ELECTRONIC DEVICES AND AMPLIFIER CIRCUITS LAB

Course Code	**19EE3352**	**Year**	II	**Semester**	I
Course Category	Program Core	**Branch**	EEE	**Course Type**	Lab
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	Nil
Continuous Internal Evaluation:	25	**Semester End Evaluation:**	50	**Total Marks:**	75

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Measure the device small signal parameters of BJT and MOSFET.
CO2	Design, simulate and implement BJT and MOSFET amplifiers for the given specifications.
CO3	Construct NMOS differential amplifier circuits for the given specifications.
CO4	Fabricate PCB for multivibrator circuits using BJT.

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)

Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation

* - Average value indicates course correlation strength with mapped PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	3			1	1	1	2	2	2	2
CO2	3	3	2	3	3			1	1	1	2	2	2	2
CO3	3	3	2	3	3			1	1	1	2	2	2	2
CO4	3	3	2	3	3			1	1	1	2	2	2	2

Syllabus

Expt. No.	Contents	Mapped CO
1	Voltage-Current Characteristics of BJT / Measurement of scale current & common emitter current gain	CO1
2	Measurement of small signal parameters (g_m, r_o, r_π, r_e) of BJT at a given operating (Q) point .	CO1

3	Design, Simulate and Implement BJT amplifier and Inverter logic gate	CO1
4	Voltage-Current Characteristics of MOSFET / Measurement of threshold voltage	CO1
5	Measurement of small signal parameters (g_m,r_o,g_{mb}) of MOSFET at a given operating point.	CO1
6	Design and simulation of basic NMOS current mirror, cascode NMOS current mirror and current steering circuit	CO2
7	Design and Simulation of Common Source Amplifier for Gain, Power dissipation requirements	CO2
8	Design and Simulation of Common Drain Amplifier (Voltage Buffer) for Gain, Output Impedance, Level Shift requirements	CO2
9	Analysis and Verification of Basic NMOS Differential Pair for Gain, Input Common Mode Range, Maximum Input differential voltage requirements	CO3
10	Design and Simulation of Differential Amplifier with active current mirror load for gain, power dissipation CMRR requirements.	CO3
11	Design, Simulation and PCB fabrication of a BJT Multivibrator Circuit	CO4

Learning Resources
Text Books
1.Adel S. Sedra, Kenneth C. Smith, Arun N. Chandorkar, Microelectronic Circuits, 6/e, Oxford University Press, 2013.
Reference Books
1. Behzad Razavi, Fundamentals of Microelectronics, 2/e, Wiley Student Edition, 2013. 2. Robert L. Boylestad, Louis Nashelsky, Electronic Devices and Circuits Theory, 10/e, Pearson Education, 2009. 3. Dharma Raj Cheruku, B T Krishna, Electronic Devices and Circuits, 2/e, Pearson Education, 2008.
e- Resources & other digital material
https://www.researchgate.net/publication/314154179_Electronics_Lab_Manual http://abexp.aiaiai.dk/electronic_devices_and_circuits_lab_manual_bgpltd.pdf