

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 %
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Create a project that translates a simple user interaction to an output.

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

Participation	10%
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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.

<i>Grade</i>	<i>Points Required</i>	<i>Grade</i>	<i>Points Required</i>
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.

Week 1: Jan 14th-16th - Intro to Physical Computing, Intro to Basic Fabrication

Week 2: Jan 21th-23rd - Getting Started with Arduino, Basic Electricity and Electronics

Week 3: Jan 28th-30th - Representing Emotion Work Week

Week 4: Feb 4th-6th – Lights and Animation

Week 5: Feb 11th-13th - Project Presentation

Week 6: Feb 18th-20th – Introduction to Analog Input/Output

Week 7: Feb 25th-27th – Analog Input/Output Cont' & Intro to 3D Design/Printing

Week 8: Mar 3rd-5th – 3D Design Workshop

Week 9: Mar 17th-19th – Toy Workshop

Week 10: Mar 24th-26th – Toy Presentation

Week 11: Mar 31st-Apr 2nd – Final Ideation Workshop

Week 12: Apr 7th-9th - Fabrication Workshop

Week 13: Apr 14th-16th – Programming Workshop

Week 14: Apr 21st-23rd – Project Workshop

End of Year Show TBA

IMPORTANT DATES:

Jan 13 - CLASSES BEGIN

Jan 20 - HOLIDAY (MARTIN LUTHER KING, JR. DAY)

March 7-15 - SPRING RECESS

March 25 - Last Day to Drop a Course

April 24 - CLASSES END (11:00 PM)

April 25 - April 28 - Reading Days

April 29- May 6 - FINAL EXAMS

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) _____