Physics (2)

Course Name: Physics (2)
Course Code: GEN109
Credit Hours: 3
Knowledge Domain: General Fundamentals.
Prerequisite(s): Physics (1) (GEN108).

Learning Objectives

In addition to those given in physics (1), the student will be able to:

1. Indicate the importance of the modern topics covered in this part.
2. Understand the emerging fields of optical networks, quantum computers and communication, and nanotechnology.

Learning Outcomes

In addition to those covered in physics (1) add the following:

1. The student will be prepared to read about the emerging technologies having impact on IT, particularly in optical communication and quantum information processing.

Overview and Syllabus

Electric charge and electric field. Electrical potential. Electrical current and resistance. Magnetism. Electromagnetic induction. AC circuits. Geometrical optics. Optical instruments. Wave optics. Relativity. Atomic structure. Quantum theory. Lasers. Holography and color.

Course Outline

	Topic
1	**Module 01 : Electrostatics** **Topic 1:** Electric Charge and Force acting on a Charge **Topic 2:** Electrostatic Field Assessment
2	**Module 02 : Electricstatic potential** **Topic 1:** Potential and Energy in Electrostatic field **Topic 2:** Electric Capacitance Assessment

3	**Module 03 : DC Current** **Topic 1:** DC Circuits **Topic 2:** Circuit analysis **Topic 3:** Applications Assessment
4	**Module 04 : Magnetism** **Topic 1:** Magnetic field **Topic 2:** Electric Current and Magnetic field Assessment
5	**Module 05 : Electromagnetic Induction** **Topic 1:** Magnetic Flux and Induced EMF **Topic 2:** Analysis of LR circuits Assessment
6	**Module 06 : AC Current** **Topic 1:** Electric Oscillations **Topic 2:** Analysis of AC circuits Assessment
7	**Module 07 : Electromagnetic Waves** **Topic 1:** Electromagnetic field **Topic 2:** Propagation of Electromagnetic Waves Assessment
8	**Module 08 : Geometrical optics** **Topic 1:** Optical Phenomena **Topic 2:** Simple Optical Devices Assessment
9	**Module 09 : Physical Optics** **Topic 1:** Wave Properties of Light **Topic 2:** Wave Behavior of Light Assessment
10	**Module 10 : Light Quanta** **Topic 1:** Concepts of Relativity **Topic 2:** Thermal Radiation **Topic 3:** Photoelectric Phenomenon Assessment
11	**Module 11 : Atom** **Topic 1:** Structure of Atom **Topic 2:** Quantum Approach Assessment
12	**Module 12 : Nucleus**

	Topic 1: Nuclear Structure **Topic 2:** Nuclear Interaction Assessment