

ENGINEERING PHYSICS – I

AS-102

L: 2 T: 1 P: 0 Cr: 3

COURSE OUTCOMES

1. Enhancing the concepts of conservative and non-conservative forces.
2. Understanding the basics of optics and introduction to wave nature.
3. Expanding the concepts of electromagnetism and its various applications.
4. Exploring the basics of quantum ideas.
5. Understanding the physics of solids.

SYLLABUS

UNIT-1: Physics Of Motion

Inertial and non-inertial frames, conservation principles of momentum and energy; conservative systems, simple harmonic motion, damped harmonic motion.

UNIT-II: Optics

Two views about nature of light, concept of coherence, interference of light, single slit and N-slits diffraction, hydrogen atom spectrum, diffraction grating.

UNIT-III: Electromagnetism

Cylindrical coordinates, Gradient, divergence and curl, line integral and surface integral Lorentz force, Gauss's law, Ampere's Law, Maxwell's equations, electromagnetic waves and Poynting vector.

UNIT-IV: Quantum Ideas

Difficulties of classical Physics, wave particle duality, photoelectric effect, Compton effect, uncertainty principle and its implications, wave packets, group velocity and phase velocity.

UNIT-V: Physics of Materials

Classification of materials, Bragg's law and X-ray diffraction, classical free electron theory, its success and failures, Wiedemann Franz law, Maxwell Boltzmann distribution.

Text Books:

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| 1. | Halliday, Resnick | Physics |
| 2. | Jenkins, White | Optics |
| 3. | Wahab | Solid State Physics |

Reference Books:

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| 1. | G. Gamow | Physics, Foundations and frontiers |
| 2. | Mathews | Optics |
| 3. | Islam s.s. | Solid State Physics |