COURSE CODE	COURSE TITLE	L	T	P	C
UCS1502	**MICROPROCESSORS AND INTERFACING**	3	0	0	3

OBJECTIVES
- To understand the Architecture of 8086 microprocessor
- To learn the design aspects of I/O and Memory Interfacing circuits
- To interface microprocessors with supporting chips
- To study the Architecture of 8051 microcontroller
- To design a microcontroller-based system.

UNIT I   THE 8086 MICROPROCESSORS   9

Introduction to 8086 -- Microprocessor architecture -- Addressing modes -- Instruction set and assembler directives -- Assembly language programming -- Stacks -- Procedures -- Macros -- Interrupts and interrupt service routines -- Byte and String Manipulation.

UNIT II   8086 SYSTEM BUS STRUCTURE   9

8086 signals -- Basic configurations -- System bus timing -- System design using 8086 -- I/O programming -- Introduction to Multiprogramming -- System Bus Structure -- Multiprocessor configurations -- Coprocessor, closely coupled and loosely Coupled configurations -- Introduction to advanced processors.

UNIT III   I/O INTERFACING   9

Memory interfacing and I/O interfacing -- Parallel communication interface -- Serial communication interface -- D/A and A/D Interface -- Timer -- Keyboard /display controller -- Interrupt controller -- DMA controller -- Programming and applications Case studies: Traffic Light control, LED display, LCD display, Keyboard display interface and Alarm Controller.

UNIT IV   THE 8051 MICROCONTROLLERS   9

Architecture of 8051 -- Special Function Registers(SFRs) -- I/O Pins ports and circuits -- Instruction set -- Addressing modes -- Assembly language programming.

UNIT V   INTERFACING MICROCONTROLLER   9

Programming 8051 Timers -- Serial port programming -- Interrupts programming -- LCD & keyboard interfacing -- ADC, DAC & Sensor interfacing -- External memory interface -- Stepper motor and waveform generation -- Comparison of microprocessor, microcontroller, PIC and ARM processors.

                                                                TOTAL PERIODS: 45

OUTCOMES
On successful completion of this course, the student will be able to:
- Understand the basic architecture, operation, programming of microprocessor 8086 (K3)
- Understand the design of basic and multiprocessor systems and their bus timings (K2)
- Design the 8086 interfaces with memory, I/O and other peripheral chips (K3)
- Understand the basic architecture and operation of microcontroller 8051 (K2)
- Apply programming concepts to implement microcontroller interfaces for different applications (K3).

TEXTBOOKS

1. Doughlas V Hall, "Microprocessors and Interfacing, Programming and Hardware", TMH, 2012.
2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051Microcontroller and Embedded Systems: Using Assembly and C", 2nd Edition, Pearson education, 2011.

REFERENCE BOOKS

1. Yu-Cheng Liu, Glenn A Gibson, "Microcomputer Systems: The 8086/8088Family-Architecture, Programming andDesign", 2ndEdition,Prentice Hall of India,2007.
2. A K Ray, K M Bhurchandi, "Advanced Microprocessors and Peripherals",3rd edition, Tata McGraw-Hill, 2012.
3. Barry B Bray, "The Intel Microprocessor 8086/8088,80186,80286,80386 and80486 -Architecture, Programming and Interfacing", 8th Edition, PHI, 2011.
4. Mohamed Rafiquazzaman, "Microprocessor and Microcomputer based System Design", 2nd Edition,Universal Book Stall, 1995.
5. Kenneth J Ayala,"The 8051 Microcontroller Architecture, Programming and Applications", 2nd edition, Penram International, 1996.