

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Practical	Tutorial	Theory	TW	Tutorial	Total
EXL 302	Digital Circuits and Design Laboratory	--	02	--	--	01	--	01

Subject Code	Subject Name	Examination Scheme								
		Theory Marks				Term Work	Practical and Oral	Oral	Total	
		Internal assessment			End					
Test 1	Test 2	Ave. Of Test 1 and Test 2		Exam						
EXL 302	Digital Circuits and Design Laboratory	--	--	--		--	25	50	-	75

Syllabus: Same as **EXC 303 (Digital Circuits and Design)**

Term Work:

At least **10** experiments covering entire syllabus of **EXC 303 (Digital Circuits and Design)** should be set to have well predefined inference and conclusion. Computation/simulation based experiments are encouraged. **Therefore, 5 simulation experiments be carried out (out of total 10 Expts.).** The experiments should be students' centric and attempt should be made to make experiments more meaningful, interesting and innovative. Term work assessment must be based on the **overall performance** of the student with **every experiment graded from time to time.** The grades should be converted into marks as per the **Credit and Grading System** manual and should be **added and averaged.** The grading and term work assessment should be done based on this scheme.

The final certification and acceptance of term work ensures satisfactory performance of laboratory work and minimum passing marks in term work. Practical and Oral exam will be based on the entire syllabus.

Suggested Experiments:

1. SOP and POS Minimization (different problem statement for each student)
2. Characteristics of TTL and MOS logic family
3. Implementation of combinational circuits using MSI devices. (at least two)
4. Implementation of counters with flip-flops (at least one synchronous and one asynchronous)
5. Implementation of sequential circuits using MSI devices. (at least two)
6. Implementation of FSM (different problem statement for each student)
7. VHDL based simulations (Instructor should teach syntax and give different program to each student for simulation. Minimum Four programs covering behavioral, structural and dataflow modeling)
8. Verilog/VHDL based simulations (Instructor should teach syntax and give different program to each student for simulation. Minimum Four programs covering behavioral, structural, dataflow and switch level modeling)
9. Synthesis, downloading and Verification on CPLD and FPGA (for both VHDL and Verilog programs)
10. Troubleshooting of given fault (teacher should generate set of faults in different circuits and ask students to troubleshoot)