**Course objectives:** 1. Understand architecture & programming of 8086 microprocessor and 8051 microcontrollers.

2. Design interfacing of memory, 8255, 8257 and 8251 to 8086 processor

3. Differentiation of 8086 and 8051 in terms of internal architecture, memory, programming. 4. Design Interfacing & Programming of I/O ports, timers and UART using 8051.

5. Design interfacing of real time devices like ADC, DAC and stepper motor with 8051.

**Course Outcomes**:

1. Explain the architecture of 8086 microprocessor and recognize different types of addressing modes.

2. Write assembly language programming using 8086 microprocessor instruction set.

3. Interface different peripherals to 8086 microprocessor.

4. Explain the architecture of 8051 architecture and write Assembly/C language programming using 8051 microcontroller.

5. Interface different peripherals to 8051 microcontroller.

UNIT-I: Intel 8086/8088 architecture, Segmented memory, Minimum and Maximum modes of operation, Timing diagram, addressing modes, Instruction set, assembly language programming using data transfer, arithmetic, logical and branching instructions

UNIT-II: Assembler directives, macros, procedures, assembly language programming using string manipulation instructions, 8086 Interrupt structure, IO and Memory Interfacing concepts using 8086, IC Chip Peripherals-8255 PPI, 8257 DMA controller, 8251 USART Faculty of Engineering O.U. With effect from Academic Year 2018 – 19

Unit-III: 8051 Microcontroller – Internal architecture and pin configuration, 8051 addressing modes, instruction set, Bit addressable features. I/O Port structures, assembly language programming using data transfer, arithmetic, logical and branch instructions.

UNIT IV: 8051 Timers/Counters, Serial data communication and its programming, 8051 interrupts, Interrupt vector table, interrupt programming.

UNIT V: Interfacing of 8051 with LCD, ADC, DAC, external memory, Stepper Motor interfacing.

**Suggested Reading**: 1. Ray A.K &Bhurchandhi K.M, ―Advanced Microprocessor and Peripherals, 2/e, TMH, 2007. 2. Mazidi M.A, Mazidi J.G &Rolin D. Mckinlay, ―The 8051 Microcontroller & Embedded Systems using Assembly and C,‖ 2/e, Pearson Education, 2007