

7. List of Topics: 324 CPE – Computer Interfacing Circuits

List of Topics for Theory:

- **Introduction to Computer interfacing:** Interfaces and Interfacing, Importance of Computer Interfacing, System Level interfaces, Typical mechanism at interfaces, I/O System, Bus, Memory
- **Review of Communication Interfaces:** Need for Communication Interfaces, RS232/UART, RS422/RS485, buses, USB, Infrared, IEEE 1394 Fire Wire, Ethernet, IEEE 802.11, Bluetooth, USB Throughput, USB Devices, Host Responsibility, Physical and Logical, Bus Topology, USB Communication Flow.
- **PIC16F877 Microcontroller:** Features, Signals, Architecture, Memory Organization, Watch Dog Timer, Reset Types, Oscillator Types, Power Down Modes, I/O Ports and interfacing, CCP Module, SSP Module (USART, SPI, I2C & ICSP).
- **Byte Oriented:** Bit Oriented, Literal & Control Instructions, Stack & Stack Operations, Addressing Modes, Simple Programs.
- **Input/Output (I/O) Ports** and Interfacing, Timer logic, interrupt logic, Data Converters, Serial Logic, ADC.
- **Interfacing With:** Switches, LED'S, Single Seven Segment Display, Matrix Key Board, Multiple Seven Segment Displays, Graphics on an 8x8 LED Matrix Display, LCD.
- **Interfacing With:** ADC, DAC, Stepper Motor, DC Motor, and Traffic Light Control.

List of Topics for Laboratory:

- Introduction to PIC16F877A Development board, MPLAB, Hi-Tech & C Compiler, MPASM Assembler, Proteus VSM.
- Interfacing Switches & LEDs with PIC16F877A.
- Interfacing Buzzer & Switch with PIC16F877A.
- Interfacing Relay & Switch with PIC16F877A.
- Interfacing DC motor with PIC16F877A.
- Interfacing Stepper motor with PIC16F877A.
- Interfacing 7 Segment Display with PIC16F877A.
- Interfacing 2x16 LCD with PIC16F877A.
- Interfacing D/A with PIC16F877A.
- Serial Communication RS232.
- Fixed PWM generation using Assembly language program with PIC16F877A.