



Department of Electrical and Computer Engineering (ECE)

School of Engineering and Physical Science

North South University, Bashundhara, Dhaka-1229, Bangladesh

CSE331L: Microprocessor Interfacing & Embedded System (Lab) Spring 2022

Number of Credits 3+0

Prerequisites CSE 332, Computer Organization & Architecture

Faculty Dr. Dihan Md. Nuruddin Hasan

Lab Officer Moin Shahriyar

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|---------------------|-----------------|-----|
| Office Hours | TBA | TBA |
| Class Hour | As per Schedule | - |
| Class Room | LIB609 | - |

Course Description:

This course provides an introduction to the fundamental concept of microprocessor architecture and microprocessor based embedded systems. A basic idea of the internal and external architecture of the microprocessor 8086 will be provided followed by the physical pin diagram of microprocessor 8086. The course will also cover the other peripheral devices of a microprocessor-based system i.e. RAM 6116, PIO 8255 Controller and 7-Segment Display. The course will then cover the programming languages for interfacing: Assembly language followed by Interrupt and data conversion algorithm. A brief introduction to the Microcontroller 8051 will also be provided. Simulation software tool: emulator 8086 will be introduced in the laboratory classes for doing simulation-based project works. This course has separate mandatory laboratory session every week.

Course Objectives: The objectives of this course are to

1. to introduce the internal and external architecture of microprocessor 8086.
2. to explain the interconnection of microprocessor and different peripheral devices.
3. to introduce Assembly language for direct manipulation of microprocessor 8086.
4. to introduce to simulation tool i.e. emulator 8086 for simulation-based works.

Mark Distribution:

| <i>Criteria</i> | <i>Marks (%)</i> |
|-----------------|------------------|
| Attendance | 10% |
| Lab Assessment | 20% |
| Assignment | 20% |
| Midterm Exam | 20% |
| Final | 30% |
| Total | 100% |

The marks distribution may change according to the discretion of the instructor.

Tentative Class Schedule:

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|---------------|--------------|---|
| Week 1 | Lab 1 | Introduce the Registers, Show the invalid and valid way of writing the assembly code, Basic MOV functions and the basic arithmetic, logical functions and interrupt |
| Week 2 | Lab 2 | Introduce to variables & array |
| Week 3 | Lab 3 | Interrupt codes and using them for printing and getting input. Introduce to string & assign an Assignment |
| Week 4 | Lab 4 | Do various problems using assembly code in emu8086. |
| Week 5 | Lab 5 | Recap of previous classes & Assignment Submission |
| Week 6 | Lab 6 | String operations, Variable declarations, Arrays concept, LEA, OFFSET, Loops. |
| Week 7 | Lab 7 | Basic of ALU design, CU design, Register write/read, Memory write/read, Program Counter to assist the project |
| Week 8 | Lab 8 | Midterm + Final |

*****If you fail to get 60% marks (12 out of 20) in the lab, you will also get a F in the course *****