Course code	Course Name	L-T-P - Credits	Year of Introduction
CS234	**DIGITAL SYSTEMS LAB**	**0-0-3-1**	**2016**

Pre-requisite: CS203 Switching theory and logic design

Course Objectives:
1. To familiarize students with digital ICs, the building blocks of digital circuits
2. To provide students the opportunity to set up different types of digital circuits and study their behaviour

List of Exercises/Experiments : (minimum 12 exercises/experiments are mandatory)

1. Familiarizations and verification of the truth tables of basic gates and universal gates.

2. Verification of Demorgan's laws for two variables.

3. Implementation of half adder and full adder circuits using logic gates.

4. Implementation of half subtractor and full subtractor circuits using logic gates.

5. Implementation of parallel adder circuit.

6. Realization of 4 bit adder/subtractor and BCD adder circuits using IC 7483.

7. Implementation of a 2 bit magnitude comparator circuit using logic gates.

8. Design and implementation of code convertor circuits

9. a) BCD to excess 3 code   b) binary to gray code

10. Implementation of multiplexer and demultiplexer circuits using logic gates. Familiarization with various multiplexer and demultiplexer ICs.

11. Realization of combinational circuits using multiplexer/demultiplexer ICs.

12. Implementation of SR, D, JK, JK master slave and T flip flops using logic gates. Familiarization with IC 7474 and IC 7476.

13. Implementation of shift registers using flip flop Integrated Circuits.

14. Implementation of ring counter and Johnson counter using flip flop Integrated Circuits.

15. Realization of asynchronous counters using flip flop ICs.

16. Realization of synchronous counters using flip flop ICs. Familiarization with various counter Integrated Circuits.

17. Implementation of a BCD to 7 segment decoder and display.

18. Simulation of Half adder, Full adder using VHDL.

    (Note: The experiments may be done using hardware components and/or VHDL)

Course outcome:

Students will be able to:

1. identify and explain the digital ICs and their use in implementing digital circuits.
2. design and implement different kinds of digital circuits.