

# GOPAL KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

**GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005**

## **LESSON PLAN**

**Name of the Subject:** ANALOG ELECTRONIC CIRCUIT

**Name of the Faculty:** Jagannath Das

**Semester:** 3<sup>rd</sup> Semester

**Branch:** ETC

**Semester From:** July to December

**No. of Weeks:** 15 Weeks

Week	Day	Theory/ Practical Topics	Classes
1		<b>Unit 1 - Biasing of BJT, Small Signals Modelling of BJT and their analysis</b>	<b>8</b>
	1.	Analysis, DC Load line	1
	2.	Operating Point, Fixed bias	1
	3.	Emitter bias, Voltage-divider bias	1
	4.	DC bias with voltage feedback, Bias stabilization	1
2	5.	The re transistor model, Hybrid equivalent model	1
	6.	small signal analysis of CE, CC, CB amplifier	1
	7.	Emitter Follower; Cascade Amplifier	1
	8.	Darlington connections and Current Mirror Circuit	1
		<b>Unit 2- Biasing of FET and MOSFET, Small Signal operation and models of FET and MOSFETs</b>	<b>8</b>
3	9.	Fixed bias configuration	1
	10.	Self-bias configuration, Voltage divider bias and design.	1
	11.	Small signal equivalent models	1
	12.	Single-stage MOSFET Amplifiers	1
4	13.	Common-Source (CS) amplifiers	1
	14.	Common-Source amplifiers with a source resistance	1
	15.	Common-Gate (CG) amplifiers	1
	16.	Common-Drain (CD) or Source follower amplifiers and cascaded system	1
		<b>Unit 3- Frequency Response of BJTs and FETs</b>	<b>4</b>
5	17.	OP-AMP Specifications, DC offset parameters, frequency parameters	1
	18.	Gain-bandwidth, Slew rate, OP-AMP Applications	1
	19.	voltage buffer, differentiator, and Integrator	1
	20.	Instrumentation amplifier	1
6		<b>Unit 4- Operational Amplifiers</b>	<b>4</b>
	21.	Low Frequency Response of BJTs (CE) Amplifier, Low Frequency Response of FETs (CS) Amplifier	1
	22.	Miller Effect Capacitance, High Frequency Response of BJTs (CE) Amplifier	1

	23.	High Frequency Response of FETs (CS) Amplifier, Multi stage frequency effect	1
7	24.	Square Wave testing of amplifiers	1
		<b>Unit 5 - Oscillators and power amplifiers</b>	<b>6</b>
	25.	Positive feedback circuit as Oscillator	1
	26.	Barkhausen's criteria for oscillation	1
	27.	Oscillators (Wien Bridge Oscillator, R-C phase shift oscillator and Crystal Oscillator)	1
8	28.	Classification of Power Amplifiers	1
	29.	Power dissipation and power conversion efficiency of Class A	1
	30.	Class B amplifiers, Push-pull amplifier	1
	31.		1
	32.		1

### **COURSE OUTCOME:**

After completion of course, student should be able to

1. CO1: Understand BJT biasing and stabilization and analyse transistor re and hybrid models.
2. CO2: Understand the characteristics and configurations of single stage MOSFET amplifiers.
3. CO3: Design amplifier circuits using BJT, FET and study the low and high frequency response of BJT, FET amplifiers.
4. CO4: Understand operational amplifier's specifications, parameters, and its various applications.
5. CO5: Explain various oscillator circuits and power amplifiers.

### **Books Recommended:**

1. Microelectronic Circuits – Sedra& Smith, International Student Edition
2. Electronic Devices and Circuit Theory – Robert L.Boylestad and LowisNashelsky, Pearson Publication, New Delhi, 10th edition