

Course Code	Course Title	L	T	P	C
1151EC302	DIGITAL ELECTRONICS LAB	0	0	2	1

**a) Course Category**

Program core

**b) Preamble**

The aim of this course is to understand the fundamental and design of digital circuits using ICs. Additionally this course includes design and implementation of combinational and sequential circuits using Verilog HDL.

**c) Prerequisite**

Nil

**d) Related Courses**

Nil

**e) Course Outcomes**

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Skill Level (Based on Dave's Taxonomy)
CO1	Demonstrate the realization of various ICs using discrete components	S2
CO2	Implement combinational circuits using ICs	S2
CO3	Implement sequential circuits using ICs	S2
CO4	Design the synchronous and asynchronous Sequential circuits using IC's	S2
CO5	Apply the Programming concepts of Verilog HDL for combinational and sequential circuits	S2

**f) Correlation of COs with POs**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	L	M	H	-	H	-	-	-	-	L	L	L	-	-
CO2	L	M	H	-	H	-	-	-	-	L	L	L	-	-

CO3	H	L	H	-	-	-	-	-	-	L	L	L	M	-
CO4	L	L	H	-	-	-	-	-	-	-	H	M	M	-
CO5	L	L	H	-	-	-	-	-	-	-	H	M	M	-

**g) Course Content:**

**List of Experiments**

**Cycle -1**

1. Realization of Gates using Discrete Components
2. Realization of Gates using Universal Building Block(NAND only)
3. Design of Combinational Logic Circuits like Half-Adder, Full-Adder, Half- Subtractor and Full-Subtractor
4. Verification of 4-Bit Magnitude Comparator
5. Design of Decoders and encoders like BCD-Decimal decoder
6. Applications of IC Parallel Adder(1's and 2's complement addition)
7. Design of Code Converters (Binary to Gray)

**Cycle -2**

8. Design of Multiplexers/De Multiplexers
9. Verification of Truth Table of Flip-Flops using Gates
10. Design of Shift register (To verify Serial to Parallel, Parallel to Serial ,Serial to Serial and Parallel to Parallel Converters) using Flip-Flop
11. Conversion of Flip-Flops (JK-T, JK-D)
12. Design Synchronous and Asynchronous Counters
13. Design and implementation of combinational circuits using Verilog HDL
14. Design and implementation of sequential circuits using Verilog HDL.