

DIGITAL ELECTRONICS AND LOGIC DESIGN LAB**Course Code : ECE 326****Credit Unit: 01****Total Hours: 20****Course Objectives:**

- To understand number representation and conversion between different representation in digital electronic circuits.
- To analyze logic processes and implement logical operations using combinational logic circuits.
- To understand characteristics of memory and their classification.
- To understand concepts of sequential circuits and to analyze sequential systems
- To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.
- To prepare students to perform the analysis and design of various digital electronic circuits.

Course Contents:

Lab Experiments are based on the course Digital Electronics and Logic Design (ECE 306)

List of Experiments:

1. To verify the truth tables of NOT, OR, AND, NOR, NAND, XOR, XNOR gates. **(2 Hours)**
2. To obtain half adder, full adder using gates and verify their truth tables. **(2 Hours)**
3. To obtain half subtractor, full subtractor using gates and verify their truth tables. **(2 Hours)**
4. To implement control circuit using multiplexer. **(2 Hours)**
5. To convert BCD code into excess 3 code and verify the truth table. **(2 Hours)**
6. To verify the truth tables of RS, D, JK and T flip- flops. **(2 Hours)**
7. To implement and verify 3-bit bi-directional shift register. **(2 Hours)**
8. To design and study asynchronous/ripple counter. **(2 Hours)**
9. To design and study synchronous counter. **(2 Hours)**
10. To design and study a sequence detector. **(2 Hours)**

Course Outcomes:

After studying this course the students would gain enough knowledge.

- To have thorough understanding of the fundamental concepts and techniques used in digital electronics.
- To understand and examine the structure of various number systems and its application in digital design.
- The ability to understand, analyze and design various combinational and sequential circuits.
- Ability to identify basic requirements for a design application and propose a cost-effective solution.
- To develop skill to build and troubleshoot digital circuits.

Examination Scheme:

| IA | | | | EE | |
|----|----|----|---|----|----|
| A | PR | LR | V | PR | V |
| 5 | 10 | 10 | 5 | 35 | 35 |

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.