CSE3231: Microprocessor and Assembly Language

75 Marks [70% Exam, 20% Quizzes/Class Tests, 10% Attendance]
3 Credits, 33 Contact hours, Exam. Time: 4 hours

Microprocessor Fundamentals: Architecture of a microprocessor, Data bus, address bus, control bus, I/O units and memory.

Architecture: Architecture of Intel 8086 Microprocessor, its execution unit and bus-interface unit, its registers and flags.

Programming Model: Programming model of 8086 processor, segment-offset address and physical address calculations, even and odd addressing, introduction of different addressing modes, Operating systems and BIOS, Memory organization of PC.

Assembly Language: Introduction to IMB PC Assembly Language, Assembly Language syntax, Program Data, Variables, Named constants, program structure, memory models, Input/Output instruction, Running program, Program Segment Prefix.

Status Register: The processor status and the Flag register, Overflow condition, Debugging a program.

Flow control: Flow control instructions, Conditional jumps, signed versus unsigned jumps, High-level language structures, branching and looping structures.

Logic Operation: Logic, Shift and Rotate Instruction, some common applications of Shift and Rotate operations.

Data Structure: The Stack and Introduction to Procedures, Basic stack operations, Procedures Declaration, Communication between procedures, calling a procedures.

Arithmetic Operation: Multiplication and Division Instructions, signed versus unsigned multiplications, Divide overflow, Signed Extension of Dividend.

Arrays: Arrays and related addressing modes, DUP operator, Register indirect modes, Based and Indexed addressing modes.

String Manipulation: The string instructions, director flag, Moving a string, storing a string, Loading a string, scanning a string, comparing strings, substring operation.

Books Recommended:

1. Ytha Yu and Charlers Marut : **Assembly Language Programming and Organization of the IBM PC,** *McGraw-Hill*
2. Rafiquzzaman : **Microprocessor and Microcomputer based System Design**, *Crc Press Publication*
3. D. V. Hall : **Microprocessors and Interfacing**, *McGraw-Hill*
4. Y. Liu and G. A. Gibson : **Microcomputer Systems: 8086/8088 Family,** *Prentice-Hall*
5. Artwick : **Microcomputer Interfacing,** *Prentice-Hall series.*
6. Ramesh Goanker : **Microcomputer Interfacing**, *McGraw-Hill*