K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE
Department of Electronics & Communication Engg.
FIRST / SECOND SEMESTER SYLLABUS – 2025 scheme

Course: Fundamentals of Electronics and Communication Engineering Lab		Semester	I/II
Course Code	**25BPSL207D**	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	0:0:2:0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	03
Examination type (SEE)	**Practical**		

Course outcome (Course Skill Set)

At the end of the course, the student will be able to

1. Apply the operating principles of diodes, transistors, and MOSFETs to construct and test basic analog circuits.
2. Implement operational amplifier configurations such as inverting, non-inverting, integrator, and differentiator for analog signal processing applications.
3. Analyze the functionality of logic gates and combinational circuits including adders, subtractors, and code converters using digital ICs.
4. Investigate amplitude modulation to explore fundamental analog communication techniques.
5. Develop solutions to open-ended electronic design problems by selecting appropriate components, constructing circuits, and interpreting results to meet defined objectives.

Note:

1.The laboratory syllabus consists of PART-A and PART-B. While PART-A has 6 conventional experiments, PART-B has 6 typical open-ended experiments. The maximum marks for the laboratory course are 100.

2.Both PART-A and PART-B are considered for CIE and SEE.

3.Students have answer 1(one) question from PART-A and 1(one) question from PART-B.

a) The questions set for SEE shall be from among the experiments under PART-A. It is evaluated for 70 marks out of the maximum 100 marks.

b) The open-ended question set for SEE shall be any other open-ended question and not selected from the experiments under PART-A. It shall be evaluated for 30 marks.

4.For continuous internal evaluation, during the semester, classwork, the typical open-ended questions shall be from PART-B, and any other similar questions to enhance the skill of the students

PART – A : CORE/BASIC HARDWARE EXPERIMENTS

1. Design and Testing of Half-Wave and Full-Wave Rectifiers With and Without Filter for Determining Ripple Factor, Voltage Regulation, and Efficiency
2. Design and Testing of Bridge Rectifier With and Without Filter for Determining Ripple Factor, Voltage Regulation, and Efficiency
3. Analysis of Input and Output Characteristics of a Bipolar Junction Transistor in

Common Emitter Configuration

4. Study of Transfer and Drain Characteristics of a MOSFET in Common Source Configuration
5. Investigation of Op-Amp in Inverting and Non-Inverting Modes with Gain Measurement
6. Study of Truth Tables for OR, AND, NOT, NAND, and NOR Gates Using Basic and Universal Gates

PART – B
OPEN ENDED HARDWARE EXPERIMENTS

1. Design and Testing of Clipping and Clamping Circuits to obtain desired Transfer Characteristics
2. Design and test a single stage bipolar junction transistor amplifier to obtain desired gain and bandwidth requirements.
3. Testing of Op-Amp as voltage follower and a weighted summer with waveform analysis.
4. Design and Testing of Integrator and Differentiator Circuits using Op-Amp with Waveform Analysis
5. Amplitude Modulation using Discrete Components for Given Specifications.
6. Realization of Half/ Full Adder and Subtractor using Logic Gates.
7. Design and test Hartley Oscillator for the given frequency

Suggested Learning Resources:

Text books:

1. David A Bell, Electronic Devices and Circuits, 5th Edition, Oxford University Press, 30th Impression, 2025.
2. Ramakanth A Gayakwad, Op-amps and Linear Integrated Circuits, 4th Edition, Pearson Education, 2015.
3. John G. Proakis, Masoud Saleh, Fundamentals of Communication Systems, Second Edition, Pearson Educations, Inc., 2014.
4. D.P Kothari and I J Nagrath, Basic electronics, Second Edition, McGraw Hill Education Pvt ltd, 2018.
5. M.Morris Mano and Michael D.Ciletti, Digital Design - With an Introduction to the Verilog HDL, VHDL and System Verilog 6th Edition, Pearson Education Inc, 2024.
6. Robert L. Boylestad, Louis Nashelsky, “Electronic Devices and Circuit Theory", 11th Edition, PHI, 2016.

Web links and Video Lectures (e-Resources):

- Introduction to Basic Electronics: https://nptel.ac.in/courses/122106025
- Digital Electronic Circuits: https://nptel.ac.in/courses/108105132

Teaching-Learning Process (Innovative Delivery Methods):

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching-learning process and facilitate the achievement of course outcomes.

1. While explaining each experiment, also focus on the application of that particular experiment in the electronics industry.
2. Students need not memorize pin diagrams, these can be provided to the student during CIE and SEE.