

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING



LESSON PLAN

SUBJECT: ELECTRONICS DEVICES (TH 2)

ACCADEMIC SESSION: 2026-27

FACULTY: Mrs PALLABI MOHANTA, LECTURER(STAGE-I)

SEMESTER: 3RD

Sd/-

H O D (AE&I Engg.)

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING
LESSON PLAN

COURSE OUTCOMES

CO1: Explain the fundamentals of semiconductor physics, energy band theory, and carrier transport mechanisms in intrinsic and extrinsic semiconductors.

CO2:- Analyze the construction, operation, and characteristics of p-n junction diodes and different special-purpose diodes such as Zener diode, LED, photodiode, and solar cell.

CO3:- Describe the construction, working principles, characteristics, and biasing methods of Bipolar Junction Transistors (BJT) and analyze amplifier circuits using transistor models.

CO4:- Understand the operation, characteristics, and applications of Field Effect Transistors (JFET and MOSFET) and compare their performance with BJTs.

CO5:- Explain feedback amplifiers, oscillators, and integrated circuit fabrication processes, and analyze the working of different oscillator circuits and CMOS fabrication techniques.

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING
LESSON PLAN

Discipline: AE&I Engineering	Semester: 3 RD	Name of the teaching faculty: PALLABI MOHANTA
Subject: Electronics Devices	No. of Days/ per week class allotted: 03 periods per week.	Semester From Date: 01-07-2026 To Date: 05-11-2026 No. of weeks: 19 weeks
Week	Class Day	Theory Topics
1 st	1st	Introduction to Semiconductor Physics Review of Quantum Mechanics , Electrons in periodic Lattices
	2nd	Energy bands in intrinsic and extrinsic silicon , Carrier transport
	3rd	Drift current , Mobility and resistivity
2 nd	1st	Generation and recombination of carriers
	2nd	Poisson and continuity equation
	3rd	P-N Junction Diodes
3 rd	1st	Construction of P-N Junction Diode , Operating Principle
	2nd	P-N junction characteristics , I-V characteristics
	3rd	Small signal switching models
4 th	1st	Avalanche breakdown , Zener diode
	2nd	Schottky diode
	3rd	LED , Photodiode and solar cell

BIHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING
LESSON PLAN

5 th	1st	Construction of BJT , Operating Principle of BJT
	2nd	Types of BJT , Working principle of p-n-p and n-p-n BJT
	3rd	I-V characteristics , Ebers Moll Model
6 th	1st	Different types of transistor connection , Common Base (CB) ,Common Emitter (CE) ,Common Collector (CC)
	2nd	Input and output characteristics of transistor in different connections
	3rd	Define ALPHA, BETA and GAMMA of transistors in various modes.
7 th	1st	Establish the Mathematical relationship between ALPHA, BETA and GAMMA , Basic concept of Biasing
	2nd	Types of Biasing ,h-parameter model of BJT
	3rd	Load line and determine the Q-point. , Types of Coupling
8 th	1st	Working principle and use of R-C Coupled Amplifier
	2nd	Frequency Responses of R-C coupled Amplifier
	3rd	Class test I
9 th	1st	FET & its classifications ,Differentiate between JFET & BJT
	2nd	Construction, working principle & characteristics of JEFT
	3rd	Parameters of JFET & establish relation among JFET parameters
10 th	1st	JEFT as an amplifier , Construction and working principle of MOSEFT

BHUBANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING
LESSON PLAN

	2nd	INTERNAL ASSESSMENT I
	3rd	INTERNAL ASSESSMENT I
	1st	Classification of MOSEFT, Characteristics (Drain & Transfer) of MOSEFT
11 th	2nd	Explain the operation of CMOS, VMOS & LDMOS.
	3rd	Explain the operation of CMOS, VMOS & LDMOS.
12 th	1st	FEED BACK AMPLIFIER & OSCILLATOR , Define & classify Feedback Amplifier
	2nd	Types of feedback – negative & positive feedback
	3rd	Characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise and distortion in amplifiers.
13 th	1st	Oscillator ,Block diagram of sine wave oscillator
	2nd	Types Requirement of oscillation , Barkhausen criterion
	3rd	LC oscillators , Colpitts Oscillators
14 th	1st	Hartley Oscillators
	2nd	Wien Bridge Oscillators
	3rd	Discussion
15 th	1st	Integrated Circuit Fabrication Process , Oxidation

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AE&I ENGINEERING

LESSON PLAN

	2nd	Diffusion
	3rd	Ion implantation
16th	1st	Ion implantation
	2nd	Class test-2
	3rd	Photo-lithography
17th	1st	Etching
	2nd	Chemical vapor deposition
	3rd	Sputtering
18th	1st	INTERNAL ASSESSMENT 2
	2nd	INTERNAL ASSESSMENT 2
	3rd	Twin-tub CMOS process
19th	1st	Revision
	2nd	Revision
	3rd	Revision


 Signature of Faculty


HOD
 Signature of HOD
AE & I Department
B.O.S.E. Cuttack-753007