

KL University
Department of Electronics & Computer Engineering
M.Tech (wcsn) 2015-2017

Course Code : 15-EM52H4
Course Title : **Advanced Microcontroller and Its Applications**
Course Structure : 3-0-0
Credits : 3

SYLLABUS:

UNIT - 1

Overview of Microcomputer systems, Addresses, General Operation of a computer, Microprocessors in Digital System design. Purpose of micro controller. Difference between microprocessor and microcontroller. Advantages and Disadvantages. Block diagram of a microcontroller – operation, Microcontroller functioning. Microprocessors architectures **Architecture**, RISC and CISC processors. **Memory organization**, ports, interrupts.

Unit-2

Internal architecture: Introduction to ARM7TDMI processor – Pin Description, Pinfunctionality, internal architecture, Instruction Set and Instruction Cycle timings, ARM 32-bit and THUMB (16-bit) operating modes, Switching between ARM and THUMB instructions. Types of memory – Code memory, External Memory, Internal memory, Register Set.

Unit-3

PIC16F877 Instructions Set, addressing modes, Assembly language Programs. **PIC16F877 PERIPHERALS:** Timers, CCP modules, ADC modules, configuration word and programming.

UNIT - 4

SERIAL COMMUNICATION MODULES: UART, I2C, PSP, EEPROM, Reset, Oscillator modes, configuration word and programming.

INTERFACING: Interfacing of keys, Display - LEDs, 7-segment LED (multiplexed display) & LCDs, (Programs in assembly and C). DAC and ADC, generation of PWM with PIC microcontroller. (Programs in assembly and C)

UNIT – 5

APPLICATIONS OF MICROCONTROLLERS. EX: RPM meter, event counter, temperature, controller. (Programs in assembly and C). Development Tools: Simulators, debuggers, cross compilers, in-circuit Emulators for the microcontrollers.

TEXT BOOKS:

1. J.B.PEATMAN Design with PIC microcontrollers-, PHI 1998.
2. Barrnett Cox & Cull, Embedded C programming and the microchip PIC- Thomson Publications 2004.

REFERENCE BOOKS:

1. Ajay .V. Deshmukh Micro Controller theory and Application, TATA McGraw –Hill, 2008, 1st Edition