1.	Title of the course	Fiber Optic Systems
2.	Course number	EE561L
3.	Status of the course	Elective
4.	Structure of credits	3-0-0-3
5.	Offered to	PG
6.	New course/modification to	New
7.	To be offered by	Department of Electrical Engineering
8.	To take effect from	January 2023
9.	Prerequisite	CoT
10.	Whether approved by the Department	Yes
11.	**Course Objective(s):** To provide the concepts of optical fibers, sources, and detectors used in optical communication systems.	
12.	**Course Content:** Planar optical waveguides: wave propagation in planar optical waveguides, ray theory, electromagnetic mode theory, phase and group velocity, dispersion; Optical fiber waveguides: wave propagation in cylindrical fibers, modes and mode coupling, step and graded index fibers, single-mode fibers; Transmission characteristics of fibers: attenuation, material absorption and scattering loss, bend loss, intra-modal and inter-modal dispersion in step and graded fibers, overall dispersion in single and multi-mode fibers; Optical fiber connection: optical fiber cables, stability of characteristics, fiber alignment; Fiber splices, connectors, couplers; Optical sources: absorption and emission of radiation, population inversion and laser oscillation, p-n junction, recombination and diffusion, stimulated emission and lasing, hetero-junctions, single-frequency injection lasers, light emitting diodes; Optical detectors: optical detection principles, p-n, p-i-n, and avalanche photodiodes; Optical communication system: system description and design considerations of an optical fiber communication system, noise in detection process, power budgeting, rise time budgeting, maximum transmission distance, principles of optical networks.	
13.	**Textbook(s):** 1. Kolimbiris H, *Fiber Optics Communications*, 1st Edition, Pearson India (2004). 2. Senior J M, *Optical Fiber Communications*, 3rd Edition, Prentice-Hall of India (2008).	
14.	**Reference(s):** 1. Cheo P K, *Fiber Optics and Optoelectronics*, 2nd Edition, Prentice-Hall (1990). 2. Keiser G, *Optical Fiber Communications*, 1st Edition, McGraw-Hill (2000).	