

# ECE 321 - Homework #2

- Revised -

Light & Temperature Sensors, Audio & Strain Sensors. Due Wednesday, April 12th  
Please email to jacob.glower@ndsu.edu, or submit as a hard copy, or submit on BlackBoard

## Temperature Sensors

Assume you are using a thermistor where the temperature - resistance relationship is

$$R = 1000 \exp\left(\frac{3905}{T+273} - \frac{3905}{298}\right) \Omega$$

where T is the temperature in degrees C.

1) Design a linearizing circuit so that the resistance is approximately linear from -20C to +20C. Plot the resulting resistance vs. temperature relationship.

2) Using the linearizing circuit from problem 4, design a circuit which outputs

- 0V at -20C
- +5V at +20C
- Proportional in between.

Plot the resulting output voltage vs. temperature.

