

Branch Name:	Electrical Engineering, Civil Engineering, Computer Engineering, IT Engineering, Mechanical Engineering, Automobile Engineering
Program Code	---
Course Name:	Basic Physics
Course Code:	2ET4000104
Pre-requisite Course:	

COURSE OBJECTIVE:

1. Select proper measuring instrument on the basis of range, least count & precision required for measurement and Estimate errors in measurement of physical quantities.
2. Analyze properties of material & their use for the selection of material mostly applicable for engineering users.
3. Identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.
4. Analyze variation of sound intensity with respect to distance.
5. Follow the principles used in the physical properties, its measurement and selections.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Total (Marks)
Lecture	Tutorial	Practical	Credit	Theory		Practical		
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
03	00	02	04	60	40	20	30	150

DETAILS OF COURSE CONTENTS:

SR. NO.	TOPIC	Total Hours	Weightage
1	SI Units & Measurements: 1a. Explain Physical Quantities and their units. 1b. Measure given dimensions by using appropriate instruments accurately. 1c. Calculate error in the measurement 1d. Solve numerical based on above outcomes	06	13 %
2	Motion and Force: 2a. Differentiate among various forces in nature 2b. Define inertia, momentum and impulse of force 2c. State Newton's laws of motion 2d. State law of conservation of momentum 2e. Solve numerical problems based on above topics	06	12 %
3	General properties of matter: 3a. Comprehend the concept of elasticity and Define Stress, Strain and Elastic limit. 3b. State Hooke's law. 3c. Explain the term elastic fatigue. 3d. Distinguish between Streamline and Turbulent flow	09	21 %

	3e. Define coefficient of viscosity. 3f. Apply the principle of viscosity in solving problems. 3g. State significance of Reynold's number 3h. Explain terminal velocity. 3i. Mention Stoke's formula. 3j. Explain the effect of temperature on Viscosity 3k. Comprehend the phenomenon of surface tension and its applications. 3l. Define surface tension. 3m. Explain angle of contact and capillarity. 3n. Solve problems related to surface tension.		
4	Waves and Sound: 4a. Comprehend the concept of wave motion 4b. Distinguish between transverse and longitudinal waves. 4c. Define period, frequency, amplitude and wavelength 4d. Explain principle of superposition of waves 4e. Define resonance 4f. Explain resonance. 4g. State Formula for velocity of sound in air	05	15 %
5	Electricity and Magnetism 5a. State Coulomb's law, Ohm's law 5b. Explain Electric field, potential And potential difference 5c. Define intensity of electric current, resistance 5d. Apply laws of series and Parallel combination to electrical circuits 5e. Explain heating & chemical effect of current 5f. Solve numerical based on above outcomes 5g. Define magnetic intensity and flux and state their units 5h. Distinguish between dia, para and ferro magnetic materials 5i. State lenz's law	09	27 %
6	Heat Transfer: 6a. Distinguish between Heat and Temperature. 6b. Explain modes of Transmission of heat and their applications. 6c. Define heat capacity and specific heat of substances. 6d. Explain temperature 7e. List various temperature scales and convert among temperatures	08	12 %

LIST OF TEXTBOOKS:

1	ENGINEERING PHYSICS	S.S.PATEL	ATUL PRAKASHAN
2	BASIC PHYSICS	S.S.PATEL	ATUL PRAKASHAN

LIST OF REFERENCES:

1	Fundamentals of Physics	David Halliday, Robert Resnick and Jearl Walker	9 th Edition John Wiley
2	Engineering Physics	R.K. Gaur and S. L. Gupta	DhanpatRai Publications
3	Applied Physics	Prakash Manikpure	S. Chand Publishing
4	Engineering Physics	AvadhanuluKshirsagar	S. Chand Publishing

List of Open Source Software/learning website:

1. <https://www.open2study.com/courses/basic-physics>
2. <http://www.physics.org/>
3. <http://www.physicsclassroom.com/>
4. <http://hyperphysics.phy-astr.gsu.edu/hbase/hph.html>
5. <http://nptel.ac.in>

LIST OF PRACTICALS:

SR NO	PRACTICALS/EXPERIMENTS
1	Linear Measurement by Vernier calipers
2	Linear Measurement by Micrometer screw
3	Measurement of Surface tension
4	Measurement of Viscosity
5	Measurement of Young's Modulus
6	To determine Force constant with the help of periodic time of oscillations of spring
7	Measurement of specific gravity
8	To calculate refractive index of material of prism using spectrometer device.
9	To measure acceleration due to gravity by simple pendulum.
10	To study the relation between the length of a stretched string and the tension in it with the help of a sonometer.
11	To verify Ohm's law by Ammeter-voltmeter method.
12	To measure the unknown resistance of the material of a wire by meter bridge using Wheatstone bridge principle.
13	To find equivalent resistance using voltmeter with (i). Three resistances connected in series (ii) Three resistances connected in parallel

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Able to Measure Dimension of Specimen basis on range, least count & precision.	L1 Remember L2 Understand L3 Apply
CLO2	Analyze and Estimate Error in measurement of physical Quantities	L1 Remember L2 Understand L4 Analyze
CLO3	Analyze properties of material & their use for the selection of material engineering and research.	L2 Understand L3 Apply

		L4 Analyze
CLO4	Analyze variation of sound intensity with respect to distance.	L2 Understand L4 Analyze
CLO5	Follow the principles used in the physical properties, its measurement and selections.	L2 Understand L3 Apply L5 Evaluate
CLO6	Apply principles and concept of physics for solving various engineering problems.	L1Remember L3 Apply L6 Creative

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	H	H		M	M				M						
CLO2	H	H		M					M						
CLO3	H	H		L					L						
CLO4	H	H					L								
CLO5	H	H		L	L				L						
CLO6	H	H	M						M						

H:High, M:Medium, L:Low