Course description for CS 2984 Introduction to Physical Computing
Spring 2014, Dr. Tom Martin

Course description: This course is intended to give students a hands-on introduction to physical computing, where computing mediates a person's interactions with the environment. The course will be run in a studio setting, providing students with an exposure to a variety of prototyping and implementation techniques. Using simple microcontroller boards such as the Arduino and Raspberry Pi, along with sensors, actuators and other electronics, students will create interactive and responsive devices, installations and environments. The course will take a human-centered design approach to exploring the range of expressions and affordances provided by physical objects whose response is determined by computation. The course work will consist of short projects to learn new techniques and a longer term, more open-ended project for creative application of those techniques.

Objectives:

The goal of the course is to provide students with technical skills in programming, electronics, and communication, such that they can apply physical computing in an area of their own interest. No prior programming or prototyping experience is required. There are no pre-requisites.

Having successfully completed this course, the student will be able to:

- Describe properties of physical computing and its potential applications in their area of interest
- Specify techniques for sensing, actuating, and processing that are appropriate for a range of physical computing applications
- Design and implement physical computing objects using electronics components, programming, and physical prototyping
- Work in a team to design, develop, and document a physical computing application

Method of evaluation:

A student's performance in the class will be evaluated by the following:
- Attendance and participation: 20%
- Short technical projects to introduce specific prototyping techniques (4-5 short projects): 40%
- Final project presentation and demonstration: 15%
- Final project quality and documentation: 25%