BIRZEIT UNIVERSITY
Faculty of Engineering and Technology
Electrical and Computer Engineering
Summer Semester 2022

SYLLABUS

Course number and name: ENCS336- Computer Organization and Assembly Language

Credits and contact hours: 3 credit hours**.**

Instructor's or course coordinator's name: Dr. Abualsoud Hanani,

Office: Dr. Abualsoud Hanani, Masri222, email: ahanani@birzeit.edu ,

Office hours: See Ritaj.

Textbook:

W. Stallings, Computer Organization and Architecture: Designing for Performance, 8th or 9th Edition.

References:

- Computer Systems Architecture, M. M. Mano, Prentice Hall 1992, 2nd edition
- Fundamentals of Computer Organization and Architecture, Mostafa Abd-El-Barr & Hesham El-Rewini, 2005 by John Wiley & Sons, Inc.
- IBM PC Assembly Language & Programming, Peter Abel, Prentice Hall 5th edition
- Computer Organization & Design, Patterson & Hennessy, Morgan Kaufman 1998 2nd edition.

Specific course information

- **Description**:
   Basic Computer Organization: computer structure and machine language; processing and input/output units, registers, principal machine instruction types and their formats, character representation, program control, fetch, indirect, execute, and interrupt cycles, timing, input/output operations. Register Transfer and micro operations: hardware Implementation and sequencing of instruction fetch, address construction and instruction execution, data flow and control block diagram of simple processor. Central Processing Unit Organization: bus organization, ALU, stack, addressing modes, instruction formats, instruction types, interrupts. Micro-program Control Organization: Concept of microprogramming, control memory, microinstruction formats. Input/output Organization: peripheral devices, modes of data transfer.
- **Prerequisites:** Digital Systems Design (ENCS234)
- Core course for Computer Engineering

Specific goals for the course:
Introduce the students with the basic concept of computer organization and architecture covering topics in both the physical design of a computer (Organization) and the logical design of the computer (Architecture).
Introduces students to hardware programming with Assembly language based on x86 architecture.

(ABET) Relationship of course to Computer Engineering Program Student Outcomes:

- (a) Ability to apply mathematics, science and engineering principles.
- (c) Ability to design a system, component, or process to meet desired needs.
- (e) Ability to identify, formulate and solve engineering problems.

Brief list of topics to be covered

a. **Introduction** (Chapters 1 and 2 in the Textbook)

b. **Instruction Sets Architecture** (chapters 10 in the Textbook)

c. **Addressing modes** (Chapter 11 in the Textbook)

d. **Introduction to 8086 Assembly Language** (Slides and lecture notes)

e. **Computer Functions and Interconnections** (chapter 3 in the Textbook)

f. **Computer Arithmetic and Number Systems** (Chapter 9 in the Textbook)

g. **Cache Memory, Design and Read/Write Strategies** (chapter 4 of the Textbook)

h. **Internal Memory, External Memory and Input/Output** (Chapters 5,6 and 7 of the Textbook)

Tentative Grading:

Quizzes	15
Assembly Project	15
Midterm	30
Final	40

General Policies:

- No late submissions will be accepted.
- Lectures attendance is mandatory by the university regulations. You have to attend **All** lectures and course activities.
- No Make-up for the Midterm Exam.
- All students are expected to comply with University rules and regulations on academic Integrity and honesty.

Good Luck!