Subject Code	Subject Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	TW/Pracs	Tutorial	Total
ECL302	Digital System Design Laboratory	--	02	--	--	1	--	1

Subject Code	Subject Name	Examination Scheme							
		Theory Marks				Term Work	Practical & Oral	Oral	Total
		Internal assessment			End Sem. Exam				
		Test 1	Test2	Avg. Of Test 1 and Test 2					
ECL302	Digital System Design Laboratory	--	--	--	--	25	25	--	50

Laboratory plan

Maximum of 8 practicals including **minimum 2 simulations** should be conducted.

Suggested list of experiments:
1. Verify different logic gates.
2. Simplification of Boolean functions.
3. Verify Universal gates NAND and NOR and design EXOR and EXNOR gates using Universal gates.
4. Implement Half adder, Full adder, Half subtractor and Full subtractor circuits.
5. Implement BCD adder using four bit binary adder IC-7483.
6. Flip flops conversion JK to D, JK to T and D to TFF.
7. Implement logic equations using Multiplexer.
8. Design synchronous MOD N counter using IC-7490.
9. Verify encoder and decoder operations.
10. Implement digital circuits to perform binary to gray and gray to binary operations.
11. Verify truth table of different types of flip flops.
12. Verify different counter operations.
13. Write VHDL simulation code for different logic gates.
14. Write VHDL simulation code for combinational and sequential circuits
15. Write VHDL simulation code for 4:1 Multiplexer, 2 line to 4 line binary decoder

Minimum One project

Suggested list of Mini Projects:
1. Design Clock pulse generator.
2. Design Clap operated remote control for Fan.
3. Design BCD counter and show operation on Seven Segment Display.
4. Design digital stop watch.
5. Write VHDL code to implement traffic light controller.
6. Design water level indicator for overhead water tank.
7. Design frequency divider circuit.
8. Design switch debounce circuit.
9. Design sequence generator circuit.
10. Design sequence detector circuit.
11. Design Even/Odd parity generator/checker circuit.
12. Design simple LED flasher circuit.
13. Design digital dice.
14. Design fastest finger first indicator.
15. Design Toggle switch using TFF.

Note : Small project should be considered as a part of term-work.

Term Work:

At least 08 Experiments including 02 simulations covering entire syllabus must be given during the "**Laboratory session batch wise**". Computation/simulation based experiments are also encouraged. The experiments should be students centric and attempt should be made to make experiments more meaningful, interesting and innovative. Application oriented one mini-project can be conducted for maximum batch of four students.

Term work assessment must be based on the overall performance of the student with every experiments/tutorials and mini-projects are graded from time to time. The grades will be converted to marks as per "**Choice Based Credit and Grading System**" manual and should be added and averaged. Based on above scheme grading and term work assessment should be done. **The practical and oral examination will be based on entire syllabus.**