## II B.Tech – I Semester (17EC312) DIGITAL ELECTRONICS LAB

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#### Int. Marks Ext. Marks Total Marks

60 40 100

#### **Pre-Requisites:** None

#### **Course Objectives:**

To provide hand-on experience in designing and implementing digital/logic circuits. The laboratory exercises are designed to give students ability to design, build, and implement digital circuits and systems. The course uses standard ICs, wires and trainer kits and also uses tool i.e Multisim for simulation. Laboratory assignments progress from investigation of the properties of basic logic gates and to the design of combinational circuits and sequential circuits such as latches, flip-flops.

## List of Experiments:

## Cycle-1:

- 1. Logic gates IC7408, IC7432, IC7404, IC7400, IC7402, IC7486
- 2. Implementation of Boolean expressions
- 3. ADDER & SUBTRACTOR
- 4. Error Detecting and Correcting codes
- 5. Decoder & Encoder
- 6. Multiplexer & De-multiplexer
- 7. Magnitude Comparator

## Cycle-2:

- 8. Realization of Boolean expressions with PROM, PLA/PAL
- 9. Flip Flops D, SR, JK, T
- 10. Shift Register Left/Right
- 11. Ripple Counter
- 12. Ring Counter
- 13. Johnson Counter

#### **Requirements:**

- 1. Basic logic gate IC's IC7408, IC7432, IC7404, IC7400, IC7402, IC7486 & standard IC's
- 2. IC trainer Kits
- 3. Circuits Lab Software

## **Course Outcomes:**

After successful completion of the course, the students can be able to:

S.No	Course Outcome	BTL
1.	To acquire knowledge on Different Digital IC's used for design of various Digital circuits and basics of circuit's lab Software and to implement Boolean functions.	L2
2.	To design and observe the functionality of adders and Subtractors using IC'S and Circuits lab Software	L2
3.	To design a Digital Logic circuit to Detect and Correct errors in Data using ICs and Circuits Lab Software	L2
4.	To design and Observe the functionality of Various Combinational logic circuits like Multiplexers, Encoders, Decoders, Comparator etc using ICs & Circuits Lab Software	L2
5.	To design and Observe the functionality of Programmable Logic Device using ICs.	L2
6.	To design and observe the functionality of Various Sequential logic circuits like Flip- flops, Counters, and Registers etc using ICs & Circuits Lab Software	L2

# **Correlation of COs with POs & PSOs:**

CO	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	2	-	3	-	-	-	3	2	2	-	2	3
CO 2	3	2	3	-	3	-	-	2	3	2	2	-	2	3
CO 3	3	2	3	2	3	-	-	2	3	2	2	-	2	3
CO 4	3	3	3	2	3	-	-	2	3	2	2	-	2	3
CO 5	3	3	3	2	3	-	-	2	3	2	2	-	2	3
<b>CO 6</b>	3	3	3	2	3	-	-	2	3	2	2	-	2	3