

Lesson Plan			
	Discipline: ETC	Semester-4th Summer-2022	Name of the Teaching Faculty: Rabindra kumar satapathy (Lecture ETC Engg)
Sl. No.	Subject-Th-4 ANALOG ELECTRONICS & LINEAR IC	No. Of Days/Week class alloted:05	Semester From date: 14.03.2022 To date: 10.06.2022 No of weeks: 15
	Weeks/Months	Class Day	Topic
1	3rd week of march	1st	1.1 Working principle, of Diode & its current equation, Specification and use of p-n junction diode.
		2nd	1.2 Breakdown of diode (Avalanche & Zener Breakdown) and Construction, working, Characteristics
		3rd	1.3 Classification of Rectifiers and working of different types of Rectifiers- Half-Wave Rectifier, Full-Wave Rectifier (CT & BRIDGE type)
		4th	1.4 Working principle of p-n-p and n-p-n transistor, different types of transistor connection (CB, CE and CC) & input and output characteristics of transistor in different connections.
2	4th week of march	1st	1.5 Define ALPHA, BETA and GAMMA of transistors in various modes. Establish the Mathematical relationship between them.
		2nd	1.6 Basic concept of Biasing, Types of Biasing, h-parameter model of BJT, load line (AC & DC) and determine the Q-point.
		3rd	1.7 Types of Coupling, working principle and use of R-C Coupled Amplifier & Frequency Responses of R-C coupled Amplifier & draw the curve.
		4th	Unit-2: AUDIO POWER AMPLIFIERS. 2.1 Classify Power Amplifier & Differentiate between Voltage and Power Amplifier.
3	5th week of march	1st	2.2 Working principle of different types of Power Amplifier (Class-A, Class-AB, Class-B and Class-C & Class D amplifier).
		2nd	Unit-3: FIELD EFFECT TRANSISTOR (FET). 3.1 FET & its classifications & Differentiate between JFET & BJT.
		3rd	3.2 Construction, working principle & characteristics of JFET & Explain JFET as an amplifier, parameters of JFET & Establish relation among JFET parameters.
		4th	3.3 Construction & working principle MOSFET & its classification & characteristics (Drain & Transfer)
4	1st week of april	1st	3.4 Explain the operation of CMOS, VMOS & LDMOS.
5	2nd week of april	2nd	4.1 Define & classify Feedback Amplifier, principle of negative feedback with the help of block diagram. Types of feedback – negative & positive feedback
		2nd	4.2 Types of negative feedback – voltage shunt, voltage series, current shunt & current series and characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise, distortion in amplifiers.
		3rd	4.3 Oscillator -block diagram of sine wave oscillator Types Requirement of oscillation- Barkhausen criterion

		4th	4.4 RC oscillators – RC phase shift ,Crystal, LC oscillators – Colpitts , Hartley & Wien Bridge Oscillators :Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability
6	3rd week of april	1st	Unit-5: TUNED AMPLIFIER & WAVE SHAPING CIRCUIT 5.1 Defined and classify Tuned amplifier, Explain parallel Resonant circuit, Resonance Curve & sharpness of Resonance.
		2nd	5.2 working principle of Single tuned Voltage& Double tuned Amplifier & its limitation
		3rd	5.3 Different type of Non-linear circuits - Clipper, diode series & shunt, positive& negative biased & unbiased and combinational clipper clippers circuit & its application
		4th	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
7	4th week of april	1st	5.5 Working of Astable, Monostable & Bistable Multivibrator with circuit diagram.
		2nd	5.6 Working& use of Integrator and Differentiator circuit using R- C circuit(Linear), input / output waveforms & frequency response.
		3rd	Unit-6: OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS 6.1 Differential amplifier & explain its configuration & significance.
		4th	6.2 Block diagram representation of a typical Op- Amp, its equivalent circuits and draw the schematic symbol
8	1st week of may	1st	6.3 Discuss the types of integrated circuits manufacturer's designations of ICs, Package types, pin identification and temperature and ordering information.
		2nd	6.4 Define the following electrical characteristics input offset voltage, input offset current, CMMR, Large signal voltage gain, Slew rate .
		3rd	6.5 Draw and explain the Open Loop configuration (inverting, non-inverting Amplifier)
		4th	6.6 Draw the circuit diagram of the voltage series feedback amplifier and derive the close loop Voltage gain, gain of feedback circuits input resistance, and output resistance, bandwidth and total output offset voltage with feedback
9	2nd week of may	1st	6.7 Draw the circuit diagram of the voltage shunt feedback amplifier and derive the close loop, Voltage gain, gain of feedback circuits and input resistance, and output resistance, bandwidth and total output offset voltage with feedback.
		2nd	Unit-7. APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS& IC voltage regulator 7.1 Discuss the summing scaling and averaging of inverting and non-inverting amplifiers
		3rd	7.2 DC & AC Amplifies using OP-AMP..
		4th	7.3 Integrator and differentiator using op-amp.
10	3rd week of may	1st	7.4 Active filter and describe the filter design of fast order low Pass Butterworth
		2nd	7.5 Concept of Zero-Crossing Detector using Op-Ampe



10	3rd Week of May	3rd	7.6 Block diagram and operation of IC 555 timer & IC 565 PLL & its applications.
		4th	7.7 Working of Current to voltage Convertor using Operational Amplifier
11	4th Week of May	1st	7.8 Working of the Voltage to Frequency Convertor using Operational Amplifier.
		2nd	7.9 Working of the Frequency to Voltage Conversion using Operational Amplifier.
		3rd	7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317.
		4th	5.6 Working & use of Integrator and Differentiator circuit using R-C circuit (Linear), input / output waveforms & frequency response.
12	1st week of June	1st	Unit-6: OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS <u>6.1 Differential amplifier &amp; explain its configuration &amp; significance.</u>
		2nd	7.9 Working of the Frequency to Voltage Conversion using Operational Amplifier.
		3rd	6.2 Block diagram representation of a typical Op- Amp, its equivalent circuits and draw the schematic symbol
		3rd	6.3 Discuss the types of integrated circuits manufacturer's designations of ICs, Package types, pin identification and temperature and ordering
		4th	6.4 Define the following electrical characteristics input offset voltage, input offset current, CMMR, Large signal voltage gain, Slew rate .
13	2nd week of June	1st	6.5 Draw and explain the Open Loop configuration (inverting, non-inverting Amplifier)
		2nd	6.6 Draw the circuit diagram of the voltage series feedback amplifier and <u>derive the close loop Voltage gain, gain of feedback circuits input resistance.</u>
		3rd	6.7 Draw the circuit diagram of the voltage shunt feedback amplifier and <u>derive the close loop Voltage gain, gain of feedback circuits and input</u>
		4th	7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317.
14	3rd week of June		Unit-7. APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS & IC voltage regulator
		2nd	7.2 DC & AC Amplifiers using OP-AMP..
		3rd	7.3 Integrator and differentiator using op-amp.
		4th	7.3 Integrator and differentiator using op-amp.
15	3rd week of June	1st	7.7 Working of Current to voltage Convertor using Operational Amplifier
		2nd	7.8 Working of the Voltage to Frequency Convertor using Operational Amplifier.
		3rd	7.9 Working of the Frequency to Voltage Conversion using Operational Amplifier.
		4th	7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317.