



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

LESSON PLAN (WINTER-2026)

Discipline: Electronics and Telecommunication Engg.	Semester: 5 th	Name of the Teaching Faculty: DEBASISH MOHAPATRA
Subject: /Code No: ETCPE002 (I)/TH-4a	No of Days /per week class allotted: 3	Semester From date: 1 ST JULY, 2026 No of Weeks: 15
Week	Class Day	Theory / Practical Topics
1st	1st	UNIT -I: Semiconductors Introduction to semiconductors and recombination
	2nd	Doping
	3rd	Alloy Semiconductors
2nd	1st	Electron-hole pair formation
	2nd	Energy bands in solids
	3rd	UNIT -II: Optical Processes in Semiconductors , Absorption in semiconductors
3rd	1st	Indirect intrinsic transitions
	2nd	Exciton absorption
	3rd	Donor acceptor and impurity band absorption
4th	1st	Effect of electric field on absorption
	2nd	Radiation in Semiconductors ,Relation between absorption and emission spectra
	3rd	Near band gap radioactive transitions
5th	1st	UNIT -III: Optoelectronic detectors , Photoconductors
	2nd	Junction Photodiodes
	3rd	PIN Photodiodes
6th	1st	Heterojunction diodes
	2nd	Avalanche Photodiodes
	3rd	Phototransistors
7th	1st	Modulated barrier Photodiode
	2nd	Metal - semiconductor -metal photodiode
	3rd	UNIT -IV: Photovoltaic devices , Solar energy spectrum
8th	1st	Device principles
	2nd	I - V characteristics
	3rd	Equivalent circuit
9th	1st	Materials, devices and efficiencies
	2nd	UNIT V : Light emitting diode, Electroluminescent process
	3rd	Choice of LED materials , Device configuration and efficiency
10th	1st	Light output from LED, LED structure
	2nd	Heterojunction LED

	3rd	Surface emitting LED
11th	1st	Device performance characteristics
	2nd	Frequency response and modulation bandwidth
	3rd	UNIT VI: Laser diode - Junction laser operating principles , Threshold current
12th	1st	Heterojunction lasers
	2nd	Distributed feedback lasers
	3rd	Cleaved coupled cavity laser
13th	1st	Quantum well lasers
	2nd	Modulation of lasers - rate equations
	3rd	Steady state solution
14th	1st	Transient phenomena and frequency response
	2nd	UNIT VII: Optical fiber , Introduction to optical fiber
	3rd	Structure of optical fiber
15th	1st	Propagation of light through a numerical aperture
	2nd	Pulse broadening
	3rd	Advantages and disadvantages of fiber optics

Debasish Mohapatra
Faculty

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