

EE337 - Microprocessors Lab

Course Outline

Jan 3, 2023

Instructors

TAs

Pankaj Goswami, Nidhisha D,
K Akhilesh Rao, Dhruva S H,
Naef Ahmad, Siddhant Singh Tomar,
Yerramsetti Chaitanya Kumar, Harsh Gupta,
Siddhesh Sharma, Rishabh Gautam,
Parth Makode, Gaurav Kumar,
Kirti Agrawal, Ashutosh Ranjan,
Rishabh Ajay Sureka, Farheen Shamim Ahmed Sabiha,
Anuranan Das, Aman Dhammani,
Shaun Zacharia, Patel Pranav Alpeshkumar,
Samar Pradeep Jain, Chaitanya Sri Raj Kodamanchili,
Jyoti Kumari, Ankit Kumar,
Anant Agarwal

Staff

Mahesh Bhaganagare, Amit Shetye, Maheshwar
Mangat

Faculty

Saravanan Vijayakumaran, Nikhil
Karamchandani

Timings and Venue

- Lab slot
 - BTech: **Mondays, 2 to 5 PM**
 - DD: **Tuesdays, 2 to 5 PM**
 - Repeaters: **Wednesdays, 2 to 5 PM**
- Venue: **WEL-4, 3rd floor of EE main building**

Course Objective

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

Skills Gained

- Develop, simulate and debug programs using the Keil IDE
- Write assembly and embedded C programs for given problem statements
- Interface variety of peripherals like LCD, keypad, speakers, ADC/DAC
- Understand and implement various communication protocols like SPI, UART

Prerequisites

- EE 214 Digital circuits
- EE 224 Digital systems
- EE 309 Microprocessors
 - Taking it this semester is also fine

Grading Policy

- Lab experiments (40 %)
 - Includes 5% for attendance
 - 10 lab experiments
- Midsem (25%)
 - Will be held on 11th or 12th February.
- Endsem (35%)
 - Will be held on 8th or 9th April.

Attendance

- Be present in the lab slot by 2:10pm
- If you cannot attend a lab session for medical reasons, inform us and your TA
 - Email sarva@ee.iitb.ac.in, nikhilk@ee.iitb.ac.in with CC to
 - Pankaj 203079013@iitb.ac.in
 - Nidhisha 203079011@iitb.ac.in
 - Your assigned TA

Lab Experiment Schedule

- Each student will be issued a Pt-51 board
- Lab experiment will be released on Thursdays
- Lab slot on the following Monday or Tuesday will be used for evaluation
 - Students can also use the lab slot for getting help from TAs
 - One TA/RA for a group of 6-9 students
- The completed code needs to be uploaded in Moodle
 - For BTech students, upload deadline is 5pm on Mondays
 - For DD students, upload deadline is 5pm on Tuesdays
- Penalty for late submissions:
 - 10% for delay upto 1 day from the deadline
 - 30% for delay between 1 and 2 days from the deadline
 - 60% for delay between 2 and 3 days from the deadline
 - 100% for delay more than 3 days from the deadline.

Lab Experiment Evaluation

- You will show your work to the TA on your laptop
- TA will ask questions to test your understanding
- You are encouraged to discuss, but prepare your own solution
- **Penalties for any academic dishonesty**

What counts as malpractice?

- Copying code from the web, getting others to solve etc
- Sharing your code with your classmates
 - Multiple instances of this in previous years
 - Both parties (source and receiver) get the same penalty
- Sharing your code on a public Github repo or webpage
 - If you want to showcase your skills, pick something other than assigned lab exercise solutions to share
- Above list is not exhaustive

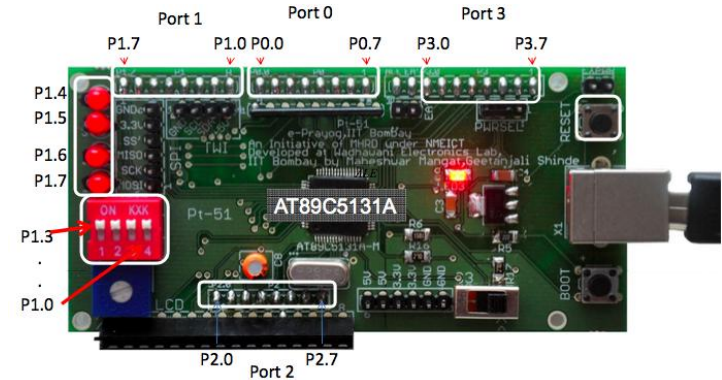
Website and Moodle

- Course website <https://ee337.github.io>
- Course Moodle will be used for announcements, assignments, grades
 - Separate Moodle forum for debugging board issues
- Always check your marks in Moodle
 - Students got zero for malpractice but did not realize it until the end
 - TA forgot to enter marks but students didn't notice until grade was assigned

Reference Texts

- The 8051 Microcontroller and Embedded Systems - Using Assembly and C, Second edition
 - Muhammad Ali Mazidi, Janice Gillispie Mazidi, and Rolin D. McKinlay
 - <https://www.amazon.in/dp/8131710262>
- The 8051 Microcontroller, Third Edition
 - Kenneth J. Ayala
 - <https://www.amazon.in/dp/8131502007>

Lab kit and software



- Every student will receive a lab kit
 - A Pt-51 board, LCD, a keypad, a USB cable
- Install the software (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. Use the boards carefully and return them!

Download links for software

- ARM Keil-C51 download

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

(requires registration)

- FLIP download

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

**Thank you for your
attention.
Good luck!**

<https://ee337.github.io/>