SCHEME OF COURSE WORK
B. Tech Semester I
DEPARTMENT OF PHYSICS

Course Details:

Course Title	***Engineering Physics Lab***		
Course Code	***20BP1104***	**L T P C**	**0 0 3 1.5**
Program:	**B. Tech.**		
Specialization:	**Civil Engineering**		
Semester	**II**		
Prerequisites	**Basics of Physics up to +2 level**		
Courses to which it is a prerequisite	**-**		

PROGRAM OUTCOMES:
The undergraduate of Civil engineering will be able to:

Program Outcomes:

1. Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals to solve complex civil engineering problems.

2. Graduates will attain the capability to identify, formulate and analyse problems related to civil engineering and substantiate the conclusions

3. Graduates will be in a position to design solutions for civil engineering problems and design system components and processes that meet the specified needs with appropriate

consideration to public health and safety

4. Graduates will be 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. Graduates will be able to select and apply appropriate techniques from the available resources and modern civil engineering and software tools, and will be able to predict and model complex engineering activities with an understanding of the practical limitations.

6. Graduates will be able to carry out their professional practice in civil engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.

7. Graduates will be able to understand the impact of the professional engineering solutions on environmental safety and legal issues.

8. Graduates will transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.

9. Graduates will be able to function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.

10. Graduates will be 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. Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.

12. Graduates will engage themselves in independent and life-long learning in the broadest context of technological change while continuing professional practice in their specialized areas of civil engineering.

Course Outcomes (COs):

The Students will have	
1	identify the mechanical behaviour and thermal properties of the materials
2	analyze the dielectric behaviour of a material
3	interpolate some of the physical parameters based on optical phenomena
4	estimate the strength of magnetic field and asses the losses in magnetization
5	demonstrate the mechanical parameters using sensors

Course Outcome versus **Program Outcomes:**

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	1	-	1	-
CO2	2	-	-	-	-	-	-	-	1	-	1	-
CO3	2	1	-	-	-	-	-	-	1	-	1	-
CO4	2	1	-	-	-	-	-	-	1	-	1	-
CO5	3	1	-	-	-	-	-	-	1	-	1	-

Mapping Levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -: 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 acceleration due to gravity and radius of gyration using a compound pendulum • Study the variation in magnetic field along axis of current carrying coil. • Compare the micro strain values indicated by sensor with theoretical values. • Determination of the wavelength of monochromatic light using laser diffraction • Determination of the size of lycopodium particle using diffraction phenomenon. • Estimating the rigidity modulus of the given material using Torsional pendulum	CO-1 CO-3 CO-4 CO-5	1. Determine the acceleration due to gravity using compound pendulum. 2. Determine the wavelength of the given laser beam using plane diffraction grating. 3. Estimate the strength of magnetic field along the axis of a current loop using Stewart and Gee type galvanometer. 4. Compare the micro strain	• Demonstration • Experiment and Result Analysis • Evaluation	**Day to Day Evaluation(20M)** Initial preparation **4M** Observations **5M** Calculations & Graph **4M** Result &units **3M** Record **4M**

			values indicated by strain gauge sensor with theoretical values. 5. Determine the size of lycopodium particles using laser diffraction technique. 6. Determine the rigidity modulus of given wire using torsional pendulum.		
7	**MID TEST-I**				**Mid Test(20M)** Preparatory **4M** Procedure **4M** Calculations & Graph **3M** Result &units **3M** Viva- voce **4M** Record **2M**
8-13	**Cycle-2** • Determination of the moment of inertia of a fly wheel. • Determination of the dielectric constant by method of charging and discharging a capacitor. • Determination of the elastic constants using flat spiral spring. • Study the variation of B versus H by magnetizing a magnetic material. • Determination of thermal conductivity of a bad conductor by Lee's disc method. • Determination of the velocity of sound in liquids using ultrasonic interferometer.	CO-1 CO-2 CO-4	**1.** Determine the moment of inertia of a flywheel. **2.**Determine the dielectric constant of by charging and discharging a capacitor. **3.** Determine the Young's modulus of the given material using flat spiral spring. **4.** Study the hysteresis loop and estimate the energy loss in a ferromagnetic material. **5.** Determine coefficient of thermal conductivity of the given bad conductor using Lee's disc method. **6.** Determine velocity of ultrasound in the given liquid using interferometer.	• Demonstration • Experiment and Result Analysis • Evaluation	**Day to Day Evaluation(20M)** Initial preparation **4M** Observations **5M** Calculations & Graph **4M** Result &units **3M** Record **4M**
14	**MID TEST-II**				**Mid Test(20M)** Preparatory **4M** Procedure **4M** Calculations & Graph **3M** Result &units **3M**

					Viva- voce **4M** Record **2M**
15	Practice/ Beyond syllabus Experiments beyond Curriculum 1. I-V Characteristics of Solar Cell 2. Melde's Experiment			Demonstration & Experiment	
16	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.