

Module Title:	Computer Organization & Assembly language
Module ID:	CAP 221
Prerequisite:	None
Level:	3
Credit Hours:	3 (2+2+0)

Module Description:

The purpose of this course is to introduce the information technology students to computing systems below that of a high-level programming language. The material covered can be broadly separated into the categories of assembly language programming and Computer Organization. Topics include: number representation, basic organization of the von Neumann machine, computer instructions, memory organization, interrupt, input/output (I/O), IBM PC organization and assembly language programming; instruction formats, addressing mode, basic arithmetic, data transfer and control instructions.

Module Aims:

The purpose of this course is to introduce the information technology students to computing systems below that of a high-level programming language.

Learning Outcomes:

- The student will gain knowledge and understanding of basic computer organization.
- Data representation, Integer and floating-point arithmetic, Instruction sets and instruction formats, Addressing modes, Machine and Assembly language programming, ALU design,
- Interrupts, Memory system and cache memory
- Recognize the different Instruction Set Architectures (ISA) and their advantages and disadvantages with respect to coding efficiency and implementation efficiency
- Design a simple ALU in a typical Data path and control unit designs
- Understanding System Numerical and logical gates, the difference between high-level language and machine language, the type of modern processors.

- The ability to work independently to accomplish assigned tasks.
- The ability to communicate and to discuss related topics of the course with instructor inside and outside class.
- Acquaintance of using computer software related to the course.

List of Topics	No. of Weeks	Contact Hours
Introduction	1	3
Basic Concept	3	9
Data Organization	2	6
Representation Of numbers	2	6
System Organization	2	6
8086 Assembly Language Programming 1	2	6
8086 commands	2	6
Review	1	3

Textbook:

Marut ,Yu , Assembly Language Programming for the IBM PC , Mc Graw Hill

William Stallings, Computer Organization and Architecture: Designing for performance, Prentice Hall