**Lab 2: Title**

**Your Name**

Your Major

Your Minor or Second Major (if applicable)

**ABSTRACT**

This is the template for your lab report. **Except for section headings (e.g. ABSTRACT), delete all instructions and replace with your own text.** Margins are 1-inch all around. Each page should have a header and page number. All text is in Times New Roman font with a line-spacing of 1.5. The title is bold-faced, 18 pt, and centered. The main body text is in 11 pt font. The author entry is bold-faced and centered. The author affiliation is also centered. The abstract should be short (seven lines or so). It summarizes the purpose of the lab (e.g. goals), what you actually did (e.g. wrote an Arduino program), noteworthy results (e.g. you happen to have impressively hot fingers). The last sentence or two should describe your opinion on how you benefited from the lab (e.g. feel more comfortable with MATLAB, better understanding of how to use a thermistor).

**METHODS**

1. Include a figure showing a system block diagram of the entire temperature measurement system. Your diagram must include blocks for the *measurand*, *sensor*, *signal conditioning*, *data acquisition*, *signal processing*, and *display*. **The label for each block must include a few words describing the basic function and specific implementation**.
2. Include calculations (e.g. from PreLab) to explain why a gain resistor value of RG = 100 kohm was used for the instrumentation amplifier. You do not need to show all work – just show the important formulas, resulting values, and describe the rationale for choosing RG = 100 kohm. It is very strongly preferred that you type your calculations.

**EXPERIMENTS AND RESULTS**

1) Summarize how the Arduino communicates with the computer in order to send a Vmeas value. You do not need to mention any specific commands. Just explain the basic concepts. NOTE: Buma has posted a pdf of the Lab 2 tutorial on the course website.

2) Summarize how the MATLAB program communicates with the Arduino in order to record Vmeas and display a live plot of temperature vs time.

3) Include the key equations that convert the measured voltage **Vmeas** into temperature **Temp**.

4) Include the data figures (fingers, ice water). Try to make the figures no bigger than about 3 inches across – this way you can fit two figures side-by-side on the same page (this saves paper and trees will be grateful).

**CONCLUSIONS**

This section is not simply “my setup worked”. **You should reflect on the concepts or any valuable lessons you learned in the lab.** If possible, discuss how they relate to other aspects of the course, or to the general field of biomedical instrumentation, or public health …

**REFERENCES (OPTIONAL)**

[1] Citation details (e.g. website info) go here.