AIMS/OBJECTIVES
The main purposes of the project are:

- To develop the student's practical knowledge of digital logic gates, circuits containing synchronous logic, and the use of microprocessors such as the PIC and Arduino.
- To gain further experience in the design, simulation, implementation & testing of digital circuits.
- To develop the ability to work on a project as a member of a team.
- To develop report writing skills

SYLLABUS
- Fundamental building blocks of digital circuits from gates to system level devices.
- Frequently used important blocks like decoders, multiplexors, flip-flops, shift registers, counters and timers.
- Use of block diagrams, circuit schematics with MULTISIM, circuit simulation & testing.
- Use of micro-controllers (Arduino) to implement tests of various stages of the electronic circuit.
- Analysis and design of combinational and synchronous digital systems.
- Maintaining good engineering documentation.

RECOMMENDED TEXT(S)

LEARNING OUTCOMES
On successful completion of this project the student will be able to:

1. Describe and plan a project involving digital electronics.
2. Construct a hardware solution for a digital electronics problem.
3. Sketch a block diagram of the circuit along with user interfaces.
4. Select a definite test strategy to check each stage of the design.
5. Obtain and describe timing waveforms.
6. Write a structured comprehensive technical report on the project.
7. Work as part of a team.
**TEACHING STRATEGIES**
The hardware construction of two real working circuits is required – one introductory project, and one more challenging circuit. The project is launched from introductory laboratory exercises with CMOS ICs. Support is on hand from the demonstrator and technical officers throughout the project.

**ASSESSMENT MODE(S)**
The written report will constitute 60% and the in-lab practical work will contribute 40% of the overall project mark.

*Note:* While this is a group project, each student must submit an individual report.