

**School of Engineering and Natural Sciences / Industrial Engineering (English)**

**2022 - 2023 Academic Year**

**PHYSICS I**

**Syllabus**

<b>Course Description</b>					
<b>Name</b>	<b>Code</b>	<b>Semester</b>	<b>T+A Hour</b>	<b>Credit</b>	<b>ECTS</b>
PHYSICS I	IND1110746	Fall Semester	3+0	3	5
<b>Prerequisites Courses</b>					
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Assoc.Prof. Muhammed Fatih TOY				
<b>Name of Lecturer(s)</b>	Lect. Saliha Zeyneb AKINCI				
<b>Assistant(s)</b>					
<b>Aim</b>	This is the first course in the two-semester sequence of calculus-based introductory physics courses. The course is designed to meet the needs of student majoring in Engineering and Applied Sciences. Main content of this course is an introduction Newtonian mechanics. The aim of the course is to demonstrate the ability of critical thinking to analyze problems or situations involving the fundamental principles of physics.				
<b>Course Content</b>	This course contains; Units, Physical Quantities, and Vectors, Motion along a straight line, Motion in Two or Three Dimensions, Newton's Laws of Motion, Applying Newton's Laws, Work and Kinetic Energy, Potential Energy and Energy Conservation I, Potential Energy and Energy Conservation II, Momentum, Impulse, and Collisions, Rotation of Rigid Bodies, Dynamics of Rotational Motion I, Dynamics of Rotational Motion II, Gravitation, Periodic Motion.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. Students can carry out fundamental vectorial operations and calculations with physical quantities.			1, 14, 15, 3, 4	A, E	
2. Students gain basic knowledge about kinematics, work, energy, impulse, momentum, rotational kinematics and dynamics, and periodic motions.			1, 14, 15, 3, 4	A, E	
3. Students define the laws of physics, uses them in problem solving; reconciles with nature.			1, 14, 15, 3, 4	A, E	
4. Students gain the ability to apply mathematical knowledge in problem solving.			1, 14, 15, 3, 4	A, E	
5. Students can interpret, evaluate, and analyze data via examining physics concepts and ideas.			1, 14, 15, 3	A, E	
<b>Teaching Methods</b>	1: Lecture, 14: Self-Study, 15: Problem solving, 3: Discussion, 4: Exercise, Practice				
<b>Assessment Methods</b>	A: Written Exam, E: Quiz				
<b>Lecture Schedule</b>					
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Units, Physical Quantities, and Vectors				
2	Motion along a straight line				
3	Motion in Two or Three Dimensions				
4	Newton's Laws of Motion				
5	Applying Newton's Laws				
6	Work and Kinetic Energy				
7	Potential Energy and Energy Conservation I				
8	Potential Energy and Energy Conservation II				
9	Momentum, Impulse, and Collisions				
10	Rotation of Rigid Bodies				
11	Dynamics of Rotational Motion I				
12	Dynamics of Rotational Motion II				
13	Gravitation				
14	Periodic Motion				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		30			
General Exam		70			

**Resources**

Serway R.A, Jewett, Jr J.W. Physics for Scientists and Engineers with Modern Physics. Brooks Cole, 9th Edition

Young H.D, Freedman R.A. Sears and Zemansky's University Physics with Modern Physics. Pearson, 13th Edition  
College Physics, OpenStax College (From: <https://openstaxcollege.org/textbooks/college-physics>)