

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY
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	Molecular Biotechnology			
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. Neşe Aral			
Lecturer(s)	Assist. Prof. Dr. Neşe Aral			
Assistant(s)	Muhammed Cihat Mercan			
Work Placement	None			
Recommended or Required Reading				
Books / Lecture Notes	Halliday, Physik, Wiley-VCH, 2016			
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	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		
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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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 biotechnology.

P4 Having foreign language skills to follow the worldwide advancements in the field of biotechnology 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.

Compiled by:

Neşe Aral

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