DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
PHY111	1			1
Title	**T**	**A**	**L**	**ECTS**
Physics I	2	1	2	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face-to-face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	The main concepts of classical mechanics in basic physics are aimed to be taught in a way that will serve as a foundation for later lessons. This includes Motion in one, two and three dimensions. Application of Newton's Laws and energy conservation laws to dynamical systems.					
Content	This course covers vectors, motion in one, two and three dimensions, circular motion, Newton's laws, work, kinetic energy, potential energy, conservation of energy, momentum and its conservation, elastic and inelastic collisions, torque and moment of inertia, motion of rigid bodies and harmonic oscillations.					
Prerequisites	None					
Coordinator	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Elif Yunt					
Lecturer(s)	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Elif Yunt					
Assistant(s)	Dr. Anıl Can Duman Research Assist. Berat Berkan Ünal Research Assist. Yusuf Karakuş					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Physik, Lehr- und Übungsbuch, Douglas C. Giancoli, 3. Ed. Halliday, Physik, Wiley-VCH, 2016
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences	60	%

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Engineering	40	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments		
Attendance		
Laboratory	6	30
Projects		
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	6	84
Assignments	14	2	28
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	14	2	28
Projects			
Final Exam	1	2	2
		Total Work Load	**186**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Working with vectors will be learned.
2	Definition of equations of motion in one, two and three dimensions and being able to solve and analyze them will be learned.
3	Application of Newton's laws to dynamical systems will be learned.
4	Connection of ideas of work and energy, solving mechanical problems with the help of conservation of energy will be learned.

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Weekly Content	
1	Physical Quantities, SI Unit System
2	Dimensional Analysis
3	Vectors, Velocity, Acceleration
4	One dimensional motion, free fall
5	Motion in two and three dimensions, projectile and circular motion
6	Newton's Laws
7	Work, Power, Kinetic Energy
8	Motion in a force field
9	Potential Energy, Conservation of Energy
10	Momentum and Conservation of Momentum, Elastic and inelastic Collisions
11	Torque, Moment of Inertia
12	Moments of Inertia of Solid Bodies
13	Motion of Rigid Bodies
14	Harmonic Oscillations
15	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1	5		5	5			2
2	5		5	5			2
3	5	5	5	5			4
4	5	5	5	5			5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

P1 Working with modern scientific sources.
P2 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.
P3 Having theoretical and practical skills in the area of Energy Science and Technology.
P4 Having foreign language skills to follow the worldwide advancements in the field of Energy Science and Technology and to be able to discuss them with foreign colleagues.
P5 Having computational skills for research data analysis purposes.
P6 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.
P7 Having knowledge about work occupational work and safety.

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