

Fundamentals on Integrated Optics

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The lecture provides students with the basic knowledge of photonic passive devices for optical communications. The topics include fundamentals of optical waveguides, fibers, filters, multiplexers, couplers splitters, evidencing for each device the design guidelines and performance. The optical modes and dispersion equations of planar waveguides and fibers are described, as well as the effects of intermodal and chromatic dispersion. The main features of power splitters, directional couplers, MMI couplers, optical filters, Mach Zehnder interferometers, Bragg gratings and arrayed waveguide gratings (AWG) are analyzed in details.