Topics
HCI, electronics, serial, parallel, microcontrollers, soldering, programming, Arduino, memory, variables, hex, decimal, binary, virtual, analog, performance and responsive objects, interactivity as dynamic, socially engaged, and collaborative process that may or may not involve machines, aesthetics of digital interactive artifacts with respect to discourses in the visual arts, communications and performance, representation, visual language, link, rhizome, multiplicity, network, documentation, storage, performance, schematics, meters, components, input, output, memory, variables, serial communication, motors
(in no particular order and this list is subject to change)

Course Description
Physical computing/HCI (Human Computer Interaction) explores how devices respond to and interact with human physical action. In this 3 credit class, students will create artwork that explores physical interfaces beyond mouse/keyboard/screen interactions through the use of microcontrollers and sensors. This course introduces students to basic electronics, microcontrollers and sensors. We will examine what works in terms of the conceptual content as well as how it works technically. Through readings, discussions, practical exercises, individual and collaborative projects, students will develop an articulate, theoretical basis for conceptualizing and discussing works presented in class as well as their own creative projects. Emphasis will be placed on the ways that the technology and interactivity relate to the content of the work. Physical computing takes a hands-on approach, which means that you spend a lot of time building circuits, soldering, writing programs, building structures to hold sensors and controls, and figuring out how best to make all of these things relate to a person’s expression.

Objectives
Students will demonstrate understanding of the following principles and techniques through studio assignments:
• Explore recent and current trends in digital arts and experimental media research
• Learn techniques of basic electronics
• Create art work that that explores interactions between humans and processes such as motion, mapping, sound, position, gesture recognition
• Learn to solder and wire
• Demonstrate skills in basic programming with Arduino and Processing to facilitate the interface between humans, objects, and sensors
• Integrate tools and concepts from science & technology into art making
• Articulate theoretical perspectives relevant to cultural experimentation with embodiment, physical computing, motion detection, gesture recognition, activated objects and alternative interfaces, advances

Course Structure
• WEEKS 1-5  introduction to electronics, microcontrollers, digital input and output, serial output, memory and variables, analog input, analog output, a little sound
• WEEKS 6-11  digital output, motors, coding
• WEEKS 12-16 project development and critique

Materials
required texts
Beginning Arduino by Michael McRoberts 2010 ISBN-1430232404 This book is also can be accessed as an e-
Participation by all members is critical to the success of this class. Excellent attendance and participation are expected. Absences are allowed for religious holidays, a verifiable death in the immediate family, or with a doctor’s note. Absences for other reasons will be noted and will affect your grade. There is a correlation in studio classes between attendance and final grades. You have a better chance of doing well if you come to class. Only three (3) unexcused absences will be allowed. Every unexcused absence beyond this will lower your grade by a letter grade. Excused absences include religious holidays, a verifiable death in the immediate family or with a doctor’s note.

Attendence + Participation

In-class experiments, assignments, homework, quizzes, and exercises (Attendence), class participation (statements, questions, teamwork, coming to class with all materials, general preparation, and proper classroom etiquette), 40% class participation (attendance, participation in class discussions, reading responses, asking/answering questions, teamwork, coming to class with all materials, general preparation, and proper classroom etiquette), in-class experiences, assignments, homework, quizzes, and exercises

Grades and Evaluation

The purpose of grading is to clearly and accurately pinpoint the strengths and weaknesses of your progress. You will receive grades on all assignments and receive a progress report and meet with me individually at midterm. This report will evaluate progress, note strengths and areas for improvement. Your overall grade will be based on the information and ideas discussed, and your formal, technical, and conceptual progress as demonstrated in projects and exercises, and professionalism during the course.

Students will be evaluated through exercises, participation, research, presentations, and technical proficiency with the various software applications, their aesthetic application, and problem solving.

Grading Scale

A 100–94: superior work, all criteria have been surpassed in a distinguished manner
A- 93–90: superior work, all criteria have been surpassed
B+  87–89: very good work, all criteria have been surpassed
B  83-86: above average work
B-  80-82: slightly above average
C+  77-79: adequate, average work
C  73-76, less than adequate work
C-  70-72, less than adequate work
D+  69-72 barely meeting criteria
D  60-62 barely meeting criteria
D-  59-0 failure to meet criteria

Work that is late will be graded one letter grade down for each day after the deadline of the assignment.

Distribution of Grades

Projects Total 60% = Midterm group project 30% + Final Project 30%
40% class participation (attendance, participation in class discussions, reading responses, asking/answering questions, teamwork, coming to class with all materials, general preparation, and proper classroom etiquette),

Attendence + Participation

This class is very experiential and experimental in nature. We will do a lot of in class activities for which you will get credit. Many of these activities can not be “made up” outside of class. You will miss out on a great deal if you do not come. There is a correlation in studio classes between attendance and final grades. You have a better chance of doing well if you come to class. Only three (3) unexcused absences will be allowed. Every unexcused absence beyond this will lower your grade by a letter grade. A total of seven absences, excused or unexcused, will result in a grade of “E” for the class. Excused absences include religious holidays, a verifiable death in the immediate family or with a doctor’s note.

