

VLSI DESIGN LAB

Course Code	19EC3652	Year	III	Semester	II
Course Category	Program Core	Branch	ECE	Course Type	LAB
Credits	1.5	L-T-P	0-0-3	Prerequisites	Digital Circuits
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	Design, Simulate & test the various Combinational logic circuits using Verilog (L6)
CO2	Design, Simulate & test the various Sequential logic circuits using Verilog (L6)
CO3	Design, Simulate & test arithmetic logic circuits using Verilog (L6)
CO4	Design, Simulate & test memories using Verilog (L6)

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	2	2	2	2	3								3	
CO2	3	2	3	2	3								3	
CO3	3	2	3	2	3								3	
CO4	3	2	3	2	3								3	
Average* (Rounded to nearest integer)	3	2	3	2	3								3	

Syllabus

Expt. No.	Contents	Mapped CO
Simulate the internal structure of the following Digital IC's using VERILOG and verify the operations of the Digital IC's (Hardware) in the Laboratory		
I	Realization of Logic Gates	CO1
II	3 to 8 Decoder -74x138	CO1
III	8 x 1 Multiplexer-74x151 and 2x 4 De-multiplexer-74x155	CO1
IV	BCD to 7-segment Decoder 74x49	CO1
V	4- Bit comparator-74x85	CO1
VI	4-Bit Binary Adder 74x83	CO3
VII	D Flip-Flop-74x74	CO2
VIII	Decade counter -74x90	CO2
IX	4 Bit counter-74x93	CO2
X	Shift registers-74x95	CO2
XI	Universal shift registers-74x194/ 195	CO2
XII	RAM (16 x 4)-74x189 (Read and Write operations)	CO4
XIII	4-Bit ALU Design – 74x181	CO3

Learning Resources**Text Books**

1. Charles H. Roth, Lizy Kurian John, Byeong Kil Lee, Digital Systems Design using Verilog, 1/e, Cengage Learning, 2016.

Reference Books

1. Kang, Leblibici, CMOS Digital Integrated Circuits, 3/e, Tata McGraw Hill, 2001.
2. Jan M. Rabaey, Digital Integrated Circuits, 2/e, Pearson Education, 2002.
3. Jackson, Hodges, Analysis and Design of Digital Integrated Circuits, 3/e, Tata McGraw Hill, 2010.

e-Resources

1. <https://nptel.ac.in/courses/106/105/106105165/>