

# Digital Logic & Microprocessors Laboratory



This lab is used to conduct experiments in Digital Logic Design & Microprocessors.

## Digital Logic Design Lab

This is a very important lab for the Digital Logic Design course where students learn how to design, build and troubleshoot digital logic circuits. In this lab, students work with ready-to-use modules and also build circuits using discrete components such as TTL Integrated Circuits (ICs). The experience gained in this lab is indispensable for students working on senior design projects. Students also learn to simulate their design using MultiSim before implementing the circuit in hardware.

## Microprocessor Lab

In this lab, students learn about the hardware and software of the Motorola M68000 processor. Experiments involve programming the microprocessor and interfacing with input-output (I/O) devices. Some experiments are also conducted using EASy68K which is a cross-assembler and simulator for the M68000 and can run on any PC running Windows OS.

## Major Equipment

- Flite KL-300 Digital Logic Trainer
- Flite FLT-68K Microprocessor Trainer & Applications board
- PCs running required simulation software and cross-assembler



Flite KL-300 Digital Logic Trainer



M68000 Trainer Board



Applications Board

## Experiments

### Digital Logic Design

- Basic Logic Gates
- Combinational Circuit Design
- Sequential Circuit Design
- Design with RAM/ROM
- Simulation using MultiSim

### Microprocessors

- Addressing Modes & Data Transfer
- Arithmetic & Logic Operations
- Shift/Rotate Operations
- Interactive programs using Trap #15 functions
- Text and pixel-based graphics
- Switches and LEDs control
- Traffic Lights System
- DC Motor speed control
- Simulation using EASy68K