School of Communication
University of Miami

CIM 542/642-R Physical Computing - Spring Semester 2020

Wolfson 1018 TuTh 2:00-3:15pm

Instructor

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SYLLABUS

CLASS SITE: https://github.com/zevenrodriguez/CIM542-642

COURSE DESCRIPTION AND PURPOSE:

This course explores how to build a bridge between the physical and digital world. Students will learn to develop software and hardware to sense and respond to physical interaction. Through various projects, students will learn how to program sensors and other electronic components to convert the human senses into creative inputs and outputs, such as lights, sounds, and movement. Students will learn the ideation and design process through challenges presented in their assignments and personal projects. In this course students will also learn how to design for and use various digital fabrication tools, such as 3D printing, laser and paper cutting, and CNC milling. Students will have access to work hands on with these fabrication tools to enhance and build their prototypes.

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:

- Elegoo Uno Kit from Amazon
- Official Arduino Starter Kit from Arduino.cc or from Amazon.com

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 submitted through Microsoft Teams.

2 Small Projects **60 %**
Create a project that translates a simple user interaction to an output.

Final Project **30%**
An awesome interactive project that demonstrates your new found technical abilities as well as your attention to aesthetics.

Participation **10%**

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.

End Of Year Show:

The Interactive Media Program puts on a project showcase at the end of the year. Students must enter and present a project at the showcase.

TEXTS AND RESOURCES RECOMMENDED:

Learn Electronics with Arduino: An Illustrated Beginner's Guide to Physical Computing by Jody Culkin, Eric Hagan
ISBN-13: 978-1680453744
ISBN-10: 1680453742

Online Resources:
https://www.arduino.cc/
http://arduinotogo.com/

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	Playability	Process	Creativity
A	Users can experience a cohesive and smooth interaction. Throughout the experience, instruction is clear and concise.	Students documents in detail project's inspiration, creation, user and code flow, and areas of potential growth	Project has gone through multiple iterations and provides something novel, original, and/or engaging to the users. Visually the project shows a high level of refinement
B	Project's instruction is clear, but experience can be buggy or lacks some cohesion. Student has shown growth throughout the process	Student completes all points of documentation, but areas lack sufficient detail	The project has some growth through iterations. Visually, the project needs more focus on design and details
C	Project's instruction needs work and experience has many issues	Documentation is missing details or key areas	Project did not go through enough iteration and its presentation and usability is too basic
D or Below	Project has problems including poor instruction and poor user experience	Student did not sufficiently explain the purpose nor how the project works	The project did not go through various iterations. Little work was done to make it visually appealing.

Grade	*Points Required*	*Grade*	*Points Required*

A	93	C	74
A-	90	C-	70
B+	87	D+	67
B	83	D	63
B-	80	D-	60
C+	77	F	0

ATTENDANCE POLICY:

Students are expected to attend each class and be on time. All students are responsible for material covered in the classroom regardless of his/her presence. Three or more unexcused absences will result in the deduction of one complete letter grade. Doctor's appointments, job-related activities, interviews, study sessions or other meetings during class are *not* an excused absence.

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 current 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...

1. turning in someone else's paper as one's own
2. using another person's data or ideas without acknowledgment
3. failing to cite a written source (printed or Internet) of information that you used to collect data or ideas
4. copying an author's exact words and putting them in the paper without quotation marks
5. rephrasing an author's words and failing to cite the source
6. 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!)
7. 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.

In creative assignments, plagiarism is often due to...

- Copying, sampling, or modifying someone else's media or code without attribution or doing so when original work is expected or required for the assignment.
- Using stock imagery or media from a Creative Commons source without proper attribution.
- Removing source code licensing and attribution information and passing it off as your own.
- Using media without knowledge or documentation of copyrights, licensing, and other use restrictions.

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.

The class will be a flip classroom. I will post video lectures or assignments before class and during class we will have office hours. I will be available only through teams. I would like to keep emailing to a minimum to make sure that all questions get answered. If you have general questions, use the general chat. If you have specific questions, feel free to send me a message. Teams has a great feature to do screen sharing, FYI. If you are not available for class due to time zone issues, please reach out to make arrangements.

- Online lecturers will be available before class
- Check in periodically for updates on assignments and lectures
- Office hours during class time
- Install Microsoft Teams Desktop

Week of March 23rd – Re-intro to 3D Design and Tinkercad

Week of March 30th – Toy Design Workshop

Week of April 6th - Toy Programming Workshop

Week of April 13th – Toy Projects Due, Helping Robots Project Introduction

Week of April 20th - Helping Robots Design

Week of April 27th - Helping Robots Programming

Week of May 4th - Helping Robots Due - Spring semester ends on May 6

STUDENT ACKNOWLEDGEMENT:

I HAVE RECEIVED AND READ THE SYLLABUS FOR CIM542/642-R. 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)_____