



**Department of Electrical and Computer Engineering (ECE)**  
 School of Engineering and Physical Sciences  
 North South University, Bashundhara, Dhaka-1229, Bangladesh

***CSE331L: Microprocessor Interfacing & Embedded System (Lab)***  
***Fall 2020***

<b>Number of Credits</b>	<b>3+0</b>
<b>Type</b>	Core, Engineering, Lecture + Lab
<b>Prerequisites</b>	<b>CSE 332, Computer Organization &amp; Architecture</b>
<b>Section</b>	10
<b>Faculty Member</b>	Mohammad Sakib Mahmud (MoM)
<b>Lab Instructor</b>	Asif Ahmed Nelay
<b>Office Room</b>	<b>*LIB 600(C7)</b>
<b>Email</b>	<a href="mailto:asif.nelay@northsouth.edu">asif.nelay@northsouth.edu</a> <a href="mailto:neloy@myumanitoba.ca">neloy@myumanitoba.ca</a>
<b>Github Repo</b>	<a href="#">CSE331L Section 10 Fall 2020</a>

<b>Office Hours:</b>	Monday (M)	08:00 pm – 9:00 pm
<b>Class Hours:</b>	Section 10 – Wednesday (W)	8.00 am – 11.10 am
<b>Class Room:</b>	LIB 611	

**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 as CSE 331L.

**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>
Lab Assessment (6)	25%
Quiz (6)	10%
Assignment (6)	30%
Midterm Exam (1)	15%
Final (1)	20%
<b>Total</b>	<b>100%</b>

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

**Tentative Class Schedule:** (6 Classes to cover Assembly Language and 3 Classes to Cover Simulation and Project Related Works)

<b>Week 1</b>	<b>Lab 1</b>	<b>Github and Introduce the Registers, Show the invalid and valid way of writing the assembly code.</b>
Week 2	Lab 2	Introduce Basic MOV functions and the basic arithmetic, logical functions and interrupt
<b>Week 3</b>	<b>Lab 3</b>	<b>Microarchitecture</b>
Week 4	Lab 4	Interrupt codes and using them for printing and getting input. Examples of the scrolling screen, clear screen and etc.
<b>Week 5</b>	<b>Lab 5</b>	<b>Introduce the Implemented Microprocessor and its workflow and assign a project. Midterm Exam</b>
<b>Week 6</b>	<b>Lab 6</b>	<b>Do various problems using assembly code in emu8086.</b>
Week 7	Lab 7	String operations, Variable declarations, Arrays concept, LEA, OFFSET.
Week 8	Lab 8	ALU design, CU design, Register write/read, Memory write/read, Program Counter
<b>Week 9</b>	<b>Lab 9</b>	<b>Final</b>

*\* The marks distribution along with course materials may change according to the discretion of the instructor.*