanics. C. Lanczos

Week	Weekly Detailed Course Contents	
1	Theoretical	Analyse of basic principles
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.1-22).
2	Theoretical	Velocity depended potentials
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.22-29). Mechanics. L.D. Landau and E.M.Lifshitz. (p.1-8).
3	Theoretical	Variational principles and Lagrange equations
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.34-44). Variational Principles of Mechanics. C. Lanczos. (p.35-48).
4	Theoretical	Centripetal force
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.70-83).
5	Theoretical	Two-body problem
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.92-106). Mechanics. L.D. Landau and E.M.Lifshitz. (p.25-35). Classical Mechanics. T.W. Kibble, F.H. Berkshire.(p.159-173).
6	Theoretical	Kinematics of rigid-body motion
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.134-161).
7	Theoretical	Equations of motion of rigid-body
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.184-200). Classical Mechanics. T.W. Kibble, F.H. Berkshire.(p.197-208).
8	Intermediate Exam	Midterm Exam

9	Theoretical	Small oscillations
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.238-259). Classical Mechanics. T.W. Kibble, F.H. Berkshire.(p.253-272).
10	Theoretical	Special relativity in classical mechanics
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.277-324).
11	Theoretical	Hamilton equations of motion
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.334-349). Mechanics. L.D. Landau and E.M.Lifshitz. (p.131-135). Classical Mechanics. T.W. Kibble, F.H. Berkshire.(p.277-285).
12	Theoretical	Canonical transformations
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.368-381). Variational Principles of Mechanics. C. Lanczos. (p.161-172).
13	Theoretical	Hamilton-Jacobi theory
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.430-477).
14	Theoretical	Canonical perturbation theorem
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.526-549).
15	Theoretical	Mechanics of continuous media
	Preparation Work	Classical Mechanics. H. Goldstein, C.P.Poole and J.L.Safko. (p.558-577).
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	3	112
Assignment	12	2	3	60
Individual Work	4	3	2	20
Quiz	4	1	1	8
Midterm Examination	1	7	5	12
Final Examination	1	8	5	13
			Total Workload (Hours)	225
			[Total Workload (Hours) / 25*] = **ECTS**	9

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	To be able to write the Lagrange functions of given systems and reach the equations of motion
2	To be able to understand the conservation laws and solve problems by using them
3	To be able to get the insight of the concepts of energy, momentum, centre of mass and angular momentum
4	To be able to integrate the equations of motion and explain the importance of them in physics
5	To be able to understand the importance of scattering in physics

Programme Outcomes *(Physics Master)*

1	The student should conceive the concepts in physics and may apply them on her/his own
2	The student should be able to conceive the relationship between the different physics laws and integrity of them and apply them in solving different physics problems
3	The student should know the basic principles of classical, quantum and relativistic physics and use them in the solutions of problems
4	The student should be able to do research in a specific area of physics
5	The student should be able to prepare reports on papers on the subject of her/his research and present her/his research subject in scientific conferences
6	The student should be able to explain the relationship between complicated problems and basic physics laws.
7	The student should be able to use computers for solving complicated physics problems

8	The student should be able to interrelate between the theory and the experiment. If she/he is experimentalist he/she has to explain the theory behind her/his work. If she /he is a theorist she/he should has to know the experiments in her/his subject.

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	5	5	5	4	5
P2	4	5	4	5	5
P3	5	5	4	5	5
P4	4	3	3	4	4
P5	2	2	2	3	3
P6	4	4	4	3	4
P7	2	2	2	3	3
P8	1	2	3	2	3