The Maharaja Sayajirao University of Baroda Polytechnic Diploma in Electronics & Communication Engg. (HPP)			ACADEMIC YEAR 2023-24	
Year	III	CORE / ELECTIVE / FOUNDATION FIBER OPTIC COMMUNICATION(ELE3632)	Lecture/Lab Hrs per week	4/2
Semester	II		Max marks	100

Pre-Requisite: Communication basics, digital communication

CO1	Explain the principles of fiber-optic communication, fiber types, light propagation, and fiber-splicing methods.
CO2	Describe fiber-optic attenuation mechanisms and the effects of various transmission losses.
CO3	Analyze optical source devices including LEDs, semiconductor lasers, gas lasers, and modulation techniques.
CO4	Evaluate optical detectors, photodiodes, photoconductors, coupling methods, and optical connectors.
CO5	Assess optical communication systems, receivers, repeaters, PCM generation, equalization, integrated optics, and fiber-optic applications.
BT	**1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation**

COURSE CONTENT/SYLLABUS

Unit	Unit Name	Hrs	Weightage	CO
1	PRINCIPLE OF FIBER OPTICS COMMUNICATION: Advantages of optical fiber optics communication, Elements of fiber optics communication, Types of optical fibers, Principles of light propagation within the fiber, Fiber splicing & joining of fibers.	8	15	**CO1**
2	LOSSES IN FIBRES: Various types of losses in fibers and its effects	6	8	**CO2**
3	FIBRE OPTICAL SOURCE DEVICES : Light emitting diodes, Semiconductor LASER diodes, Gas LASERS, Various methods of LASER Modulation and modulators	10	18	**CO3**
4	OPTICAL DETECTOR AND CONNECTORS : PIN diodes, Avalanche photodiode, Photo conductors, Coupling of fibers to detectors. Optical connectors.	8	15	**CO4**
5	OPTICAL COMMUNICATION SYSTEM : Transmitter design, Receiver design, Device used and their characteristics, Line guided optical system, Comparison with others.	8	15	**CO4**
6	OPTICAL RECEIVER, DETECTORS AND REPEATERS : Receiver, Photodetectors, Diodes circuit models, Optical receiver models, Optical repeaters, PCM generation, Equalizer, Repeater spacing, Power consumption.	8	15	**CO5, CO4**
7	INTEGRATED OPTICS : Material and fabrication techniques used in the integrated optics, Application of integrated optics, Photoreceptor optics.	6	8	**CO5**
8	APPLICATIONS : Telephone, Video distribution, Telemetry, Military application, Passive and Active sensing.	2	6	**CO5**
		56	**100**	

REFERENCE BOOKS:

1. Optical Fiber Communication By J.M.Senior
2. Optical Fiber Communication - M.J.Homes & D.V.Morgan.