Course Name MICROPROCESSOR & MICROCONTROLLER

Course Code EE504

Course Credit 3

Contact Hour 3L

Prerequisite Computer Architecture, Digital Electronics

Course Objective

The objectives of this course are

1. Through this course, the students will be exposed to hardware details of 8085 microprocessor with the related signals and their implications.
2. They will also learn programming and interfacing of 8085.
3. The students will be able to know the Architecture and programming of 8086 Microprocessor.
4. They will also be aware of the 8051 architecture and its programming.
5. Lastly the students will have a basic idea on PIC microcontroller (16F877).

Course Outcome

On completion of the course students will be able to

1. Understand the architecture of 8085, 8086 and 8051
2. Impart the knowledge about the instruction set.
3. Understand the basic idea about the data transfer schemes and its applications.
4. Develop skill in simple program writing for 8051, 8086 & 8085 and applications

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H											
CO 2	H	M	L									
CO 3			M	H								
CO 4			M	H								
CO 5			H									
CO 6			M	H								

Course Content

Module I: Introduction to Computer architecture **10L**

Introduction to Computer architecture: Architecture of a typical Microprocessor, Bus configuration, The CPU module, ROM & RAM families, Introduction to assembly language & machine language programming, Instruction set of typical microprocessor (e.g. 8085), Subroutine & stack, Timing diagram.

Module II: Assembly language programme of a typical Microprocessor **8L**

Use of compilers, assembler, linker & debugger.

Module III: **12L**

Memory Interfacing, Interfacing input output- port, Interrupt & interrupt handling, Serial & parallel data transfer scheme, Programmed & interrupt driven data transfer, Direct memory access, Programmable peripheral devices, Programmable interval timer, Analog input-output using AD & DA converter.

Module IV: Basic 16 bit Microprocessor (e.g. 8086) **5L**

Architecture, Min-max mode.

Module V: Microcontroller **5L**

Introduction to microcontroller: Architecture & instruction set of a typical microcontroller (e.g. PIC16F84 device), Feature of popular controller (processor 8031/8051), its programming & interfacing.

Text Books

1. Microprocessor architecture, programming and application with 8085 – R. Gaonkar (Penram International) (strongly recommended)

1. The 8051 microcontroller - K. Ayala (Thomson)
2. Microprocessors & interfacing – D. V. Hall (Tata McGraw-hill)
3. Ray & Bhurchandi, Advanced Microprocessors & Peripherals, TMH
4. The 8051 microcontroller and Embedded systems - Mazidi, Mazidi and McKinley (PEARSON)
5. An Introduction to Microprocessor and Applications –Krishna Kant (Macmillan)

Reference Books

1. Microprocessors and microcontrollers - N. Senthil Kumar, M. Saravanan and Jeevananthan (Oxford university press).
2. 8086 Microprocessor –K Ayala (Cengage learning)
3. Microprocessors – The 8086/8088, 80186/80386/80486 and the Pentium family – N. B. Bahadure (PHI).
4. The 8051 microcontrollers – Uma Rao and Andhe Pallavi (PEARSON).