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

**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 deference 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.

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| List of Topics | No. ofWeeks | 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