GAU, Faculty of Engineering

Course Unit Title	General Physics 2
Course Unit Code	PS112
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	First year of BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	1
Semester when the course unit is delivered	2
Mode of Delivery	Face to Face, Laboratory Experiments, E-learning activities
Language of Instruction	English
Prerequisities and co-requisities	General Physics 1 (PS111)
Recommended Optional Programme Components	Basic background of physics 1 and calculus 1

Objectives of the Course:

- Conceptual overview of laws and methods in engineering
- Teaching of DC circuits and electricity fundamentals and laws
- Teaching of magnetism fundamentals and laws
- Teaching capacitance and inductors and AC circuits

Learning Outcomes

When this course has been completed the student should be able to		Assessment.
1	Get familiar and understand conceptually topics of electromagnetism.	1, 2, 5
2	Apply the methods of solving elementary electromagnetism problems that leads to the first insights into the rudiments of related fields in engineering sciences.	1
3	Analyze simple resistive circuits	1, 2, 5
4	Apply the fundamental methods of Circuit theory on DC circuits	1, 2, 5
5	Apply and integrate the basic physical sciences and the principles of engineering sciences into a working practical knowledge.	3, 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		Introduction	
2	Chapter 23	Electric charge and Electric field	
3	Chapter 23	Coulomb's law and the Electric Field	
4	Chapter 24	Gauss's Law	
5	Chapter 24	Gauss's Law	
6	Chapter25	Electric Potential	
7	Chapter25	Electric Potential	
8	Chapter 26	Capacitance and Dielectric	Midterm
9	Chapter 27	Current and Resistance	
10	Chapter 28	Direct Current Circuits	
11	Chapter 29	Magnetic Field	
12	Chapter 30	Sources of the Magnetic Field	Quiz
13	Chapter 31	Faraday's Law	
14	Chapter 33	Alternating Current Circuits	Lab. Exam
15			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.

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	3	21
Project/Presentation/Report Writing	5	2	10
E-learning Activities	5	2	10
Quizzes	1	10	10
Midterm Examination	1	18	18
Final Examination	1	20	20
Self Study	14	2	28
Total Workload			167
Total Workload/30 (h)			5.57
ECTS Credit of the Course			6