Course Number and Name

BEC 7L1 - DIGITAL CMOS VLSI LAB

Credits and Contact Hours

2 and 45

Course Coordinator's Name

Ms M.Jasmin

Text Books and References

Lab Manual

Course Description

- To learn Hardware Descriptive Language(Verilog/VHDL)
- To learn the fundamental principles of VLSI circuit design in digital domain
- To familiarize implementation of logical modules on FPGAs

Prerequisites	Co-requisites
Digital Electronics Lab	Digital CMOS VLSI

required, elective, or selected elective (as per Table 5-1)

Required

Course Outcomes (COs)

CO1 Demonstrate a clear Understanding in hardware design language Verilog HDL
CO2 Model a Combinational circuit using hardware description language Verilog HDL and validate its functionality
CO3 Design and implement a sub system on a FPGA board..
CO4 Model a Sequential circuit using hardware description language Verilog HDL and validate its functionality
CO5 Demonstrate implementation of FPGA of ADC
CO6 To Understand the FPGA implementation of Traffic Light Controller

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H				H	M		M		H	H
CO2	M	M	H		H	M	H		M		
CO3	M	H		H			L	M	M	M	M
CO4	M	H	H	M	H	M	H		M		
CO5		L		M					L		
CO6				M						L	

List of Topics Covered

LIST OF EXPERIMENTS (45 hours)

1. Design and implementation of logic gates
2. Design and implementation of Half adder and full adder
3. Design and implementation of Half subtractor and full subtractor

4. Design and implementation of Boolean expressions
5. Design and implementation of simple logic circuits
6. Design and implementation of MUX & DEMUX – 4x1 and 8x1
7. Encoder and decoder – 2x4 and 3x8
8. Magnitude comparator
9. Code converters
10. Design and implementation of counters
11. Design and implementation of flipflops
12. FPGA implementation of ADC
13. FPGA implementation of traffic light controller