B.Sc (Computer Science / Maths / Chemistry)

Total Hours: 45 **PHU1731 APPLIED PHYSICS - I** **Credit 3**

UNIT I – PROPERTIES OF MATTER

Elasticity - Stress – Strain – Hooke's law –Moduli of elasticity- Poisson's ratio- Elastic Behaviour of Material – Factors affecting Elasticity – Young's modulus by cantilever-Non - uniform Bending.

UNIT II – TECHNICAL ACOUSTICS

Reverberation time - Acoustics of buildings – Reverberation, echo, creep, focusing, standing wave, Principles to be observed in the Acoustical design of an Auditorium – Noise Pollution – Absorption coefficient - Ultrasonics -Generation – Piezoelectric method – Applications of Ultrasonics in industries.

UNIT III – LASER

Principles – Einstein theory of spontaneous and stimulated emission – Population inversion - Nd:YAG laser , Co_2 laser – Applications of Lasers in 3D profiling, computer peripherals such as CD-ROM.

UNIT IV - FIBER OPTICS

Types of Optical Fibers – step index – grated index single mode – multiple mode fiber – acceptance angle – Numerical aperture – applications in engineering and medicine.

UNIT V - ELECTRONICS

P-N Junction and P-N Junction Diode - Zener Diode – V-I Characteristics –Zener diode as Peak Clipper- Field Effect Transisters (FET) –Types – Junction Field Effect Transistor (JFET)– Static and Transfer Characteristics.

Text Books

1. Applied Physics for Engineers – Venkatramanan, Raja, Sundarrajan –SCITECH Publishers – 2011.
2. Applied Engineering Physics – Rajendran&Marikani – Tata McGraw Hill Publications -
3. Modern Engineering Physics – R.K.Gaur&S.L.Gupta – DhanpatRai Publications -2011.
4. Modern Engineering Physics – A.S.Vasudeva – S.Chand& Company Ltd 1999.
5. Engineering Physics – Bhatacharya, Bhaskaran – Oxford Publications 2010.
6. Engineering Physics – B.N.Shankar&S.O.Pillai – New Age International Publishers.
7. Basic Electronics (Solid State) – B.L Thereja 2007.

Reference Books

1. Properties of Matter - D.S.Mathur. (Unit I) – 2008.
2. Sound - Brijilal& Subramanian. (Unit II) – 1985.
3. Engineering Physics - Rubhan Kumar. (Unit II & III)
4. Engineering Physics - M.N.Avadhanulu. (Unit II &III) – 1992.
5. Fiber Optics - R.Agarwal. (Unit IV)
6. Basic Electronics (Solid State) – B.L Thereja (Unit V) – 2007.

B.Sc. (Computer Science / Maths / Chemistry)

Total Hours: 45 PHU1732 APPLIED PHYSICS - II Credit 3

Unit I – Nano Physics

Introduction to Nano materials - Quantum confinement – Properties of nano materials – Synthesis of nano materials – Top down and bottom up approach – Ball milling and Physical vapour deposition method – applications of nano materials – CNTs.

UNIT II - Magnetism & Dielectrics

Types of Magnetic materials(Dia,Para and Ferro)– properties – Application- Floppy Disc
Dielectrics- Basic Definitions –Dielectric Breakdown – Dielectric loss – Internal field –

Classius- Mossotti relation. Application of Dielectric materials

UNIT III - Engineering Materials

Introduction and Properties of Metallic glasses – Shape memory alloys – Bio materials

Superconductors- Introduction – Meissner effect – Type I & Type II superconductors – High Tc Superconductors

UNIT IV- Optoelectronic Devices

Photomultiplier Tube –Photo Conductive cells – P-N junction Photodiode – PIN Photodiode- Avalanche Photodiodes - Light Emitting Diode (LED) –-Liquid Crystal Display(LCD)

UNIT V - Integrated Circuits & Logic Gates

Introduction –Scale of Integration-Classification of IC's by Structure and function – Linear and Digital Integrated Circuits- Fabrication of IC Components – Logic Gates- Positive and Negative Logic- The OR, AND, NOT Gates – Symbols and Truth table for Logic Operations – Universal Gates – The NAND & NOR gates – Symbols and Truth Table for Logic operations

Text Books

1. Applied Engineering Physics – Rajendran&Marikani – Tata McGraw Hill
2. Modern Engineering Physics – R.K.Gaur&S.L.Gupta – DhanpatRai publications- 2011.
3. Modern Engineering Physics – A.S.Vasudeva – S.Chand& Company Ltd. -1999.
4. Engineering Physics – Bhatacharya, Bhaskaran – Oxford Publications 2010.
5. Engineering Physics – B.N.Shankar&S.O.Pillai – New Age International
6. Applied Physics for Engineers – Venkatramanan, Raja, Sundarrajan –SCITECH - 2011
7. Basic Electronics (Solid State) – B.L Thereja– 2007.

Reference Books

1. Modern Physics - R.Murugesan. (Unit I) – 2011.
2. Engineering Physics - Rubhan Kumar. (Unit II) -
3. Engineering Physics - M.N.Avadhanulu. (Unit II&III) - 1992.
4. Engineering Physics – P.K.Palanisamy - Scitech Publications (Unit II &III) – 2009.
5. Basic Electronics (Solid State) – B.L Thereja (Unit IV & V) – 2007.

B.Sc (Computer Science/Maths/Chemistry)

PHU174L1 Applied Physics laboratory

Credit 2

Any 10 Experiments

1. Cantilever – Determination of Young's Modulus of beam
2. Torsional Pendulum – Determination of rigidity modulus of wire
3. Laser Grating – Determination of wavelength of laser source
4. Transistor – Input and Output characteristics – CE mode
5. Logic Gates – AND, OR, NOT, NAND and NOR Gates – Verification of Logical Operations
6. NAND Gate as Universal Building Block
7. NOR Gate as Universal Building Block
8. Zener diode – V-I Characteristics
9. Determination of Numerical Aperture & Acceptance angle of optical fiber
10. Ultrasonic Interferometer – Determination of Ultrasonic velocity in liquids
11. Diode characteristics
12. Half Adder
13. Full Adder
14. Study of C.R.O

REFERENCE BOOKS FOR PHYSICS PRACTICALS

1. Practical Physics – Ouseph and Rangarajan - 2009.
2. Engineering practical Physics – K.Srinivasa.
3. Engineering practical Physics – M.N.Avadhanulu.
4. Experimental Physics for Engineers– Venkatramanan, Sundarrajan, Raja– 2016 (latest edition)