PH110 PHYSICS

PH110	PHYSICS	3-0-2

COURSE CONTENT:

Elasto-dynamics: Simple Harmonic Motion, Electric Flux, displacement vector, Columb law, Gradient, Divergence, Curl, Gauss Theorem, Stokes theorem, Gauss law in dielectrics, Maxwell's equation: Integral
& Differential form in free space, isotropic dielectric medium.

Lasers: Properties of lasers, types of lasers, derivation of Einstein A & B Coefficients, Working He-Ne and
Ruby lasers.

Fibre Optics: Light guidance through optical fibre, types of fibre, numerical aperture, V-Number, Fibre dispersion (through ray theory in step index fibre), block diagram of fibre optic communication system.

Quantum Mechanics: Black body radiation, ultraviolet catastrophe, Crompton effect, plates theory of radiation, phase and group velocity, particle in a box, uncertainty principle, well-behaved wave equation, Schrodinger equation, application to particle in a box

Optics: Interference, division of amplitude & division of wave front, young's double slit experiment, thin film interference, Newton Ring Experiment. Diffraction: Difference between interference and diffraction, types of diffraction, single slit, double slit & n-slit diffraction, Resolving power of grating.

Semiconductors: Crystalline and Amorphous solids, Band theory of solids, mobility and carrier concentrations, properties of P-N junction, Energy brands, hall effect, VI characteristics of photodiode, zener diode and photovoltaic cell

Nuclear Physics: Nuclear composition, mass defect, binding energy, nuclear force, liquid drop model, elementary idea about nuclear fission and fusion.

LABORATORY

Experiments as suggested by the course coordinator.

EVALUATION

Evaluation will be continuous an integral part of the class as well through external assessment.

REFERENCES

A Bezier, Concepts of Modern Physics, McGraw Hills
Ghatak, Optics, McGraw Hills