NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

NIST POLYTECHNIC

LESSON PLAN

SUBJECT: Th-2 (Analog Electronics and OP-AMP)

Name of the Faculty- Er.SOUMYAJIT ROUT

Branch- Electrical Engineering **Session-** 2024-25

Semester- 4th **Examination-** 2025(s)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	P-N JUNCTION DIODE	6	7
2	SPECIAL SEMICONDUCTOR DEVICES	5	8
3	RECTIFIER CIRCUITS & FILTERS	7	10
4	TRANSISTORS	7	9
5	TRANSISTOR CIRCUITS	7	8
6	TRANSISTOR AMPLIFIERS & OSCILLATORS	13	15
7	FIELD EFFECT TRANSISTOR	6	7
8	OPERATIONAL AMPLIFIERS	9	11
TOTAL		60	75

SIGN OF FACULTY

SIGN OF HOD

Discipline: EE	Semester: 4th	Name of the Teaching Faculty: Er. SOUMYAJIT ROUT
		SESSION-2024-25 EXAMINATION-2025(S)
Week	Class Day	Theory / Practical Topics
1ST	1st	**P-N JUNCTION DIODE:** P-N Junction Diode,Working of Diode
	2nd	V-I characteristic of PN junction Diode.
	3rd	DC load line Important terms such as Ideal Diode, Knee voltage
	4th	Junctions break down Zener breakdown Avalanche breakdown
2nd	1st	P-N Diode clipping Circuit
	2nd	Thermistors, Sensors & barretters
	3rd	Zener Diode,tunnel Diode,PIN Diode
	4th	3.1 Classification of rectifiers
3rd	1st	Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate: 3.2.1 DC output current and voltage
	2nd	3.2.2 RMS output current and voltage 3.2.3 Rectifier efficiency
	3rd	3.2.4 Ripple factor 3.2.5 Regulation
	4th	3.2.6 Transformer utilization factor 3.2.7 Peak inverse voltage
4th	1st	3.3 Filters: 3.3.1 Shunt capacitor filter
	2nd	3.3.2 Choke input filter
	3rd	3.3.3 π filter
	4th	**RECTIFIER CIRCUITS & FILTERS:** Classification of rectifiers
5th	1st	Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate:
	2nd	DC output current and voltage RMS output current and voltage
	3rd	DC output current and voltage RMS output current and voltage
	4th	Rectifier efficiency Ripple factor Regulation

Week	Class Day	Theory / Practical Topics
6th	1st	Rectifier efficiency Ripple factor Regulation
	2nd	Transformer utilization factor Peak inverse voltage
	3rd	**Filters:** Shunt capacitor filter
	4th	Choke input filter π filter
7th	1st	**TRANSISTORS:** Principle of Bipolar junction transistor
	2nd	Principle of Bipolar junction transistor
	3rd	Different modes of operation of transistor
	4th	Current components in a transistor
8th	1st	Current components in a transistor
	2nd	Transistor as an amplifier
	3rd	Transistor circuit configuration & its characteristics CB Configuration
	4th	Transistor circuit configuration & its characteristics CB Configuration
9th	1st	CE Configuration CC Configuration
	2nd	**TRANSISTOR CIRCUITS:** Transistor biasing
	3rd	Stabilization
	4th	Stability factor
10th	1st	Different method of Transistors Biasing
	2nd	Different method of Transistors Biasing
	3rd	Base resistor method
	4th	Collector to base bias

Week	Class Day	Theory / Practical Topics
11th	1st	Self bias or voltage divider method
	2nd	**TRANSISTOR AMPLIFIERS & OSCILLATORS:** Practical circuit of transistor amplifier
	3rd	DC load line and DC equivalent circuit
	4th	AC load line and AC equivalent circuit
12th	1st	Calculation of gain Phase reversal H-parameters of transistors
	2nd	Calculation of gain Phase reversal H-parameters of transistors
	3rd	Simplified H-parameters of transistors Generalised approximate model
	4th	Analysis of CB, CE, CC amplifier using generalised approximate model
13th	1st	Multi stage transistor amplifier R.C. coupled amplifier
	2nd	Transformer coupled amplifier Feed back in amplifier General theory of feed back
	3rd	Negative feedback circuit Advantage of negative feed back
	4th	Power amplifier and its classification Difference between voltage amplifier and power amplifier
14th	1st	Transformer coupled class A power amplifier Class A push – pull amplifier Class B push – pull amplifier
	2nd	Oscillators Types of oscillators
	3rd	Principle of operation of tuned collector, Hartley, colpitt, phase shift, wein-bridge oscillator (no mathematical derivations)
	4th	**FIELD EFFECT TRANSISTOR:** Classification of FET
15th	1st	Advantages of FET over BJT
	2nd	Principle of operation of BJT
	3rd	FET parameters (no mathematical derivation) DC drain resistance
	4th	FET parameters (no mathematical derivation) DC drain resistance

Week	Class Day	Theory / Practical Topics
16th	1st	AC drain resistance
	2nd	Biasing of FET
	3rd	**OPERATIONAL AMPLIFIERS:** General circuit simple of OP-AMP and IC – CA – 741 OP AMP
	4th	Operational amplifier stages Equivalent circuit of operational amplifier
17th	1st	Open loop OP-AMP configuration OPAMP with fed back
	2nd	Inverting OP-AMP Non inverting OP-AMP
	3rd	Inverting OP-AMP Non inverting OP-AMP
	4th	Voltage follower & buffer
18th	1st	Differential amplifier Adder and summing amplifier
	2nd	Sub tractor
	3rd	Integrator Differentiator
	4th	Comparator

Sign. Of Faculty

Sign. Of HOD