

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

INTRODUCTION OF NEW COURSE

Course Title	Optoelectronics Devices	Course No <i>(will be assigned)</i>				
Specialization		Structure (LTPC)	3	0	0	3
Offered for	UG/PG/Ph.D.	Status	Core	<input type="checkbox"/>	Elective	<input checked="" type="checkbox"/>
Faculty	Naveen Kumar	Type	New	<input checked="" type="checkbox"/>	Modification	<input type="checkbox"/>
Pre-requisite		To take effect from	January 2013			
Submission date	Oct 2012	Date of approval by Senate				
Objectives	<ol style="list-style-type: none"> <li>To teach the physics behind various opto-electronics devices/components employed in optical fiber communication</li> <li>To provide an intuitive understanding along with mathematical rigors needed in designing all-fiber components</li> </ol>					
Contents of the course <i>(With approximate break up of hours)</i>	<p>Components and Devices: Planar light guides and effective index method, Coupled mode theory, Waveguide coupler and switches, Interferometers and signal routing and gratings. (14)</p> <p>Electro optic Modulators: Electro optic effect in KDP and Lithium Niobate crystal, Electrooptic modulators and applications. (7)</p> <p>Accousto optic Modulators: Accoustootic effect, Raman Nath diffraction, Coupled wave analysis, Basic equations of Bragg Diffraction, applications in periodic media, Raman Nath modulator and Bragg modulator. (11)</p> <p>Lasers and Detectors: Communication requirements, Laser diode, LED, Principles of optical detection, PIN photodetector, Avalanche photodiodes. (10)</p>					
Textbook	<ol style="list-style-type: none"> <li>K. Okamoto, "Fundamental of Optical Waveguides", Elsevier, 2006</li> <li>R. Ramaswami and K. N. Sivarajan, and Galen Sasaki, "Optical Networks: A practical perspective", Optical Fiber Communications", Elsevier, 2009</li> <li>Ajoy Ghatak, K.Thyagarajan, "Optical Electronics", Cambridge University Press, 2002</li> </ol>					
References	<ol style="list-style-type: none"> <li>Jurgen Franz, Optical Communications Components and Systems: Analysis, Design, Optimization, Application, Narosa Publishing House, 2000</li> <li>G. Keiser, Optical Fiber Communications", McGraw Hill , 2008</li> </ol>					