ECB3103 MICROPROCESSORS & MICROCONTROLLERS

OBJECTIVES:

- To illustrate the architecture of 8085 and 8086 microprocessors.
- To introduce the programming and interfacing techniques of 8086 microprocessor.
- To analyse the basic concepts and programming of 8051 microcontroller
- To understand the interfacing circuits for various applications of 8051 microcontroller.
- To introduce the architecture of advanced microprocessors and microcontrollers.

MODULE I ARCHITECTURE OF 8085 AND 8086 MICROPROCESSORS 9

Introduction to Micro Computers, 8085 Microprocessor Architecture, 8086

Microprocessor - Architecture- Register Organization - Memory Organization-Minimum

Mode bus cycle-Maximum Mode bus cycle-Timing Diagram-Interrupts & Service Routine.

MODULE II PROGRAMMING OF 8086

Addressing modes - Instruction set- Assembly language Programming.

MODULE III INTERFACING WITH 8086

Memory interfacing- Interfacing with peripheral ICs like 8251-serial I/O,8255-parallel I/O, 8254-programmable interval timer, 8279-Keyboard display controller, 8257-DMA, LEDs, LCDs, ADCs and DACs.

MODULE IV 8051 MICROCONTROLLER

Architecture of 8051 – Special Function Registers(SFRs) – I/O Pins Ports and Circuits – Instruction set – Addressing modes – Assembly language programming.

MODULE V INTERFACING 8051 MICROCONTROLLER

Programming 8051 Timers – Serial Port Programming – Interrupts Programming – LCD & Keyboard Interfacing – ADC, DAC & Sensor Interfacing – External Memory Interface-Stepper Motor interface.

MODULE VI ADVANCED MICROPROCESSORS & MICROCONTROLLERS 4

Advanced Microprocessor Architecture- Pentium; Concept of CISC and RISC processors; Introduction to ARM processor and PIC microcontroller.

Total Hours:45

9

5

9

9

TEXT BOOKS:

- 1. Ramesh S Gaonkar, "Microprocessor Architecture, Programming and application with 8085", 4th Edition, Penram International Publishing, New Delhi, 2000.
- 2. A.K. Ray and K.M.Burchandi, "Intel Microprocessors Architecture Programming and Interfacing", 2nd Edition, McGraw Hill International Edition, 2000.
- 3. Mohammed Ali Mazidi and Janice GillispieMazidi, "The 8051 Microcontroller and Embedded Systems", 2nd Edition, Pearson Education Asia, New Delhi, 2003.

REFERENCES:

- 1. Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family – Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007.
- 2. Kenneth J Ayala, "The 8051 Microcontroller Architecture Programming and Application", 2nd Edition, Penram International Publishers (India), New Delhi, 1996.
- 3. DoughlasV.Hall, "Microprocessors and Interfacing, Programming and Hardware", TMH,2012.
- 4. M. Rafi Quazzaman, "Microprocessors Theory and Applications: Intel and Motorola", Prentice Hall of India, Pvt. Ltd., New Delhi, 2003.

OUTCOMES:

On completion of this course the student will

- Describe the architecture of 8085, 8051 and 8086.
- Illustrate the organization of registers and memory in microprocessors.
- Differentiate Minimum and Maximum Mode bus cycle.
- Identify the addressing mode of an instruction.
- Develop programming skills in assembly language.
- Explain the need for different interfacing devices.
- Compare the concepts of CISC and RISC processors.
- Outline the architecture of ARM processor and PIC microcontroller.