FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Optical Fiber Communication System

Information :

Course Code :	COM 527	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Electronics & Communication

Instructor Information :

Title	Name	Office hours
Associate Professor	KAMEL MOHAMED MAHMOUD HASSAN	6
Assistant Lecturer	Lamia Hamdy Ahmed Kamal Shehab Eldin	

Description :

Overview of optical fiber communications: Historical review, the general system, and the main features. Optical Fiber waveguides: Ray theory transmission, Electromagnetic mode theory for optical propagation.
Optical Fiber waveguides (Continued). Cylindrical fiber: modes, mode coupling, Step index fiber, Graded index fiber.
Optical Fiber waveguides (Continued) .
Single mode fiber: cutoff wavelength, Mode field diameter[MFD], Effective,refractive index, and Gaussian approximation. Transmission Characteristics of optical fibers: Attenuation{material absorption, linear scattering losses, nonlinear scattering losses, and fiber bend loss, Transmission Characteristics of optical fibers(continued): Dispersion inter-modal dispersion, ,chromatic dispersion, overall dispersion. Dispersion(continued) modified single mode dispersion: DSFs, DFFs, and NZ DFs. Optical fibers: Multi-mode Step-index fiber, Multi-mode Graded-index fiber, Single mode fiber, Plastic-clad fiber, Plastic optical fibers. Direct detection receiver performance: Noise ,Receiver noise, Receiver structure. Optical fiber systems {Direct detection}: introduction, Transmitter circuits, Receiver circuits, Digital system design considerations, optical power budget, and rise time budget.
Check the system design parameters of an optical fiber link using power budget and rise time budget. Wavelength division multiplexing techniques. Optical fiber Measurements: Fiber attenuation measurements, fiber dispersion measurements, Fiber cutoff wavelength, and Fiber NA measurements.