Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Classical Mechanic	FZK311	5. Semester	3 + 2	4.0	6.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. İsmail TARHAN
Instructors	Prof. Dr. İsmail TARHAN
Assistants	
Course Objectives	The aim this course is to discuss kinematics in general coordinates, lagrangian mechanics, Hamiltonian mechanics, two-body problem, central force problem; dynamics of a system of particles, motion in a noninertial reference frame, rigid body motion, small oscillations, nonlinear oscillations and chaos.
Course Content	Topics to be covered in this course include are kinematics in generalized coordinates, principle of least action, Lagrangian mechanics, the Hamiltonian mechanics, Euler-Lagrangian equations of motion, Hamiltonian equations of motion, two-body centrifugal force problem, dynamics of multiparticles systems, motion in accelerated reference systems, rigid-body problem, small oscillations, elementary particles and its wave feature, nonlinear oscillations and chaos, Hamiltonian-Jacobi equations.
Course Learning Outcomes	1) Interpret fundamental mechanical concepts 2) Analyze with mechanic similarity approach 3) Evoluate the obtained solutions 4) Apply fundamental mechanical concepts to various problems and events

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Kinematics in generalized coordinates	Oral lectures with interactive discussions, researches and homeworks.	
2. Week	Principle of least action	Oral lectures with interactive discussions,	

Quick Access

Physics
- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

Course Information
- Course Information
- Weekly Course Content
- Resources
- Assessment
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

		researches and homeworks.	
3. Week	Lagrangian mechanics	Oral lectures with interactive discussions, homework, applications	
4. Week	The Hamiltonian mechanics	Oral lectures with interactive discussions, homework, applications	
5. Week	Euler-Lagrangian equations of motion	Oral lectures with interactive discussions, homework, applications,	
6. Week	Hamiltonian equations of motion	Oral lectures with interactive discussions, homework, applications,	
7. Week	Two-body centrifugal force problem	Oral lectures with interactive discussions, homework, applications	
8. Week	Midterm exam	Oral lectures with interactive discussions, homework, applications	
9. Week	Dynamics of multiparticles systems	Oral lectures with interactive discussions, homework, applications,	
10. Week	Motion in accelerated reference systems	Oral lectures with interactive discussions, homework, applications	
11. Week	Rigid-body problem	Oral lectures with interactive discussions, homework, applications	
12. Week	Small oscillations	Oral lectures with interactive discussions, homework, applications	
13. Week	Elementary particles and its wave feature	Oral lectures with interactive discussions, homework, applications	
14. Week	Nonlinear oscillations and Chaos	Oral lectures with interactive discussions, homework, applications	
15. Week	Hamiltonian-Jacobi equations	Oral lectures with interactive discussions, homework, applications	
16. Week	Final Exam	Oral lectures with	

		interactive discussions, homework, applications	

RESOURCES

Recommended Sources
1- Taylor, J.R., (2005). Classical Mechanics. University Science Books.
2- Landau, L.D., and Lifshitz, E.M., (1976). Mechanics. Vol. 1. Elsevier.
3- Goldstein, H., Poole, C.P., and Safko, J.L., (2001). Classical Mechanics. Addison Wesley.

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Mid-term exam + Assignment + Research and Project 40%, Final Exam 60%		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4
PY1	4	4	4	4	4
PY2	4	4	5	5	4
PY3	5	5	4	5	4
PY4	4	5	5	4	4
PY5	4	5	4	5	3
PY6	5	4	4	4	3
PY7	4	5	4	3	4
PY8	4	4	3	4	4
PY9	4	3	4	5	4
PY10	4	5	5	4	4
PY11	4	4	4	4	3
PY12	5	4	5	4	4
PY13	5	5	4	5	3

PY14	5	5	4	5	3
PY15	4	4	4	5	4

*DK = Course's Contrubution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	12	12
Research&Project	1	5	5
Assignment 1	3	5	15
Presentation/Seminar	1	5	5
Further Study	10	3	30
Mid Term Exam 1	1	2	2
Class Hours (14 weeks)	14	5	70
		Total Workload	151
		Total Workload / 25.5 (s)	5.92
		ECTS Credit of the Course	6