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	Understanding of fundamental concepts of classical mechanics to build a basis for upcoming courses. Motion in one, two and three dimensions. Application of Newton's Laws and energy conservation laws to dynamical systems.					
Content	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, Harmonic Oscillations					
Prerequisites	None					
Coordinator	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Bünyamin Ümsür					
Lecturer(s)	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Bünyamin Ümsür					
Assistant(s)	Res. Assist. Muhammed Cihat Mercan Res. Assist. Berat Berkan Ünal Res. Assist. Yusuf Karakuş Res. Assist. Fuat Berke Gül					
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	1	10
Assignments		
Attendance		
Recitations	5	20
Projects		
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	45	1	45
Self-Study	14	5	70
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	5	10	50
Laboratory	5	2	10
Projects			
Final Exam	1	3	3
		Total Work Load	**181**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

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

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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	

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

	P1	P2	P3	P4	P5	P6	P7
1	5		5				
2	5		5				
3	5	5	5				
4	5		5				
5							
6							
7							
8							
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10							
11							
12							

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