III Year II Semester	L	T	P	C
17EC604	3	1	0	3

MICROPROCESSORS AND MICROCONTROLLERS

UNIT-I: 8086 MICROPROCESSOR:
8086 microprocessor family, Main features of 8086, register organization of 8086, 8086 internal architecture, bus interfacing unit, execution unit, signal/pin description of 8086, 8086 system timing, minimum mode and maximum mode configuration, interrupts and interrupt responses.

UNIT-II: 8086 PROGRAMMING
Program development steps, addressing modes, instruction set of 8086, assembler directives, writing simple programs with an assembler, assembly language program development tools.

UNIT-III: 8086 INTERFACING
Semiconductor memories interfacing (RAM, ROM), programmable communication interface 8251 USART, 8254 software programmable timer/counter, PIO 8255, modes of operation of 8255, interfacing to D/A and A/D converters, stepper motor interfacing, DMA Controller 8237A, Programmable interrupt controller 8259A, the keyboard/display controller 8279.

UNIT-IV: 80386 AND 80486 MICROPROCESSORS
Introduction, Salient features of 80386, programming concepts, special purpose registers, segmentation and Paging, real address mode of 80386, protected mode of 80386, virtual 8086 mode and enhanced mode, architectural differences between 80386 and 80486 microprocessors.

UNIT-V: 8051 MICROCONTROLLER
Introduction, 8051 architecture, 8051pin description, i/o ports and circuits, memory organization, counters/timers, serial data input/output, interrupts. Assembly language programming: Instructions, addressing modes, simple programs.

UNIT-VI: PIC MICROCONTROLLER
Introduction, characteristics of PIC microcontroller, PIC microcontroller families, PIC 16F877 architecture, memory organization, parallel and serial input and output, timers, Interrupts, instruction set of PIC 16F877.

Text books:

1. A.K.Ray, K.M.Bhurchandi, “Advanced Microprocessors and Peripherals”, Tata McGraw Hill Publications, 2000.
2. The 8051 Microcontroller & Embedded Systems Using Assembly and C by Kenneth J.Ayala, DhananjayV.Gadre,Cengage Learning , India Edition.
3. Ajay V Deshmukh, “Microcontrollers”, TATA McGraw Hill publications, 2012.

Reference Books:

1. Microprocessors and Interfacing – Programming and Hard ware by Douglas V Hall, SSSP Rao, Tata McGraw Hill Education Private Limited, 3rd Edition.
2. Microprocessors and Microcontrollers by N.Senthil Kumar, M.Saravanan and S.Jeevananthan, Oxford University Press, Seventh Impression 2013
3. Microprocessors and Microcontrollers-Architecture, Programming and System Design by Krishna Kant, PHI Learning Private Limited, Second Edition, 2014.