

Lesson Plan

		Name of the Teaching Faculty:- Sri.Rabindra kumar satapathy(Guest Faculty. ETC Engg)	
Discipline: ETC	Semester-4th Summer-2024		
SI. No.	Subject-Th.4. (ANALOG ELECTRONICS & LINEAR IC)	No. Of Days/Week class alloted:05	Semester From date: 16.01.2024 To date: 26.04.2024 (No of weeks: 15)
Weeks/Months	Class Day	Topic	
1	3rd week 16 jan To 20 jan	1st	Unit-1:DIODE, TRANSISTORS AND CIRCUITS. 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.
		5th	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 22 jan To 27 jan	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	1.6 Basic concept of Biasing, Types of Biasing, h-parameter model of BJT, load line (AC & DC) and determine the Q-point.
		4th	1.7 Types of Coupling, working principle and use of R-C Coupled Amplifier & Frequency
		5th	1.7 Responses of R-C coupled Amplifier & draw the curve.
3	5th week 29 jan To 1st week 03 feb	1st	Unit-2: AUDIO POWER AMPLIFIERS.
		2nd	1.1 Classify Power Amplifier & Differentiate between Voltage and Power
		3rd	1.2 Working principle of different types of Power Amplifier
		4th	1.2(Class-A, Class-AB, Class-B and Class-C & Class D amplifier).
		4th	1.2(Class-A, Class-AB, Class-B and Class-C & Class D amplifier).
4	2nd week 05 feb To 10 feb	1st	1.3 Construction and working principle and advantages of Push Pull (Class-B) Amplifiers
		2nd	Unit-3: FIELD EFFECT TRANSISTOR (FET).
		3rd	3.1 FET & its classifications & Differentiate between JFET & BJT.
		4th	3.2 Construction, working principle & characteristics of JFET & Explain JFET as an amplifier
		5th	3.2 Construction, working principle & characteristics of JFET & Explain JFET as an amplifier
5	3rd week 12 feb To 17 feb	1st	3.2 amplifier, parameters of JFET & Establish relation among JFET parameters.
		2nd	3.3 Construction & working principle MOSFET & its classification & characteristics (Drain & Transfer)
		3rd	3.4 Explain the operation of CMOS, VMOS & LDMOS.
		4th	3.4 Explain the operation of CMOS, VMOS & LDMOS.
		4th	Unit-4: FEED BACK AMPLIFIER & OSCILLATOR

6	4th week 19 feb To 24 feb	1st	4.1 Define & classify Feedback Amplifier, principle of negative feedback with the help of block diagram
		2nd	4.1 Types of feedback – negative & positive feedback.
		3rd	4.2 Types of negative feedback – voltage shunt, voltage series, current shunt & current series
		4th	4.2 and characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise, distortion in amplifiers.
		4th	4.2 and characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise, distortion in amplifiers.
7	5th week 26 feb To 1st week 02 march	1st	4.3 Oscillator -block diagram of sine wave oscillator, Types Requirement of oscillation Barkhausen criterion.
		2nd	4.4 RC oscillators – RC phase shift, Crystal, LC oscillators – Colpitts, Hartley & Wien Bridge Oscillators
		3rd	4.4 Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability
		4th	4.4 Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability
		4th	Unit-5: TUNED AMPLIFIER & WAVE SHAPING CIRCUIT
8	2nd week 04 march To 09 march	1st	5.1 Define 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
		4th	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
		5th	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
9	3rd week 11 march To 16 march	1st	5.5 Working of Astable, Monostable & Bistable Multivibrator with circuit diagram.
		2nd	5.6 Working & use of Integrator and Differentiator circuit using
		3rd	5.6 R- C circuit (Linear), input/output waveforms & frequency response
		4th	5.6 R- C circuit (Linear), input/output waveforms & frequency response
		5th	Unit-6: OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS
10	4th week 18 march To 23 march	1st	6.1 Differential amplifier & explain its configuration & significance.
		2nd	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 information.
		4th	6.3 Discuss the types of integrated circuits manufacturer's designations of ICs, Package types, pin identification and temperature and ordering information.
		5th	6.4 Define the following electrical characteristics input offset voltage, input offset current, CMMR, Large signal voltage gain, Slew rate.

11	5th week 25 march To 30 march	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 derive the close loop Voltage gain, gain of feedback circuits input resistance, and output resistance, bandwidth and total output offset voltage with feedback.
		3rd	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.
		4th	6.7 Draw the circuit diagram of the voltage shunt feedback amplifier and derive the close loop, Voltage gain
		5th	6.7 voltage gain of feedback circuits and input resistance, and output resistance, bandwidth and total output offset voltage with feedback.
12	1st week 01 april To 06 april	1st	Unit-7. APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS& IC voltage regulator
		2nd	7.1 Discuss the summing scaling and averaging of inverting and non-inverting amplifiers
		3rd	7.2 DC & AC Amplifies using OP-AMP.
		4th	7.2 DC & AC Amplifies using OP-AMP.
		5th	7.3 Integrator and differentiator using op-amp. feedback control: proportional, integral and derivative
13	1st week 08 april To 13 april	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-Amp
		3rd	7.6 Block diagram and operation of IC 555 timer & IC 565 PLL& its applications.
		4th	7.6 Block diagram and operation of IC 555 timer & IC 565 PLL& its applications.
		5th	7.7 Working of Current to voltage Convertor using Operational Amplifier
14	1st week 15 april To 20 april	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.
		3th	7.10 Operation of power supply using 78XX and 79XX
		4th	7.10LM 317 Series with their PIN configuration
		5th	7.11 Functional block diagram & Working of
15	1st week 22 april To 26 april	1st	7.6 Block diagram and operation of IC 555 timer & IC 565 PLL& its applications.
		2nd	7.8 Working of the Voltage to Frequency Convertor using Operational
		3rd	7.8 Working of the Voltage to Frequency Convertor using Operational
		4th	8.1 Frequencyresponse, Relationship between time & frequency response
		5th	7.10LM 317 Series with their PIN configuration

