

# Gopal Krishna College of Engineering and Technology

Goura Hari Vihar, PO: Raniput, Jeypore-764005

## Lesson Plan (2025-2026)

**Name of the Subject:** Physics

**Course Code:** 23BS1002

**Name of the Faculty:** Mr. Dinesh Mahato

**Semester:** 2<sup>nd</sup>

Branches

**Semester Duration:** Feb to April

**Branch:** All Engineering

**No. of Weeks:** 13 Weeks

### **Module 1 – OSCILLATIONS**

Week	Class Day	Chapter Name
1	1	Introduction to Oscillations and SHM
	2	Mechanical Simple Harmonic Oscillator
	3	Electrical Harmonic Oscillator
	4	Damped Harmonic Oscillator
2	1	Heavy, Critical and Light Damping
	2	Energy Decay in Damped Oscillator
	3	Quality Factor
	4	Forced Mechanical Oscillator
3	1	Forced Electrical Oscillator
	2	Steady State Motion of Forced Damped Oscillator

### **Module 2 – WAVES AND OPTICS**

Week	Class Day	Chapter Name
3	3	Wave Motion and Wave Equation
	4	Superposition of Harmonic Waves
4	1	Coherent Sources
	2	Division of Wave Front and Amplitude
	3	Interference in Thin Parallel Film
	4	Newton's Ring Experiment
5	1	Refractive Index of Liquid
	2	Diffraction and Huygen's Principle
	3	Fraunhofer Diffraction
	4	Diffraction Grating

### **Module 3 – ELECTROMAGNETISM**

Week	Class Day	Chapter Name
6	1	Vector Calculus Basics
	2	Gradient
	3	Divergence
	4	Curl and Physical Meaning
7	1	Gauss Divergence Theorem
	2	Stoke's Theorem
	3	Maxwell's Equations in Differential Form

	4	Maxwell's Equations in Integral Form
8	1	EM Wave Equation
	2	Transverse Nature of EM Waves
<b>Module 4 – QUANTUM PHYSICS</b>		
<b>Week</b>	<b>Class Day</b>	<b>Chapter Name</b>
8	3	Wave Particle Duality
	4	Phase Velocity
9	1	Group Velocity
	2	de Broglie Hypothesis
	3	Wave Function
	4	Operators and Observables
10	1	Eigen Values and Eigen Functions
	2	Normalization
	3	Schrodinger Equation
	4	Particle in One Dimensional Box
<b>Module 5 – LASERS</b>		
<b>Week</b>	<b>Class Day</b>	<b>Chapter Name</b>
11	1	Introduction to Lasers
	2	Characteristics of Lasers
	3	Einstein Coefficients
	4	Population Inversion
12	1	Lasing Action
	2	Three Level Pumping Scheme
	3	Four Level Pumping Scheme
	4	Ruby Laser, He-Ne Laser
13	1	Previous Year Question Discussion
	2	Revision and Question Discussion

### Reference Books:

1. Ian G. Main – Oscillations and Waves in Physics
2. H.J. Pain – The Physics of Vibrations and Waves
3. Eugene Hecht – Optics
4. Ajoy Ghatak – Optics
5. O. Svelto – Principles of Lasers