INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITD&M) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	Optical Fiber Communication	Course No *(will be assigned)*				
		Structure (LTPC)	L	T	-	3
Offered for	UG	Status	Core ☐		Elective ■	
Faculty	Dr. Naveen Kumar	Type	New ■		Modification ☐	
Pre-requisite	COT	To take effect from				
Submission date		Date of approval by AAC				

Objectives	To apprise the students about the basic concepts and light guiding principles behind modern optical fiber communication. To gain understanding about the various components/devices, techniques and their applications in designing a communication network system. To develop in-depth insight in the important aspects/practices involving optical amplification, optical multiplexing/ demultiplexing, filtering and optical interferometery in relation to modern communication networks
Contents of the course *(With approximate break up of hours) - 42 hrs*	Single mode and multimode fibers: Classification of fibers, Numerical aperture, Pulse dispersion, material dispersion, Propagation of waves through fibers, Modal analysis, Gaussian approximation, Waveguide dispersion (10) Sources and detectors for fiber optic communication system: Communication requirements, Laser diode, LED, Principles of optical detection, PIN photodetector, Avalanche photodiodes (8) Design consideration of fiber optic communication system: Analog and digital modulation, Noise in detection process, Bit error rate, System design, System budgeting, Attenuation and dispersion limit (14) Devices and components: Fiber amplifiers, Wavelength division multiplexer/demultiplexer, Fiber dispersion compensators, Fiber dispersion shifter, Fiber couplers, Fiber interferometers, Fiber filters and gratings (10)
Text Books	1. James Downing, Fiber Optics Communication, Thomson Delmar Learning, 2004 2. Ajoy Ghatak, K.Thyagarajan, An Introduction to Fiber Optics, Cambridge University Press, 2004 3. G. Keiser, Optical Fiber Communications, McGraw Hill , 2000
Reference Books	1. J. Crisp, B. Elliott, Introduction to Fiber Optics, Newnes (Elsevier), 2005, 2. Harry Dutton, Understanding Optical Communications, IBM Redbook, 1998 3. Jurgen Franz, Optical Communications Components and Systems: Analysis, Design, Optimization, Application, Narosa Publishing House, 2000.