

UEI602 MICROCONTROLLERS AND APPLICATIONS

L	T	P	Cr
3	1	2	4.5

Microcontroller an overview : Introduction to 8 bit microcontrollers; Basic differences and similarities between Microprocessor and Microcontroller. Types of various architectures; Harvard and Von-Neumann, RSIC and CSIC. Concept of pipelining.

Introduction to 8051 Microcontroller : Intel8051 history, Pin diagram of 8051, 8051-architecture, Registers, Timers Counters, Flags, Special Function Registers, DPTR, PC, PSW, SP etc. Additional features in 8052.

8051 Assembly Programming - I: Addressing Modes, Data types and Directives, Jump, Loop and Call instructions Arithmetic instructions, and their simple programming applications.

8051 Assembly Programming – II : Logic Instructions Single –bit instructions, Timer and Counter programming, Interrupts programming, Serial communication, Memory accessing and their simple programming applications.

Hardware interfacing: I/O Port programming, Bit manipulation. Interfacing to a LED, LCD, Keyboard, ADC , DAC , Stepper Motors and sensors.

Introduction to Advanced microcontrollers: Overview of Microchip PIC 16Fxxx, Motorola 680XX, ARM etc. and their comparison with 8051.

Laboratory Work: Programming and Application development around 8051. Interfacing to LED, LCD, Keyboard, ADC , DAC , Stepper Motors and sensors etc.

COURSE LEARNING OUTCOME (CLO):The student will be able to

1. Understand the concept of 8051microcontroller architectures
2. Understand the addressing modes, data types and instruction set
3. Understand and implement hardware interfacing
4. Understand the concept of advanced microcontrollers.

Text Books:

1. Ayala, K.J., *The 8051 Microcontroller Architecture, Programming and applications*, Penram International Publishing (India) Pvt. Ltd. (2007).
2. Mazidi, M.A., *The 8051 Microcontroller and Embedded System*, Pearson Education (2008).

Reference Book:

1. Predko, M., *Customizing The 8051 Microcontroller*, Tata McGraw–Hill (2002).

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	MST	25
2	EST	35
3	Sessionals (May include Assignments/Projects/Tutorials/Quizzes/Lab Evaluations)	40