

GANPAT UNIVERSITY										
FACULTY OF DIPLOMA ENGINEERING										
Programme		Diploma Engineering				Branch/Spec.	Electronics and Communication Engineering			
Semester		V				Version	1.0.0.0			
Effective from Academic Year				2026-27		Effective for the batch Admitted in			July 2024	
Subject code		1EC51PE03		Subject Name		Optical Fiber Communication				
Teaching scheme						Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total	
	L	TU	P	TW						
Credit	3	0	1	0	4	Theory	40	60	100	
Hours	3	0	2	0	5	Practical	30	20	50	
Pre-requisites:										
Basic concepts of physics of light (reflection, refraction) and fundamental of communication.										
Course outcomes:										
COs	Description									
CO1	Understand basic principles and components of optical fiber communication systems.									
CO2	Explain optical fiber structure, propagation and transmission characteristics.									
CO3	Analyze optical sources, detectors and fiber losses.									
CO4	Understand optical communication systems, measurements and applications.									
Theory syllabus										
Unit	Content								Hrs	
1	Introduction to Optical Fiber Communication: Introduction to optical fiber communication, need, advantages, block diagram, applications Principle of total internal reflection, acceptance angle, numerical aperture, types of optical fibers (step index, graded index, single mode, multimode), refractive index profile.								12	
2	Transmission characteristics: Attenuation, absorption and scattering losses, bending losses, dispersion – material, waveguide and modal dispersion, bandwidth limitation.								9	
3	Optical sources and detectors: LED and LASER diodes, characteristics, optical power launching, PIN and APD photodiodes, responsivity, noise in optical receivers.								9	
4	Optical components: Optical connectors, splices, couplers, isolators, WDM, optical amplifiers, fiber joints and accessories.								8	
5	Optical communication systems: Optical transmitter and receiver, digital fiber optic communication system, link power budget, rise time budget, testing and measurements, applications in telecom networks.								7	
Practical content										
Practical assignments and tutorials are based on the above syllabus.										

Text Books	
1	“Optical Fiber Communication”, Gerd Keiser, McGraw Hill
Reference Books	
1	“Optical Fiber Communication”, John M. Senior, Pearson
2	“Fiber Optic Communications” , Joseph C. Palais, Pearson
ICT/MOOCs Reference	
1	https://nptel.ac.in/courses/115107095

Mapping of CO with PO and PSO:															
	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 1 0	P O 1 1	P O 1 2	P S O 1	P S O 2	P S O 3
CO1	1	2	1	0	0	0	0	0	0	1	0	1	1	1	1
CO2	2	2	2	2	1	0	0	0	0	1	0	2	2	1	1
CO3	2	2	3	2	2	0	0	0	0	2	1	1	2	3	2
CO4	2	3	2	2	2	0	0	0	0	1	1	2	2	2	1