Uttarakhand Technical University, Dehradun

New Scheme of Examination as per AICTE Flexible Curricula

Computer Science and Engineering, VI-Semester

CS- 601 Microprocessors and Applications

Course Objectives:

- To introduce students with the architecture and operation of typical microprocessors and microcontrollers.
- To familiarize the students with the programming and interfacing of microprocessors and microcontrollers.
- To provide strong foundation for designing real world applications using microprocessors and microcontrollers

Learning Outcomes:

At the end of the course students should be able to:

1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor's internal architecture and its operation within the area of manufacturing and performance.
2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor.
3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) to meet specified performance requirements.
4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor.
5. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.
6. Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.

Course Content:

UNIT I

Salient features of advanced microprocessors. Review and evolution of advanced microprocessors: 8086, 8088, 80186/286/386/486/Pentium and core i processors.

8086 processor: Register organization, Architecture, memory mapping, modes, and timings.

UNIT II

Intel 8086 microprocessor programming: 8086 Instruction Set, Addressing modes, Assembly Language Programming with Intel 8086 microprocessor

UNIT III

Introduction to the various interfacings chips, 8255, Interfacings key boards, LEDs, ADC, DAC and memory Interfacing. Programmes for various interfacing modules

UNIT IV

General purposes programmable peripheral devices: Timer (8253/8254), 8259A programmable interrupt controller, USART, serial I/O & data Communication. Interfacing Programs for chips

UNIT V

Introduction to 8bit and 16 bit microcontrollers and embedded systems, 8051 architecture, pin description , I/O configuration , interrupts, addressing modes instruction set, embedded system, use of microcontrollers in embedded systems, Display systems using microcontrollers

Reference Books:

1. Advance microprocessor and peripheral –A.K. Ray and K. M. Bhurchandi, Tata Mcgraw Hill
2. Microprocessor and Interfacing – D.V.Hall, McGraw Hill.
3. The Intel microprocessor - Barry B. Brey, Pearson
4. The 8086 & 8088 Microprocessor- LIU and Gibson, Tata McGraw Hill
5. GS Tomar, Advanced Microprocessors and Interfacing, Sun India Pub
6. The 8051 microcontroller and embedded systems-M.A. Mazidi, Janice GillispieMazidi, Pearson Prentice Hall

Course Outcome:

- Will be able to know the memory mapping stnadrads to be used for hard ware programming
- Will be able to devise assembly language programmes for various applications
- Will be able to programme devices for interfacing
- Will be able to design circuits for home automation
- Will be able to design products for societal use