Signature of the Teacher

LESSON PLAN

Discipline: ETC		Semester- 6th Summer- 2024	Name of the Teaching Faculty:- Sri RABINDRA KUMAR SATAPATHY (GUEST FACULTY) & B.B.NAIK (TS) . ETC Engg.
Sl. No.	Subject-Th.4 (Internet Of Things(IOT)-2024 SUMMER	No. Of Days/Week class alloted:04	Semester From date: 16.01.2024 To date: 26.04.2024 (No of weeks: 15)
Weeks/Months		Class Day	Topic
1	3rd week 16 jan To 20 jan	1st	Introduction to IoT 1.1 What is IoT..
		2nd	1.2 Architectural Overviews,
		3rd	1.3 Design principles and needed capabilities
		4th	1.4 IoT Applications, Sensing, Actuation,
2	4th week 22 jan To 27 jan	1st	1.5 Basics of Networking, M2M and IoT Technology I. 1.6 Fundamentals- Devices and gateways
		2nd	1.7 Data management, Business processes in IoT,
		3rd	1.8 Everything as a Service(XaaS),
		4th	1.9 Role of Cloud in IoT, Security aspects in IoT.
3	5th week 29 jan To 1st week 03 feb	1st	1.9 Role of Cloud in IoT, Security aspects in IoT. 2.1 Hardware Components- Computing (Arduino, Raspberry Pi),
		2nd	2.1 Hardware Components- Computing (Arduino, Raspberry Pi),
		3rd	2.1 Hardware Components- Computing (Arduino, Raspberry Pi),
			2.2 Communication, Sensing, Actuation, I/O interfaces..
		4th	2.2 Communication, Sensing, Actuation, I/O interfaces.
4	2nd week 05 feb To 10 feb	1st	2.2 Communication, Sensing, Actuation, I/O interfaces.
		2nd	2.3 Software Components- Programming API's (using Python/Node.js/Arduino) for Communication
		3rd	2.3 Software Components- Programming API's (using Python/Node.js/Arduino) for Communication
		4th	2.4 Protocols-MQTT, ZigBee, Bluetooth, CoAP, UDP, TCP.
5	3rd week 12 feb To 17 feb	1st	3. IoT Application Development .
		2nd	3.1 Solution framework for IoT applications
		3rd	3.2 Implementation of Device integration,
		4th	3.2 Implementation of Device integration,
6	4th week 19 feb To 24 feb	1st	3.3 Data acquisition and integration,
		2nd	3.4 Device data storage- Unstructured data storage on cloud/local server,
		3rd	3.4 Device data storage- Unstructured data storage on cloud/local server,
		4th	3.5 Authentication, authorization of devices.
7	5th week 26 feb To 1st week of 02 march	1st	4. Smart Technology 4.1 Understanding the IoT Big Picture
		2nd	4.1 Understanding the IoT Big Picture
		3rd	4.2 Building the Internet of Things
		4th	4.2 Building the Internet of Things
8	2nd week 04 march To 09 march	1st	4.3 Understanding Smart Devices, Building Blocks
		2nd	4.4 Understanding Network Connections
		3rd	4.4 Understanding Network Connections
		4th	4.5 Understanding IP Adressesle.

9	3rd week 11 march To 16 march	1st	4.5 Understanding IP Adressesle.
		2nd	4.6 Understanding cellular Network & Mesh Network
		3rd	5. Smart TVs: Viewing in a Connected World
		4th	5.1 What is Smart TV & its use
10	4th week 18 march To 23 march	1st	5.1 What is Smart TV & its use
		2nd	5.2 What is inside Smart TV
		3rd	5.2 What is inside Smart TV
		4th	5.2 What is inside Smart TV
11	5th week 25 march To 30 march	1st	5.3 What a Smart TV does
		2nd	5.4 Smart TV Operating Systems
		3rd	5.4 Smart TV Operating Systems
		4th	5.5 What is Smart TV Set-TopDevices
12	1st week 01 april To 06 april	1st	5.4 Smart TV Operating Systems
		2nd	5.5 What is Smart TV Set-TopDevices
		3rd	5.5 What is Smart TV Set-TopDevices
		4th	5.6 Intergrating Smart TV in to IOT
13	1st week 08 april To 13 april	1st	5.6 Intergrating Smart TV in to IOT
		2nd	5.6 Intergrating Smart TV in to IOT
		3rd	6. IoT Case Studies
		4th	6. IoT Case Studies
14	1st week 15 april To 20 april	1st	a. Smart Home
		2nd	b. Smart car
		3th	c. Smart Ciessi
		4th	d. Smart Drones
15	1st week 22 april To 26 april	1st	a. Smart car
		2nd	b. Smart car
		3th	c. Smart Ciessi
		4th	d. Smart Drones

Signature of the Faculty