What constitutes participation?
Respect

I want this class to be fun and meaningful with everybody feeling comfortable to contribute to the dialogue. This is how we learn. Effective learning/teaching is a creative and co-constructed experience with give and take between teacher and student and between student and student. Key to facilitating an environment for learning is respect. Disruptive and disrespectful behavior make for stressful atmosphere which is not conducive to learning. Please observe the following class policies.

- Be professional; be on time. Walking in late or not being prepared is disruptive to others.
- You are expected to stay for the entire class.
- Cell phones need and pagers to be turned off before class starts.
- In group projects, you are expected to do your share of the work and communicate effectively with others in your group ie. giving correct contact information to the rest of the group, responding to emails and phone calls regarding the group project, attending meetings to work out assignments and schedules.
- Most of my communications outside of class with individuals as well as the class are done via email, please check your UFL account regularly for updates and additional course information.
- Address me and your fellow students respectfully both in person and in e-mail.
- Pay attention during class, no surfing that is not relevant to the topic at hand, AIMing, reading newspapers, doing work for other classes.
- Listening to other students and myself while they are talking and not carrying on conversations or interrupting while others have the floor.
- Students will conduct themselves with personal integrity and honesty. See UF policies below.
- Common courtesy--treat others as you would like to be treated.

What you can expect from me

- End class on time or within two minutes of scheduled ending time
- Answer students' email with in 24 hours or less (usually less) unless I am out of the country or in a place where there is not email. My office phone is NOT the best way to reach me as I am often in the lab teaching or in my studio working. Face to face communication in class or email are the preferred methods of communication.
- Return assignments in a timely manner
- Be available during my office hours. If I am not in town, I will let you know in advance if I am not able to attend office hours.
- Listen to student concerns and questions.
- Explain and answer questions regarding the topics of the class
- Listen to other students and myself while they are talking and not carrying on conversations or interrupting while others have the floor.
- Students will conduct themselves with personal integrity and honesty. See UF policies below.
- Common courtesy--treat others as you would like to be treated.

general university policies and services

Includes personal, academic, crisis and career services. Dial 392-1575.

contacts for university counseling services

http://www.dso.ufl.edu/stg/

accommodations for students with disabilities

I will make every attempt to accommodate students with disabilities. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Disability Office -- http://www.dso.ufl.edu/OSD

UF STUDENT GUIDE

This resource covers most policies and procedures important to students - http://www.dso.ufl.edu/stg/

computer lab informations

When this class is held in the lab, there is no food and drink. For lab hours, equipment checkout information, access http://plaza.ufl.edu/mchristo/
misrepresentation, conspiracy, or fabrication.

commit nor assist another in

honesty policy

Students, upon prior notification of their instructions, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith. Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence. A student who believes that he/she has been unreasonably denied an education benefit due to religious beliefs or practices may seek redress through the student grievance procedure.

honesty policy

An academic honesty offense is defined as the act of lying, cheating or stealing academic information so that one gains academic advantage. As a University of Florida student, one is expected to neither commit nor assist another in committing an academic honesty violation. Additionally, it is the student's duty to report observed academic honesty violations. These can include; cheating, plagiarism, bribery, misrepresentation, conspiracy, or fabrication.
computer use and acceptable use policy

All faculty, staff, and students of the University of Florida are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

http://www.cira.ufl.edu/computers/
http://www.cio.ufl.edu/aupolicy.htm

disruptive behavior

Faculty, students, Administrative and Professional staff members, and other employees [hereinafter referred to as “member(s)” of the University], who intentionally act to impair, interfere with, or obstruct the mission, purposes, order, operations, processes, and functions of the University shall be subject to appropriate disciplinary action by University authorities for misconduct, as set forth in the applicable rules of the Board of Regents and the University and state law governing such actions. A detailed list of disruptive conduct may be found at http://www.aa.ufl.edu/sarRules/1008.h

Be advised that you can and will be dismissed from class if you engage in disruptive behavior.

Critical Dates on the University Calendar

http://www.reg.ufl.edu/dates-critical.html

It is your responsibility to check the class website in a regular basis. Generally, I announce any changes to the syllabus in class.

Navigator 555A Schematic Diagram

1. Value of component peripherals are changed to improve the performance with out notice.
2. Maintenance rel specified .............. \% of R
3. Capacitor not specified .............. \mu\text{F}