GAU, Faculty of Engineering

Course Unit Title	General Physics 1
Course Unit Code	PS111
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	First year of BSc
National Credits	3
Number of ECTS Credits Allocated	5 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	1
Semester when the course unit is delivered	1
Mode of Delivery	Face to Face, Laboratory Experiments, E-learning activities
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Background of physics and calculus from high school

Objectives of the Course:

The main objectives of this course are to engage students in the discovery of mechanics principles and to provide them with theory and applications in a clear, understandable presentation.
The course has two parts; theoretical part and experimental tests in the Laboratory.

Learning Outcomes

When this course has been completed the student should be able to		Assessment.
1	Get familiar and understand conceptually topics of mechanics.	1, 2, 5
2	Apply the methods of solving elementary mechanics problems that leads to the first insights into the rudiments of related fields in engineering sciences.	1, 2, 5
3	Analyze the kinetic problems of one dimension and two dimensions motions by using vectors	1, 2, 5
4	Apply the fundamental methods of motions due to applied forces	1, 2, 5
5	Apply and integrate the basic physical sciences and the principles of engineering sciences into working practical knowledge.	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	Ability to design and conduct experiments as well as to analyze and interpret data	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	2
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	2
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1	Chapter 1	Physics and Measurement	
2	Chapter 3	Vectors	
3	Chapter 2	Motion in one dimension	
4	Chapter 4	Motion in two dimensions	
5	Chapter 5	The Laws of Motion	
6	Chapter 5	The Laws of Motion	
7	Chapter 5	The Laws of Motion	
8	Chapter 6	Circular Motion and Other Applications of Newton's Laws	Midterm
9	Chapter 7	Energy and Energy Transfer	
10	Chapter 8	Potential Energy	
11	Chapter 8	Potential Energy	
12	Chapter 10	Rotation of a Rigid Object About a Fixed Axis	Quiz
13	Chapter 12	Static Equilibrium and Elasticity	
14	Chapter 12	Static Equilibrium and Elasticity	Lab. Exam
15		Homework and assessment practices.	Final

Recommended Sources

Main:

1. Physics, for Scientists and Engineers, 6th edition, written by; R. E. Serway and J. W. Jewett, published by; Thomson Book/Cole Publisher Company, 2004.
2. Theory and problems of Applied Physics, Schaum's outline series, written by; Arthur Beiser, published by; McGraw-Hill Book Company, 2004.

Supplementary:

3. Physics, Classical and modern, 2nd Edition, written by; F. J. Keller, W. E. Gettys, M. J. Skove, published by; McGraw Hill Book Publisher Company, 1993.
4. Physics for Scientists and Engineers, Extended Version, Vol. 1, written by; Fishbane, Gasiorowicz, Thornton, published by; Prentice Hall Book Company, 2004.

Assessment

Attendance & E-learning	5%	
Laboratory	15%	Lab Grade = (Lab exam grade + Lab Attendance)
Midterm Exam (Written)	30%	
Quiz (Written)	10%	
Final Exam (Written)	40%	
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload (hour)
Course duration in class (including the Exam week)	15	3	45
Labs and Tutorials	5	1	5
Assignments	7	2	14
Project/Presentation/Report Writing	5	2	10
E-learning Activities	2	1	2
Quizzes	1	8	8
Midterm Examination	1	18	18
Final Examination	1	20	20
Self Study	14	2	28
Total Workload			150
Total Workload/30 (h)			5
ECTS Credit of the Course			5