



## FAST School of Computing

### EE-2003 – Computer Organization and Assembly Language

**FALL 2022**

**Instructor Name:** Samin Iftikhar

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**Office Location/Number:** Exam Hall

**Office Hours:** Mon/Wed: 11.30-12.30

**TA Name (if any):** TBD

**Email address:** -

#### Course Information

**Program:** BS

**Credit Hours:** 3

**Type:** Core

**Pre-requisites (if any):** DLD

**Class Meeting Time:** Tues, Thurs 1000-1120(F), 1130-1250(G)

**Class Venue:** Lib, E&M-1, E&M-3

#### Course Description/Objectives/Goals:

##### Course Learning Outcomes (CLOs):

1. Understanding of basic concepts of computer organization with emphasis on the lower level abstraction of a computer system including machine-level representation of data, instruction set architecture, addressing modes, memory models, and assembly language programming.
2. Interfacing and Communication with hardware. Includes understanding of I/O fundamentals, Interrupts and their structures, Buses, external storage and physical organization
3. Illustrate the computer organization concepts by Assembly Language programming
4. Introduction to Intel IA-32 Architecture.
5. Familiarization with Assembly Language directives, macros, operators, and program structures.
6. Understanding of interrelationship between hardware and software
7. Comparison between different processors families
8. Introduction to computer architecture, and pipelining

#### Course Textbook

- Assembly Language Programming Lecture Notes by Bilal Hashmi.
- Assembly Language for x86 Processors Seventh Edition Kip R. Irvine
- Computer Organization and Architecture Designing for Performance Tenth Edition by William Stallings
- David A. Patterson, John L. Hennessy, Computer Organization and Design: The hardware/software interface, 4th Edition

## Tentative Lecture Plan

Week	Topics to be covered
1	Introduction to Assembly Language
2	Addressing Modes
3	Branching
4	Bit Manipulations
5	Subroutines
<b>Midterm 1</b>	
6	Display Memory
7	String Instructions
8	Software Interrupts
9	Real Time Interrupts and Hardware Interfacing (Keyboard, Timer)
10	Multitasking (Optional)
<b>Midterm 2</b>	
11-14	Computer Architecture, Pipelining, Cache, Performance

### (Tentative) Grading Criteria

1. Quizzes	10
2. Midterms	30
3. Final	45
4. Assignments/Project	15

### Grading Scheme: Absolute

#### Course Policies

1. Quizzes may be un-announced.
2. No makeup for missed quiz or assignment.
3. 80% attendance
4. 50% passing marks

#### Academic Integrity

- Plagiarism and Cheating against academic integrity. Both parties involved in such cases will face strict penalty (negative marking, F grade, DC)
- CODE/ ASSIGNMENT SHARING is strictly prohibited.
- Keep in mind that by sharing your code/assignment you are not helping anyone rather hindering the learning process or the other person.
- No excuse will be entertained if your work is stolen or lost. To avoid such incidents
  - Keep back up of your code on safe online storage, such as Google Drive, Drop box or One drive.
  - Do not leave your work on university lab computer, transfer your work to online storage and delete from the university lab computer (empty recycle bin as well)

#### Course Policies

1. Announcements related to different aspects of this course (e.g. lectures, quizzes, exams, etc.) may be posted on SLATE (<http://slate.nu.edu.pk/portal>) and google classroom. Students are expected to view the announcements section of SLATE and google classroom regularly.

2. All students are expected to attend all lectures from beginning to end. Partial or full absence from a lecture without a valid reason may hamper chances for securing good grades. University's attendance requirements must be met in order to appear in the final exam.
3. Quizzes may be announced or unannounced. A quiz will usually be about 5 – 15 minutes long and it may be given anytime during the lecture. Students missing a quiz will NOT be given a make-up quiz.
4. Students can contest their grades on quizzes and assignments ONLY within a week of the release of grades. Exams will be available for review according to university policies.
5. Students are expected to demonstrate the highest degree of moral and ethical conduct. Any student caught cheating, copying, plagiarizing, or using any other unfair means will be strictly dealt-with in accordance with university policies.