

# **EE337 - Microprocessors Lab**

## **Course Outline**

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# Course Overview

## Objective

- Understand and develop applications on the 8051 microcontroller
- Complements the Microprocessor theory course (EE309)

# Course Overview

## Prerequisites

- Digital circuits (EE214)
- Digital systems (EE224)
- Microprocessors (EE309) - in parallel/completed
- Basic programming skills

# Course Overview

Skills gained after completion

Microcontroller

- use IDE for developing, simulating and debugging programs
- write assembly and embedded C programs for given problem statements
- interface variety of peripherals like LCD, keypads, etc using appropriate protocols

# Course Overview

## Microcontroller - Reference text

- The 8051 Microcontroller and Embedded Systems - Using Assembly and C
  - a. Muhammad Ali Mazidi, Janice Gillispie Mazidi, and Rolin D. McKinlay
  - b. Kenneth J. Ayala, Dhananjay V. Gadre

# Website and Logistics

- Course website  
<https://ee337.github.io>
- MS Teams for meetings/interaction
- Course 'moodle' site will be used for communications, quizzes, grades
- Microcontroller kit being shipped

# Timings and Venue

- One batch
  - For 2nd years Monday : 2 to 5 PM
  - For 3rd years Wednesday : 2 to 5 PM
- Attend your assigned slot
- Additional lecture sessions as needed - mostly during lab time

# Grading Policy

- Lab sessions (60 %)
  - Approximately 8 labs
  - Follow deadlines for submissions - penalty for late submissions at 5% per day
- Lab quizzes (20 %)
  - Online in moodle
- Lab project (20 %)
  - Comprehensive use of various aspects of the microcontroller



# Attendance

- Attendance is mandatory and be available at your scheduled time
- If you can not attend a lab session for medical or other reasons, please inform us and your RA/TA
  - In such situations complete your work before the next lab turn

# Lab Organization

- About 8 experiments will be done independently (some on the kit)
  - Moodle quizzes for reflection points
- One project

# Lab Organization

## Prelab and/or homework

- Homework will be assigned on weekly basis
  - counted towards in-session work
- You are encouraged to discuss, but bring your own solution
- TAs conduct a viva to test your understanding based on your solution, counts towards participation

**Copying will be considered as cheating. You will get 0 points for that experiment.**

# Lab Organization

## Lab record

- Maintain a lab notebook (soft or hard) for noting down the in-session work, prelab work, design etc.

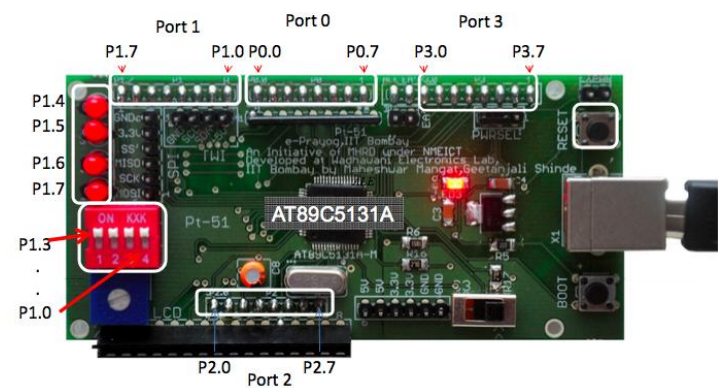
# Lab Organization

## Lab kit and softwares

- Every student will be issued a lab kit (containing a Pt-51 board, LCD and a keypad, a USB cable, and a screwdriver)
- Install the softwares (Keil and Flip) on your personal laptops and make sure the kit is working correctly (see the self-test procedure)

Note: The development board Pt-51 has been developed, soldered and tested in WEL. Thanks to Maheshwar, Shekhar, Shahin, Sadanand, Amit and Co.!

So please respect their efforts and use the boards carefully and return it (the lab kit) once you come back !



# Download links for softwares

- ARM Keil-C51 download

<https://www.keil.com/demo/eval/c51.htm#/DOWNLOAD>

(requires registration)

- FLIP download

<https://www.microchip.com/developmenttools/ProductDetails/FLIP>

# Lab Organization

Lab help

Feel free to ask !

We are here to make this lab a good/  
interesting learning platform