University of Wisconsin - Madison  
College of Engineering [EGR]  
Last Offered: 2015-2016 Spring [1164]  
Direct Link to this Syllabus: 

1. E C E 317, Sensors Laboratory  
2. Credits: 1    Contact Hours: 3.0  
3. Textbook and Materials:  
   ECE 317 Lab Manual  
   a. Other Supplemental Materials: None  

- **Specific Course Information:**  
  a. **Brief description of the content of the course (Course Catalog Description):** A hands-on introduction to a variety of different sensor types. Labs incorporate implementation concerns involving interference, isolation, linearity, amplification, and grounding.  
  b. **Pre-requisites or Co-requisites:** ECE 271, ECE 340 or cons inst  
  c. **This is a Selected Elective course.**  

- **Specific Goals for the Course:**  
  a. **Course Outcomes:**  
     1. The students will design and build a temperature control system using analog hardware.  
     2. They will measure several sensors and choose one appropriate for the system they are designing and building.  
     3. They will learn how to condition the sensor signal.  
     4. They will design and build a PID control system to use with the sensor and a peltier cooler for temperature control.  
     5. The students must also present the design ideas to the class in the form of a product promotion including some of the data that supports the design decisions they made for
the product.
6. Once the control system is functioning the students must design a GUI to give a visual monitor and control capability for the system.

- **ABET Student Learning Outcomes:**

  (a) Ability to apply mathematics, science and engineering principles.
  (b) Ability to design and conduct experiments, analyze and interpret data.
  (c) Ability to design a system, component, or process to meet desired needs.
  (e) Ability to identify, formulate and solve engineering problems.
  (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.