ECOE2 MICROPROCESSORS & INTERFACING

COURSE OBJECTIVES:

1. To understand the architecture of 8086 family, addressing modes, instructions and assembler directives of 8086 microprocessors.
2. To develop the programming skills for applying them on various applications
3. To understand the 8086 system connections.
4. To understand the 8086 interrupts and interrupt responses.
5. To understand the digital interfacing with 8086.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. Demonstrate knowledge in (a) Internal Hardware details of Intel 8086 and programming devices like 8255,8257,8259,8279 and 8251.
   (b) Interfacing various peripherals to build standalone systems.
2. Analyze various peripherals and interfacing techniques.
3. Design application based Microcomputer system using8086.
4. Solve problems by providing microcomputer-based real time solutions.

UNIT I *Text Book - 1,2* [CO:1,4] **(9)**

INTEL 8086 ARCHITECTURE AND PROGRAMMING: Evolution of Microprocessors, Architecture of 8086 microprocessor, Register organization, Physical Memory Organization, Signal Description of 8086, General Bus Operation Minimum and Maximum mode operation of 8086, Timing diagram Addressing modes.

UNIT II *Text Book - 1,2* [CO:1,2] **(11)**

ASSEMBLY LANGUAGE PROGRAMMING WITH 8086AND INTERRUPTS: Instruction set of 8086, Assembler directives and Operators; Interrupts and Interrupt service routines, Interrupt Cycle of8086, Non Maskable interrupt, Maskable interrupt (INTR), Interrupt Programming, Passing Parameters to procedures, MACROS.

UNIT III *Text Book - 1* [CO:1,2,4] **(8)**

BASIC PERIPHERALS AND THEIR INTERFACINGWITH 8086: Semiconductor memory Interfacing, Dynamic RAM interfacing, Interfacing I/O ports, Programmable Input-Output Port (PIO)8255, Modes of operations of 8255, Interfacing analog to digital and digital to analog converters, stepper motor interfacing.

UNIT IV *Text Book - 1* [CO:1,3] **(9)**

SPECIAL PURPOSE PROGRAMMABLE PERIPHERALDEVICES : Programmable Interrupt Controller 8259A; The keyboard/Display Controller 8279-Architecture, Signal Description, Modes of operations; Programmable Communication Interface 8251USART; DMA Controller 8257, DMA Transfers and Operations.

LEARNING RESOURCES:

TEXT BOOK(s):

1. A.K. Ray & K.M.Bhurchandi, Advanced Microprocessors and Peripherals- Architecture, Programming and Interfacing

2. Douglas V.Hall, Microprocessors and Interfacing: Programming and Hardware, revised 2nd Edition, TMH, TMH, 2002 reprint.

REFERENCE BOOK:

Yu-cheng Liu, Glenn A. Gibson, Microcomputer systems: The 8086/8088 Fami l y architecture, Programming and Design, PHI, 2006.