

BPHS0002: ENGINEERING PHYSICS – I (SLOW LEARNERS)

W.E.F. ACADEMIC YEAR 2020-21

OBJECTIVE: The Syllabus is designed and styled especially to give B.Tech I year students a sound base in fundamental physics as well as to give their exposure to a wide range of its utility in engineering and technology.

L-T-P: 3-1-2

Credits: 04

Semester I & II

Module No.	Content	Teaching Hours (Approx.)
I	<p>1. Interference, Diffraction & Polarization: Principle of superposition, Coherent Sources, Interference due to division of wave front- Biprism experiment and division of amplitude- Newton's ring Experiment, Diffraction: Fresnel and Fraunhofer diffraction, diffraction due to Single-slit, Qualitative description of N slits diffraction (no derivation), Concept of polarization of light, Phenomenon of double refraction, Superposition of ordinary and extra ordinary rays: Plane, Circularly and elliptically polarized light, Optical activity, Specific rotation.</p> <p>2.. Solid State Physics: Classification of solids, Temperature dependence & temperature independence of conductivity of intrinsic semiconductors, Hall effect, Superconductivity, Meissner Effect, Type I and Type II superconductors.</p>	24
II	<p>1.Relativistic Mechanics: Inertial & non-inertial frames, Galilean Transformations, Einstein's postulates, Lorentz transformation equations; Length contraction, Time dilation, Addition of velocities, Variation of mass with velocity, Mass energy equivalence (Einstein's Mass relation).</p> <p>2. Wave Mechanics: Wave - particle duality, de-Broglie hypothesis, wave packet, Heisenberg's uncertainty principle and its applications;(Non-existence of electrons in nucleus and Bohr's first orbit radius), Wave function and its normalization, Schrödinger's wave equation: time dependent and time independent, Particle in one dimensional potential box.</p>	22

Text Books:

*Engineering Physics by S.K. Gupta/ S.L. Gupta Vol. I & II

*Engineering Physics by B.K.Singh and R.K.Dubey

Reference Books:

*Concept of Modern Physics - by Beiser (Tata Mc-Graw Hill)

*Materials Science and Engineering - by V. Raghavan (Prentice- Hall India)

OUTCOME:

After completing the course, the B.Tech. I year students would be able to apply the subject knowledge in engineering science and technology.

- Teaching-learning methodology of the course is such that the elementary knowledge of a student raises gradually to its complex aspects during the completion of the course program.
- A student of average caliber can comprehend the theoretical aspects easily without strain.