Electrical and Electronic Engineering (English)			
Bachelor	TR-NQF-HE: Level 6	QF-EHEA: First Cycle	EQF-LLL: Level 6

Course Introduction and Application Information

Course Code:	PHYS101
Course Name:	Physics 1
Semester:	Fall
Course Credits:	ECTS: 6
Language of instruction:	English
Course Condition:	
Does the Course Require Work Experience?:	No
Type of course:	Compulsory Courses
Course Level:	Bachelor | TR-NQF-HE:6. Master`s Degree | QF-EHEA:First Cycle | EQF-LLL:6. Master`s Degree
Mode of Delivery:	Face to face
Course Coordinator:	Dr. Öğr. Üy. NADİR GHAZANFARI
Course Lecturer(s):	Assist. Prof. Dr. ARİF ÖZBAY
Course Assistants:	

Course Objective and Content

Course Objectives:	This is the first of the two calculus-based fundamental physics courses. The purpose of this course is to introduce to students with the fundamental laws of mechanics. While providing them with strong foundation in physics, this course also aims to help students gain analytical thinking and problem-solving skills. Through laboratory work, another objective of this course is to assist students develop skills in experimental techniques.

Course Content:	Vector algebra, kinematics in 1, 2 and 3D, dynamics, work-energy principle, conservation of energy, linear momentum and its conservation, rotational kinematics, rotational dynamics, angular momentum and its conservation.

Learning Outcomes

The students who have succeeded in this course;
1) Quantitatively describe and understand the motion of objects using vector kinematics,
2) Apply Newton's Laws of motion to solve dynamics problems,
3) Gain a deep understanding of conservation of energy, linear momentum and apply them to real life phenomena,
4) Become efficient at analytical thinking and applying mathematical tools such as algebraic equations and calculus towards problem solving and describing physical systems,
5) Develop skills in measurements and data collection, data analysis and presentation of experimental results through laboratory activities.

Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction: Science, Units and Significant Figures	
2)	Kinematics: Vectors, Kinematic Definitions, 1D, 2D and 3D motion	
3)	Kinematics: Motion with constant acceleration, Free Fall	
4)	Kinematics: Projectile Motion, Relative Motion	
5)	Dynamics: Newton's Laws of Motion	
6)	Applications of Newton's Laws: Friction, Circular Motion	
7)	Applications of Newton's Laws: Friction, Circular Motion / cont.	
8)	Midterm	
9)	Work and Energy	
10)	Conservation of Energy	
11)	Linear Momentum and Collisions	
12)	Linear Momentum and Collisions / cont.	
13)	Rotational Motion: Kinematics and Dynamics	
14)	Angular Momentum	

Sources

Course Notes / Textbooks:	Physics for Scientists and Engineers with Modern Physics, Douglas C. Giancoli, Pearson, 4th Edition
References:	Physics for Scientists and Engineers with Modern Physics, Serway, Jewett, Cengage Learning, 10th Edition

Course - Program Learning Outcome Relationship

Course Learning Outcomes	**1**	**2**	**3**	**4**	**5**
Program Outcomes					
1) Adequate knowledge in mathematics, science and Electrical and Electronics engineering; the ability to use theoretical and practical knowledge in these areas in complex engineering problems.	3	3	3	3	
2) Ability to identify, formulate, and solve complex electrical and electronics engineering problems; ability to select and apply appropriate analysis and modeling methods for this purpose.					
3) Ability to design a complex circuit, device or system to meet specific requirements under realistic constraints and conditions; ability to apply modern design methods for this purpose.					
4) Ability to develop, select and use modern techniques and tools necessary for the analysis and solution of complex problems encountered in electrical and electronics engineering applications; ability to use information technologies effectively.					
5) Ability to design, conduct experiments, collect data, analyze and interpret results for the study of complex engineering problems or electrical and electronics engineering research topics.					
6) Ability to work effectively within and multidisciplinary teams; individual study skills.					2
7) Ability to communicate effectively orally and in writing; knowledge of at least one foreign language; ability to write effectice reports and understand written reports, to prepare design and production reports, to make effective presentations, to give and receive clear and understandable instructions.					
8) Awareness of the necessity of lifelong learning; ability to access information, to follow developments in science and technology and to renew continuously.					
9) To act in accordance with ethical principles, professional and ethical responsibility; information on the standards used in electrical and electronics engineering applications.					

Course Learning Outcomes	1	2	3	4	5
10) Information on business practices such as project management, risk management and change management; awareness of entrepreneurship and innovation; information about sustainable development.					
11) Knowledge of the effects of electrical and electronics engineering practices on health, environment and safety in the universal and social scale and the problems of the era reflected in electrical and electronics engineering; awareness of the legal consequences of electrical and electronics engineering solutions.					

Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	Adequate knowledge in mathematics, science and Electrical and Electronics engineering; the ability to use theoretical and practical knowledge in these areas in complex engineering problems.	3
2)	Ability to identify, formulate, and solve complex electrical and electronics engineering problems; ability to select and apply appropriate analysis and modeling methods for this purpose.	
3)	Ability to design a complex circuit, device or system to meet specific requirements under realistic constraints and conditions; ability to apply modern design methods for this purpose.	
4)	Ability to develop, select and use modern techniques and tools necessary for the analysis and solution of complex problems encountered in electrical and electronics engineering applications; ability to use information technologies effectively.	
5)	Ability to design, conduct experiments, collect data, analyze and interpret results for the study of complex engineering problems or electrical and electronics engineering research topics.	
6)	Ability to work effectively within and multidisciplinary teams; individual study skills.	2
7)	Ability to communicate effectively orally and in writing; knowledge of at least one foreign language; ability to write effectice reports and understand written reports, to prepare design and production reports, to make effective presentations, to give and receive clear and understandable instructions.	
8)	Awareness of the necessity of lifelong learning; ability to access information, to follow	

	developments in science and technology and to renew continuously.	
9)	To act in accordance with ethical principles, professional and ethical responsibility; information on the standards used in electrical and electronics engineering applications.	
10)	Information on business practices such as project management, risk management and change management; awareness of entrepreneurship and innovation; information about sustainable development.	
11)	Knowledge of the effects of electrical and electronics engineering practices on health, environment and safety in the universal and social scale and the problems of the era reflected in electrical and electronics engineering; awareness of the legal consequences of electrical and electronics engineering solutions.	

Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution
Laboratory	5	% 15
Quizzes	5	% 15
Midterms	1	% 30
Final	1	% 40
total		**% 100**
PERCENTAGE OF SEMESTER WORK		% 60
PERCENTAGE OF FINAL WORK		% 40
total		**% 100**

Workload and ECTS Credit Calculation

Activities	Number of Activities	Preparation for the Activity	Spent for the Activity Itself	Completing the Activity Requirements	Workload
Course Hours	13	0	3		39
Laboratory	13	0	2		26
Study Hours Out of Class	13	0	3		39
Quizzes	5	0	1		5

Midterms	1	13	2		15
Final	1	18	2		20
Total Workload					**144**