SCHEME OF COURSE WORK

B. Tech Semester II (15BP1102)

DEPARTMENT OF PHYSICS

Course Details:

Course Title	Physics Lab		
Course Code	15BP1102	L T P C	0 0 3 2
Program:	B. Tech.		
Specialization:	INFORMATION TECHNOLOGY		
Semester	II		
Prerequisites	Basics of Physics up to +2 level		
Courses to which it is a prerequisite			

PROGRAM OUTCOMES:

A graduate of chemical engineering will be able to

1	Able to apply the knowledge of mathematics, science, engineering fundamentals to solve complex chemical engineering problems.
2	Attain the capability to identify, formulate and analyse problems related to chemical engineering and substantiate the conclusions.
3	In a position to design solutions for chemical engineering problems and design system components and processes that meet the specified needs with appropriate consideration to public health and safety.
4	Able to perform analysis and interpretation of data by using research methods such as design of experiments to synthesize the information and to provide valid conclusions.
5	Able to select and apply appropriate techniques from the available resources and modern chemical engineering and software tools, and will be able to predict and model complex engineering activities with an understanding of the practical limitations.
6	Able to carry out their professional practice in chemical engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
7	Able to understand the impact of the professional engineering solutions on environmental safety.
8	Transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
9	Able to function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.
10	Able to communicate fluently on complex engineering activities with the engineering community and society, and will be able to prepare reports and make presentations effectively.
11	Able to apply knowledge of the engineering and management principles while managing projects in multidisciplinary environments.
12	Engage in independent and life-long learning in their specialized areas of chemical engineering.

Course Outcomes (COs):

At the end of the course the student will

1	demonstrate the elastic response of loaded beams; estimate the frequency of a vibrating system using standing wave pattern. (Expts 1 & 2)
2	familiarize with CRO; assess the resonant frequency and quality factor of electrical oscillations.(Expts 3 & 4)
3	estimate the strength of the magnetic field due to a current carrying coil. (Expt 5)
4	interpolate some of the physical parameters based on optical phenomena. (Expts 7, 8 &9)
5	realize explicit knowledge on the working and performance of photocells. (Expts 6 &10)

Course Outcome versus Program Outcomes:

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		3	3					2		3			
CO2	3	2		3	3				2	2		3			
CO3	2	2		3	3					2	2	3			
CO4	2	2		3	3	2				2	2	2			
CO5	3	2		3	2						2	3			

S - Strongly correlated, M - Moderately correlated, Blank - No correlation

Assessment Methods:	Day to Day evaluation/ Mid Exam / End Exam

Teaching-Learning and Evaluation

Week	Experiments	Course Outcomes	Sample Questions	*Teaching-learning Strategy	Assessment Method

1-6	Cycle-1 Determination of the • Young's Modulus of a material by Uniform bending method. • Determination of the frequency of an electric vibrator, by Melde's experiment in Standing wave pattern using (i) Transverse arrangement and (ii) Longitudinal • arrangement. To use the CRO for voltage and frequency measurements and . study the wave shapes. • Study the frequency response of LCR series and parallel resonant circuits and to calculate Q – factor • Study the variation in magnetic field along axis of current carrying coil.	CO-1 CO-3 CO-4 CO-5	1. Determine Young's Modulus of a material by Uniform bending method. 2. Determination of the frequency of an electric vibrator, by Melde's experiment in Standing wave pattern using Transverse arrangement. 3. Measure the Voltage and frequencies experimenting with various wave forms in CRO 4. Determine the Q factor of a LCR series resonance circuit. 5. Estimate the strength of magnetic field	• Demonstration • Experiment and Result Analysis • Evaluation	Day to Day Evaluation(25M) 5M Initial preparation 6M Observations 5M Calculations & Graph 4M Result &units 5M Record

			along the axis of a current loop using Stewart and Gee type galvanometer.		
7	MID TEST-I				Mid Test(25M) Preparatory 5M Procedure 3M Calculations & Graph 3M Result &units 5M Viva- voce 4M Record 5M
		1.	1. Evaluate the		

8-13	Cycle-2 • To evaluate Planck's constant • Determination of radius of Curvature of a given convex lens by forming Newton's Rings. • Determination of the wavelength of different spectral lines of mercury spectrum using plane diffraction grating. • Determination of the size of lycopodium particle using diffraction phenomenon. • Study of IV characteristics of Solar cell.	CO-1 CO-2 CO-4	2. 3. 4. 5.	value of Planck's constant experimenting with various filters. 2. Determine the radius of Curvature of a given convex lens by forming Newton's Rings. 3. Determine the wavelength of Red1 and Green color spectral lines of mercury spectrum using plane diffraction grating. 4. Determine the size of given lycopodium particles using diffraction phenomenon. 5. Study the IV characteristics of Solar cell and determine its fill factor.	• Demonstration • Experiment and Result Analysis • Evaluation	) 5M Day to Day Evaluation(25M 6M 5M Initial preparation 4M 5M Observations Calculations & Graph Result &units Record
14	MID TEST-II				Mid Test(25M) Preparatory 5M Procedure 3M Calculations & Graph 3M Result &units 5M Viva- voce 4M Record 5M
15,16	Practice/ Beyond syllabus Experiments beyond Curriculum 1. Torsional Pendulum 2. Numerical Aperture of Optical fiber			Demonstration & Experiment	
17,18	Practice/ Beyond syllabus			Demonstration & Experiment	
	End Exam				

* For 1-6 weeks 1st half of students will perform Cycle –I Experiments and 2nd half of students will perform Cycle –II experiments as per the schedule given above.

* For 8-13 weeks 1st half of students will perform Cycle –II Experiments and 2nd half of students will perform Cycle –I experiments as per the schedule given above.