

**SIXTH SEMESTER**  
**FPEF-601 FIBRE OPTICS AND HOLOGRAPHY**

**UNIT-I**

Introduction, Principles of optical fibre: Acceptance angle and acceptance cone, Numerical aperture, Types of optical fibres: Single and multimode fibres, Step index fibre, Step index fibre, Graded index fibre, TE and TM modes, Dispersion, Attenuation in Optical Fibres: Scattering losses, Absorption losses, Bending losses, Loss in decibel.

**UNIT-II**

Fibre materials: Glass fibres, Plastic fibres, Optical fibres in communication: Light sources for fibre optics, LEDs as light source, Lasers as light source, Modulation, Photodetectors, Functioning of Fibre Optic Communication system, Advantages of Fibre Optic communication, Application of Optical Fibres in Medicine and Sensors, Coherent and incoherent fibre –optic bundles

**UNIT-III**

Optical Fibres in Sensing Application: Displacement sensors, Microbending concept, Phase-modulated sensors, Characteristic advantage of fibre optic sensors, Fibre-optic Medical Endoscopy: Some applications of fibre-optic endoscopy

**UNIT-IV**

Holography: Basic principles of Holography, Construction (Recording) of a Hologram, Reconstruction of a Hologram, Applications of Holography: Holographic interferometry.

References:

Applied physics : P. K. palanisami