# School of Communication
# University of Miami

CIM 542/642-1C
Physical Computing
Spring Semester 2017
Class Time: Monday, 10:10-12:40pm
Class Site: https://github.com/zevenrodriguez/CIM542-642

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## SYLLABUS

## COURSE DESCRIPTION AND PURPOSE:

This seminar will examine the differences and opportunities present, between a series of physical computing techniques and rapid prototyping.

## COURSE OBJECTIVES:

- Understand to translate human to digital interactions
- How to setup basic electronic circuits
- Being able to program basic interactions
- Understand 3D printing process and best practices
- Able to design a basic physical human interface

## MATERIALS FEES:

Arduino Starter Kit from Arduino.cc or from Adafuit.com
https://www.adafruit.com/products/1078

## COURSE PREREQUISITES: None

## ASSIGNMENTS/COURSEWORK:

Assignments and due date will be assigned in class and posted on class website. Documentation and assignments should be kept on github and/or posted on a wiki.

| **Practice** (8 total) | **40 points total** |
| *Consist of small sketches covering the day's lesson* | 5 points each |

| **Midterm Project** | **20 points total** |

*Create an Arduino project that translates a simple user interaction to an output. Think about how your project might work in a larger context.*

| **Midterm and Final Progress Report** (2 total) | **10 points total** |
| *A short report on the work done for your Midterm and final project.* | 5 points each |

| **Code Plan (2 total)** | **10 points total** |
| *Are pseudocode and logic breakdown of what you want your programs to do.* | 5 points each |

| **Final Project** | **20 points total** |

*An awesome interactive project that demonstrates your new found technical abilities as well as your attention to aesthetics.*

***Note: Students enrolled in CIM642 assignments will be graded with greater rigor. When completing Class Assignments, Student applications must have a purpose and context which should be written in your blog entry.***

## TEXTS AND RESOURCES RECOMMENDED:

**Online Resources:**
https://www.arduino.cc/


## RECOMMENDED READING:

Monk, Simon. Programming Arduino: Getting Started with Sketches

Mims III, Forest M. Getting Started in Electronics

Scherz, Paul and Monk, Simon. Practical Electronics for Inventors

## GRADING/EVALUATION:

This is a skills based course and as such in class assignments are either complete or not.  The professor determines whether the submitted assignment meets the appropriate criteria to be deemed completed. Midterm and final projects are graded on their functionality, aesthetics, creativity, and effort.

| Grade | Points Required |
|-------|-----------------|
| A     | 95              |
| A-    | 90              |
| B+    | 87              |
| B     | 84              |
| B-    | 80              |
| C+    | 77              |
| C     | 74              |
| C-    | 70              |
| D     | 60              |
| F     | 0               |

## ATTENDANCE POLICY:

Learning to program is like learning a new language; it builds on concepts. Missing a class might hinder your ability to understand concepts presented on another day. If you know that you will be missing class, please make arrangements ahead of time. Missing more than 2 classes will result in a failing grade.

## RELIGIOUS HOLY DAY POLICY:

It is the student's obligation to provide faculty members with notice of the dates they will be absent for religious holy days, preferably before the beginning of classes but no later than the end of the first three (3) class days. Absences due to observance of religious holy days not pre-arranged within the first three class days may be considered unexcused and there is no obligation to allow any make up work, including examinations. Missing a class due to travel plans associated with a particular religious holy day does not constitute an excused absence. The University's complete Religious Holy Day Policy can be found in the 2016-2017 *Bulletin.*

## HONOR CODE AND PLAGIARISM STATEMENTS:

Students enrolled in this course are expected to abide by the University of Miami Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework. Academic dishonesty of any kind, for whatever reason, will not be tolerated.

No honest student wants to be guilty of the intellectual crime of plagiarism, even unintentionally. Therefore, we provide you with these guidelines so that you don't accidentally fall into the plagiarism trap.

Plagiarism is the taking of someone else's words, work, or ideas, and passing them off as a product of your own efforts. Plagiarism may occur when a person fails to place quotation marks around someone else's exact words, directly rephrasing or paraphrasing someone else's words while still following the general form of the original, and/or failing to issue the proper citation to one's source material.

In student papers, plagiarism is often due to...

- turning in someone else's paper as one's own
- using another person's data or ideas without acknowledgment
- failing to cite a written source (printed or internet) of information that you used to collect data or ideas
- copying an author's exact words and putting them in the paper without quotation marks
- rephrasing an author's words and failing to cite the source
- copying, rephrasing, or quoting an author's exact words and citing a source other than where the material was obtained. (For example, using a secondary source which cites the original material, but citing only the primary material. This misrepresents the nature of the scholarship involved in creating the paper. If you have not read an original publication, do not cite it in your references as if you have!)
- using wording that is very similar to that of the original source, but passing it off as one's own.

The last item is probably the most common problem in student writing. It is still plagiarism if the student uses an author's key phrases or sentences in a way that implies they are his/her own, even if s/he cites the source.

Sharing code and collaborating on solutions is actively encouraged in this class. We're working with software that is able to evolve and remain free because of contributions from a community – including direct contribution of source code, detailed bug reports, documentation, example code, help on the forums, and so on. You will be able to contribute in this way.  Likewise, sharing will extend to the work you do in class. You are actively encouraged to share code solutions with your colleagues. "Free software" or "open source software" is still based on ownership and requires attribution.  Appropriating work without attribution is plagiarism and will never be tolerated. ***If you attempt to pass someone else's work off as your own without giving that person credit, you will fail this course.***

## COURSE TOPICS OUTLINE

Depending on the speed of the class, some topics might be delayed or sped up. In the case of delays, time will be devoted to workshops on trouble areas.

**Week 1: Jan 16th**
MLK Day

**Week 2: Jan 23th**
Intro to Physical Computing

**Week 3: Jan 30st**
Basic Electricity and Electronics, Getting Started with Arduino

**Week 4: Feb 6th**
Digital Input/Output

**Week 5: Feb 13th**
Analog Input/Output

**Week 6: Feb 20st**
Advanced Programming

**Week 7: Feb 27th**
Servos, Transistors, and Motors

**Week 8: Mar 6th**
Midterm Lab

**Week 9: Mar 13th**
**Spring Break**

**Week 10: Mar 20st**
Midterm Due
Intro to Serial

**Week 11: Mar 27th**
Serial Continued

**Week 12: Apr 3th**
I2C and SPI, Project Planning

**Week 13: Apr 10th**
Intro to 3D Design

**Week 14: Apr 17th**
3D Design Continued

**Week 15: Apr 24th**
User Testing

**STUDENT ACKNOWLEDGEMENT:**

I HAVE RECEIVED AND READ THE SYLLABUS FOR CIM542/642 1C.  I HAVE COMPLETED THE PREREQUISITE COURSES LISTED IN THE SYLLABUS OR HAVE HAD THE PROFESSOR SIGN BELOW TO CERTIFY A WAIVER OF THE PREREQUISITES.

SIGNED: _____

PRINT NAME: _____

DATE: _____

PROFESSOR PREREQUISITE WAIVER (IF NEEDED)_____