



COURSE BASICS

Course Title: **Applied Physics**
Course Code: **GSC-114**
Credit Hours: **2+1**
Prerequisite: **Nil**
Class & Section: **BSE-1(A, B)**

COURSE OBJECTIVES AND DESCRIPTION:

The objective of this course is to give students the basic ideas/concepts of physical sciences which would help them in better understanding of its applications in engineering. It will provide students with the knowledge of a wide variety of electric and magnetic phenomena and start with the basics of electricity at the atomic level and take it to the circuit level for electric circuit analysis and design. Majority of the course is dedicated for electric and magnetic fields, forces, elements and their applications. Additionally, it also aims to provide introductory knowledge of wave theory, thermodynamic theory and optics in conjunction with their applications.

COURSE LEARNING OUTCOMES (CLO):

On successful completion of the course students will be able to:

CLO #	CLO Statement	Bloom's Taxonomy
CLO 1	To recall the fundamental laws of physics relevant to the engineering sciences	C1
CLO 2	To describe the basic concepts of vectors, mechanics, atomic structure and electromagnetism.	C2
CLO 3	To demonstrate proficiency in problem solving and analysis	C4

WEEKLY BREAKDOWN:

Week	Week Days	Lecture Number	Tentative Course Plan
1	9 th Sep	1	Physics Introduction
		2	Scalars and Vectors
		Lab: 1	Introduction of Instruments
2	16 th Sep	3	Laws of Vector
		4	Vector Diagrams and Numerical
		Lab: 2	Determination of value of 'g'
3	23 rd Sep	5	Directions Cosines
		6	Law of Sine and Cosine
		Lab: 3	Variation of Electric Current with Intensity of Light



4	30 th Sep	7	Collinear Vectors and Coplanar Vectors
		8	Non Collinear Vectors and Non Coplanar Vectors
		Lab: 4	Compare the Luminous Intensities of two light sources
5	7 th Oct	9	Scalar Field
		10	Vector Field and Linear Dependence
		Lab: 5	To find RC time constant
6	14 th Oct	11	Vector Numericals
		12	Force and Motion
		Lab: 6	Design a Voltage Divider Circuit
7	21 st Oct	13	Newton's Law of Motion
		14	Newton's Law of Universal Gravitation
		Lab: 7	Study the characteristics of RLC Acceptor Circuit
8	28 th Oct	15	Rigid Bodies
		16	Deformable Bodies and Torque
		Lab: 8	Study the characteristics of RLC Rejector Circuit
9			Mid Term Exams
10	11 th Nov	19	Centripetal and Centrifugal Force
		20	Equations of Motion and its Numerical
		Lab: 9	Use a Passive Low Pass RC Filter to Draw Output Response
11	18 th Nov	21	Equilibrium
		22	Equilibrium Numerical
		Lab: 10	Use a Passive High Pass RC Filter to Draw Output Response
12	25 th Nov	23	Moment of Force
		24	Electricity and Magnetism
		Lab: 11	Use of Galvanometer and its conversion into Voltmeter
13	02 nd Dec	25	Charging and charging by Induction
		26	Atomic Structure of Elements
		Lab: 12	Use of Galvanometer and its conversion into Ammeter
14	09 th Dec	27	Role of Atomic Structure in Conduction of Electricity
		28	Coulomb's Law and Electrostatic Force
		Lab: 13	AC frequency determination using Melde's apparatus
15	16 th Dec	29	Electric Field Intensity
		30	Electric Potential due to Point Charge
		Lab: 14	Determine the value of unknown Resistance using Meter Bridge
16	23 rd Dec	31	Resistivity and Resistances
		32	Conductivity and Electric Power
17	30 th Dec		Course Revision
18			Final Term Exam



NOTE:

- This schedule is subject to revisions as conditions may warrant.*
- Topics will be covered in sequence no matter if city observes any planned or unplanned holidays.*
- The information in this course outline is subject to revision as conditions may warrant.*

COURSE ASSESMENT METHOD

METHOD OF EVALUATION AND STRUCTURE:

A student's grade will be based on multiple measures of performance as mentioned below:

EVALUATION INSTRUMENTS (EI)	MARKS
Quizzes	10
Assignments	20
Mid Term Examination	20
Final Examination	50
Total:	100

NOTE: Any change in this scheme/format will be communicated well in time.

MAPPING OF CLOS TO PLOS (PROGRAM LEARNING OUTCOMES)

PLO's	CLO's		
	CLO 1	CLO 2	CLO 3
PLO:1 (Engineering Knowledge)	✓	✓	
PLO:2 (Engineering Problem Analysis)			✓
PLO:3 (Designing and Development)			
PLO:4 (Investigation)			
PLO:5 (Modern tool usage)			
PLO:6 (Engineer and Society)			
PLO:7 (Environment and Sustainability)			
PLO:8 (Professionalism and Ethics)			
PLO:9 (Individual and Team Work)			
PLO:10 (Communication)			
PLO:11 (Project Management)			
PLO:12 (Lifelong Learning)			



MAPPING OF CLOS TO COURSE EVALUATION INSTRUMENTS (EI)

EI	CLO's		
	CLO 1	CLO 2	CLO 3
Assignments	✓	✓	✓
Quizzes	✓	✓	✓
Midterm Exam	✓	✓	✓
Final Exam	✓	✓	✓

GRADING SYSTEM:

Letter Grade	Grade Point	Percentage	
A	4.0	≥ 85	-
A-	3.67	≥ 80	< 85
B+	3.33	≥ 75	< 80
B	3.00	≥ 71	< 75
B-	2.67	≥ 68	< 71
C+	2.33	≥ 64	< 68
C	2.00	≥ 60	< 64
C-	1.67	≥ 57	< 60
D+	1.33	≥ 54	< 57
D	1.00	≥ 50	< 53
F	0.00	-	< 50

COURSE RESOURCES

INSTRUCTOR:

NAME: Engr. Bushra Aijaz

TEXTBOOKS:

1. Principles of Physics by David Halliday, Jearl Walker and Robert Resnick (Latest Ed)

REFERENCE BOOKS:

1. Fundamentals of Physics (Extended), by David Halliday, Robert Resnick and Jearl Walker (Latest Ed)
2. University Physics, by Freedman and Young (Latest Ed)

ONLINE REFERENCES:

1. <https://www.physicsclassroom.com/physics-tutorial>
2. <https://www.khanacademy.org/science/physics>



Appendix III
Blooms Taxonomy Levels Codes

Cognitive	Knowledge (C1)
	Comprehension (C2)
	Application (C3)
	Analysis (C4)
	Synthesis (C5)
	Evaluation (C6)
Affective	Receiving (A1)
	Responding (A2)
	Valuing (A3)
	Organization (A4)
	Characterization (A5)
Psychomotor	Speed (P1)
	Strength (P2)
	Endurance (P3)
	Coordination (P4)
	Precision (P5)
	Flexibility (P6)
	Agility (P7)
	Dexterity (P8)
	Manipulation (P9)
	Grace (P10)
	Technique (P11)