SMS 416- Sensor project 2 – Due Mar. 8th (can be submitted earlier).

Build (individually or as a group) a sensor of your choice on a breadboard from electrical components that can sense something about the environment or a phenomenon of your interest. The data (digital numbers) will be piped into a computer by using the programmable Arduino board.

Calibrate the sensor against a 'standard' (that is a calibrated sensor or some other known quantity) over a reasonable range of environmentally relevant values. Derive a calibration equation and assess likely uncertainty of sensor (e.g. +/- 2degrees) based on how well your calibration equation fits tyour observations.

Together with the Emmanuel Boss or Jim Loftin test your sensor and assess how well the sensor performed (they will test your sensor with you).

Write a short report which includes a picture of your sensor setup, a figure with the calibration data, test data, a calculation of the likely uncertainties in the measurements and a copy of your program.

Extra credit (whole grade): figure out how to store data you collect on the board itself and/or transmit data wirelessly to your computer.

Grading: late submissions, a grade down.

Rubric:

A	Sensor works, calibrated well and performs well in test (A- if minor details missing).
B	Sensor works, calibrated well but fails in test.
C	Sensor works, was not calibrated and fails in test.
D	Sensor seems to respond to the environment but it is not obvious what the sensor is doing.
E	Some components are attached but no output is measurable.
F	No homework turned in.