

Course code	Course Name	L-T-P - Credits	Year of Introduction
EE331	Digital Circuits and Embedded Systems Lab	0-0-3-1	2016
Prerequisite: EE309 Microprocessor and embedded systems			
Course Objectives <ul style="list-style-type: none"> • To impart practical experience in the design and setup of digital circuits and embedded systems. 			
List of Exercises/Experiments : (Out of 18 experiments listed, 12 experiments are mandatory.)			
DIGITAL CIRCUITS EXPERIMENTS : (at least 7 experiments are mandatory) <ol style="list-style-type: none"> 1. Realisation of SOP & POS functions after K map reduction 2. Half adder & Full adder realization using NAND gates 3. 4-bit adder/subtractor & BCD adder using IC 7483 4. BCD to decimal decoder and BCD to 7-segment decoder & display 5. Study of multiplexer IC and Realization of combinational circuits using multiplexers. 6. Study of counter ICs (7490, 7493) 7. Design of synchronous up, down & modulo N counters 8. Study of shift register IC 7495, ring counter and Johnsons counter 9. VHDL implementation of full adder, 4 bit magnitude comparator 			
EMBEDDED SYSTEM EXPERIMENTS: (Out of first six, any two experiments using 8085 and any two using 8086. Out of the last 3 experiments, any two experiments using 8051 or any other open source hardware platforms like PIC, Arduino, MSP430, ARM etc) (at least 5 experiments are mandatory) <ol style="list-style-type: none"> 1. Data transfer instructions using different addressing modes and block transfer. 2. Arithmetic operations in binary and BCD-addition, subtraction, multiplication and division 3. Logical instructions- sorting of arrays in ascending and descending order 4. Binary to BCD conversion and vice versa. 5. Interfacing D/A converter- generation of simple waveforms-triangular wave, ramp etc 6. Interfacing A/D converter 7. Square wave generation. 8. LED and LCD display interfacing 9. Motor control 			
Expected outcome. The students will be able to <ol style="list-style-type: none"> i. design, setup and analyse various digital circuits. ii. design an embedded system for a particular application 			