ELECTRONIC DEVICES AND CIRCIUTS LAB

III Semester: ECE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AECB09	Core	-		3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45				Total Classes: 45		

OBJECTIVES:

The course should enable the students to:

I. Implement and study the characteristics of Diodes and Transistors.
II. Illustrate the concept of rectification using half wave and full wave rectifiers.
III. Design and Construct different amplifier circuits.

COURSE LEARNING OUTCOMES (CLOs):

1. Understand identification, specifications, testing of R, L, C components (Color Codes), potentiometers, switches (SPDT, DPDT and DIP), coils, gang condensers, relays, bread boards, PCBs, identification, specifications and testing of active devices, diodes, BJTs, low power JFETs, MOSFETs, power transistors, LEDs, LCDs, optoelectronic devices, SCR, UJT,DIACs.
2. Study and operation of a. Multimeters (Analog and Digital) b. Function Generator c. Regulated Power Supplies d. Study and Operation of CRO
3. Verification of V-I characteristics of PN diode and calculate static and dynamic resistance using hardware and digital simulation.
4. Verification of V-I characteristics of Zener diode and perform Zener diode as a Voltage regulator using hardware and digital simulation.
5. Verification of half wave rectifier without and with filters using hardware and digital simulation.
6. Verification of full wave rectifier without and with filters using hardware and digital simulation.
7. Verification of input and output characteristics of CB configuration using hardware and digital simulation.
8. Verification of input and output characteristics of CE configuration using hardware and digital simulation.
9. Determine the Gain and Bandwidth of CE amplifier using hardware and digital simulation.
10. Determine the Gain and Bandwidth of CC amplifier using hardware and digital simulation.
11. Verification of V-I Characteristics of UJT using hardware and digital simulation.
12. Verification of V-I Characteristics of SCR using hardware and digital simulation.
13. Verification of V-I Characteristics of FET using digital simulation.
14. Determine the Gain and Bandwidth of CS amplifier using digital simulation
15. Determine the Gain and Bandwidth of CS amplifier using digital simulation.

WEEK-1 ELECTRONIC WORKSHOP PRACTICE

Identification, specifications, testing of R, L, C components (Color Codes), potentiometers, switches (SPDT, DPDT and DIP), coils, gang condensers, relays, bread boards, PCBs, identification, specifications and testing of active devices, diodes, BJTs, low power JFETs, MOSFETs, power transistors, LEDs, LCDs, optoelectronic devices, SCR, UJT,DIACs.

WEEK-2	ELECTRONIC WORKSHOP PRACTICE
Study and operation of a. Multimeters (Analog and Digital) b. Function Generator c. Regulated Power Supplies d. Study and Operation of CRO.	
WEEK-3	**PN DIODE CHARACTERISTICS**
Verification of V-I characteristics of PN diode and calculate static and dynamic resistance using hardware and digital simulation.	
WEEK-4	**ZENER DIODE CHARACTERISTICS AND VOLTAGE REGULATOR**
Verification of V-I characteristics of Zener diode and perform Zener diode as a Voltage regulator using hardware and digital simulation.	
WEEK-5	**HALF WAVE RECTIFIER**
Verification of half wave rectifier without and with filters using hardware and digital simulation.	
WEEK-6	**FULL WAVE RECTIFIER**
Verification of Full Wave Rectifier without and with filters using hardware and digital simulation.	
WEEK-7	**TRANSISTOR CB CHARACTERISTICS**
Verification of Input and Output characteristics of CB configuration using hardware and digital simulation.	
WEEK-8	**TRANSISTOR CE CHARACTERISTICS**
Verification of Input and Output Characteristics of CE configuration using hardware and digital simulation.	
WEEK-9	**FREQUENCY RESPONSE OF CE AMPLIFIER**
Determine the Gain and Bandwidth of CE amplifier using hardware and digital simulation.	
WEEK-10	**FREQUENCY RESPONSE OF CC AMPLIFIER**
Determine the Gain and Bandwidth of CC amplifier using hardware and digital simulation.	
WEEK-11	**UJT CHARACTERISTICS**
Verification of V-I Characteristics of UJT using hardware and digital simulation.	
WEEK-12	**SCR CHARACTERISTICS**
Verification of V-I Characteristics of SCR using hardware and digital simulation.	
WEEK-13	**FET CHARACTERISTICS**
Verification of V-I Characteristics of FET using digital simulation	
WEEK-14	**FREQUENCY RESPONSE OF CS AMPLIFIER**
Determine the Gain and Bandwidth of CS amplifier using digital simulation.	
WEEK-15	**FREQUENCY RESPONSE OF CD AMPLIFIER**
Determine the Gain and Bandwidth of CS amplifier using digital simulation	

Reference Books:

1. J. Millman, C.C.Halkias, Millman's, "Integrated Electronics",Tata McGraw Hill, 2nd Edition, 2001.
2. J. Millman, C.C.Halkias and Satyabrata Jit, "Millman's Electronic Devices and Circuits", Tata McGraw Hill, 2nd Edition, 1998.
3. Mohammad Rashid, "Electronic Devices and Circuits", Cengage learning, 1st Edition, 2014.
4. David A. Bell, "Electronic Devices and Circuits", Oxford University Press, 5 th Edition, 2009.

Web References:

1. https://archive.org/details/ElectronicDevicesCircuits
2. http://www.tedpavlic.com/teaching/osu/ece327/