

## **CIE 143 Laboratory Exercises B**

### **1. uACE Exercise #1: Message Display.**

Write a program that will display a "CIE143" then blank then "COUrSE" with an interval of one second. "CIE143" one second delay " (blank) one second delay "COUrSE" one second delay then "CIE143" and so on.

Hint: You may need to write your own display routine. Study the PUT routine then make your own PUT routine.

### **2: uACE Exercise #2: I/O Capabilities of uACE.**

This exercise shows the I/O capability of the uACE. You will have to design and construct an external interface. The external interface consists of a decoder, a buffer (74xx245), four LEDs and resistors.

Note: Make sure you place an appropriate resistor from the buffer to the LED display. 1 = LED is on, 0 = LED is off.

**Write a program that will output 0000 -> 0001 -> 0011 -> 0111 -> 1111 -> 0000 etc**

### **3. Interfacing with the PIC16F877 Microcontroller using the Microchip PIC Trainer**

This exercise aims to familiarize the student with the PIC micro-controller.

The exercise consists of designing a micro-controller-based voltmeter. Using the PT-100 Microchip PIC trainer configure the PIC so that the ADC can be used to read analog signals and output the voltage reading using the three 7-segment display module. In addition to this PIC-based voltmeter, configure the LEDs so that when the reading is below 2.0V, the left LED is blinking else if greater than 3.00 V, the right LED is blinking.

4, 5, 6. TBA

**Project :-)**