OSTIM TECHNICAL UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS FORM
2020-2021

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PHYS 101 PHYSICS I							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Physics I	PHYS 101	1	3	0	2	4	6

Precondition	No
Language of Instruction	English
Course Status	Compulsory
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Question and Answer, Application

Course Objective

The goal of this course is to provide a calculus-based physics course to help students pursuing advanced studies in engineering develop conceptual understanding of physical principles, the ability to reason, and gain skills for problem solving.

Learning Outcomes

Students who can successfully complete this course;

1. Can understand, model and analyze the fundamental physical processes of nature
2. Can suggest mathematical models to problems they face and solve them by various (approximate/analytical/numerical) approaches.
3. Can use basic measurement devices; can choose and apply the best measurement technique.
4. Can adequately record their observations, e.g., in a lab book.
5. Can design and carry out experiments.
6. Can access scientific information sources.
7. Can critically analyze and contribute to scientific information.
8. Can present scientific information clearly.
9. Can analyze systems that contain probabilistic parts; can do error analysis.

10. Has the basic programming skills; can solve a simple physical problem or can simulate one with an appropriate language they choose.
11. Can actively and skillfully conceptualize, apply, analyze, synthesize and evaluate information.
12. Can produce new ideas and products by using their background in physics.
13. Can systematically design, evaluate, and implement a strategy to respond to an existing problem.
14. Is effective in oral and written communication skills by using both Turkish and English languages.
15. Can do leadership and take initiative.
16. Obeys the ethical rules in the workplace and the society and ascertains that they are obeyed by others.
17. Can use the digital communication and computation tools in the most efficient and effective way.
18. Can effectively use the knowledge and skills they gained in physics, in observing, analyzing, modeling and solving other societal problems.

Course Outline
Vectors, displacement kinematics and dynamics, work and energy, particle system, rotational kinamatic and dynamic, equilibrium, gravity, oscillating motion, waves.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Physics and Measurement	Chapter 1
2	One-Dimensional Motion	Chapter 2
3	Vectors Two-Dimensional Motion	Chapter 3
4	The Laws of Motion	Chapter 4
5	Circular Motion and other Applications of Newton's Laws	Chapter 5
6	Gravitation and Newton synthesis	Chapter 6
7	Work and Energy	Chapter 7

8	**Midterm**	
9	Conservation and Energy	Chapter 8
10	Linear Momentum and Collisions	Chapter 9
11	Rotation of a Rigid Object about a Fixed Axis	Chapter 10
12	Angular Momentum	Chapter 11
13	Statics and Fluids	Chapter 12&13
14	Oscillations	Chapter 14
15	Waves	Chapter 15
16	**Final Exam**	

Textbook(s)/References/Materials:
Physics for Scientists and Engineers with Modern Physics, by Giancolli
Physics for Scientists and Engineers with Modern Physics, by Fishbane, Gassiorowıcz, Thornton

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance		%5
Lab		%20
Application		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework		
Presentation		
Projects		
Report		
Seminar		
Midterm Exams / Midterm Jury	1	%30
General Exam / Final Jury	1	%45
	Total	**100**
Success Grade Contribution of Semester Studies		55
Success Grade Contribution of End of Term		45
	Total	**100**

Kurs Kategorisi	
Basic Vocational Courses	X
Specialization / Field Courses	
Support Courses	
Communication and Management Skills Courses	
Transferable Skills Courses	

Relationship Between Course Learning Outcomes and Program Competencies							
Nu	Learning Outcomes	Contribution Level				
		1	2	3	4	5
1	Can understand, model and analyze physical phenomena in nature.				x	
2	Can produce solutions for the problems by mathematical models.				x	
3	Can apply the basic measurement techniques and knows the most appropriate measurement technique for the problem.				x	
4	Conduct appropriate experiments, conduct trials, and can evaluate the data as needed.				x	
5	Can properly record his observations.				x	
6	Knows how to access scientific resources.			x		
7	Systematically develop a strategy for solving an existing problem.			x		

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Course hours (Including the exam week: 16 x total course hours)	16	3	48
Laboratory	16	2	32
Application			
Course-Specific Internship			
Field Study			
Study Time Out of Class	16	2	32
Presentation / Seminar Preparation			
Projects			
Reports	10	3	30
Homeworks			
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	15	15
Preparation Period for the Final Exam / General Jury	1	20	20
Total Workload	**(177/30=5.9)**		**177**