A) Objectives

Study ADC conversions, the Nyquist Theorem, the Valvano Postulate, and develop a temperature measurement system using a thermistor.

B) Hardware Design

The circuit diagram of the thermistor and LCD interface is on page 3.

C) Software Design (a hardcopy software printout is due at the time of demonstration)

1) Calibration data (procedure 5 and the **calib.h** file) – We did not do this.

2) Low level ADC interface (**ADC.c** and **ADC.h** files) – On page 4 and 5.

3) Main program used to measure temperature – On page 6 and beyond.

D) Measurement Data

1) Sketch three waveforms (procedure 1)

2) Static circuit performance (procedure 2,4)

The voltage at the top of the bridge is 2.49 V. The voltage across the 48k resistor is 0.807 V. The voltage out of the instrumentation amp is when the thermistor is shorted is 4.772. The gain of our instrumentation amp is 5.91. Using the LCD to display the voltage into the ADC we found that the voltage out of the amp at room temperature is around 2.61 V.

3) Dynamic circuit performance (procedure 3) – We did not do this.

4) Accuracy (procedure 6) - We did not do this.

5) Reproducibility (procedure 7) - We did not do this.

E) Analysis and Discussion (1 page maximum)