NATIONAL UNIVERSITY
of Computer & Emerging Sciences, Lahore

Department of Computer Science

EE-229 – Computer Organization and Assembly Language

FALL 2023

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Course Information

Program: BS **Credit Hours:** 3 **Type:** Core
Pre-requisites (if any): DLD
Class Meeting Time: (Mon, Wed) Section 3D 10:00am, Section 3E 11:30am, Section 3F 2:30pm
Class Venue: CS-4

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 (BH).
- Assembly Language for x86 Processors Seventh Edition Kip R. Irvine (KI)
- Computer Organization and Architecture Designing for Performance Tenth Edition by William Stallings (WS)

Tentative Lecture Plan

Topics to be covered	#Lectures
Introduction to Computer Organization and Assembly language	0.5
Computer functions and Interconnection	0.5
Intro to intel architecture (registers, bus and memory) Getting started in assembly language	2
Data Transfer and Addressing Modes	2
Instruction set with examples and integer arithmetic	5
Procedures and stack	4
Display memory and string processing	5
Interrupts	4
Computer Architecture and Pipelining	5

(Tentative) Grading Criteria

1. Quizzes 10
2. Midterms 30
3. Final 45
4. Assignments 5
5. Project 10

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)