

DEPARTMENT OF MATERIALS 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	Materials 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 and			
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				
Coordinator	None			
Lecturer(s)	Asist Prof.Dr. Neşe Aral			
Assistant(s)	None			
Work Placement	No			
Recommended or Required Reading				
Books / Lecture Notes	Gerthsen Physik; Dieter Meschede, Springer, 2015			
Other Sources				
Additional Course Material				
Documents				
Assignments				
Exams				
Course Composition				
Mathematics und Basic Sciences				60%
Engineering				40%
Engineering Design				%
Social Sciences				%

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Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge			%
Assessment			
Activity	Count		Percentage (%)
Midterm Exam	1		20
Quiz	2		20
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	10	5	50
Laboratory	5	2	10
Projects			
Final Exam	1	3	3
		Total Work Load	181
		ECTS Points (Total Work Load / Hours)	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		
5			
6			
7			

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8	
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10	
11	
12	

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							
9							
10							
11							
12							

Contribution Level

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



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Compiled by:	
Date of Compilation:	