

Syllabus	Developing and Designing Interactive Devices Fall 2018 CS5424/INFO5345
Teaching Team	Wendy Ju (wendyju@cornell.edu) Andrea Cuadra (apc75@cornell.edu) JD Zamfirescu (jdz32@cornell.edu)
Description	This course provides an introduction to the human-centered and technical workings behind interactive devices ranging from cell phones and video controllers to household appliances and smart cars. This is a hands-on, lab-based course. Topics include electronics prototyping, interface prototyping, sensors and actuators, microcontroller development, physical prototyping and user testing. For the final project, students will build a functional interactive device prototype of their own design, using Javascript, single-board Linux computer, embedded microcontrollers, and other electronics components.
Attendance	<p>It is important to be in class. Students are expected to be present throughout each semester at all meetings of classes for which they are enrolled. You do not need our permission if you need to miss class for some reason. Of course the absence will impact your performance in the class.</p> <p>Please do not come to class if you are sick. In light of the rise of influenza cases during this season, the Center for Disease Control recommends students with flu-like symptoms self-isolate until at least 24 hours after they are free of fever.</p> <p>If you do miss class, the expectation is that you will contact fellow students to find out what occurs in class, to catch up on course announcements, and to otherwise make up for lost time.</p>
Late Policy	<p>Lab prep will be due in class on Thursdays. Lab assignments will be due by class on Tuesdays. Since the labs are cumulative—each one depends on your understanding of the previous one—it is essential to stay caught up.</p> <p>Late assignments will be dropped one letter grade per day late.</p>
Textbook	Practical Electronics for Inventors, 4 th edition Paul Schertz & Simon Monk In stock on Amazon.com
Course site	Please find the course website on https://github.com/FAR-Lab/Developing-and-Designing-Interactive-Devices

Grading Your final grade will be based on:

Lab assignments (40%)
Final project (25%)
Homework assignments (25%)
Class participation (10%)

While technical functionality will be a major component of homework, labs and the final project, this is a design class. A sizable portion of the class grade will be based on a subjective evaluation of your device designs. Very technically simple designs can be great, and very technically complex designs can be wanting, so focus on developing a “design eye” rather than trying to make the most ambitious feature-laden projects imaginable.

Integrity We will strictly follow Cornell’s policies on academic integrity as outlined in the Academic Integrity Handbook.

In this class, we make substantial use of open-source software. We encourage you to make use of found code and online examples, and also for the class to act as a microcosm of the open-source community by assisting and collaborating with one another.

That said, proper attribution of all work, assistance and collaboration is absolutely critical in this endeavor. We expect you to be absolutely meticulous in documenting and celebrating shared ideas and code.

Accessibility We are happy to make accommodations to make this course accessible to all students. Please contact the teaching team if you need help. Also, the Office of Student Disability Services (<http://sds.cornell.edu>) may have services available.

Schedule The following is a provisional schedule. We will be changing the schedule in response to feedback.

Week	Topic	
1	August 23	
	Introductions & Course overview	
2	August 28	August 30
	Basic Circuits, Microcontrollers	Lab: Frankenlight
3	September 4	September 6
	Firmware Programming, Interaction Design	Lab: Digital Timer
4	September 11	September 13
	Displays and Actuators	Lab: Data Logger
5	September 18	September 20
	Using Integrated Circuits	Lab: Paper Displays
6	September 25	September 27
	Design, Making, Fabrication	Lab: Useless Box I
7	October 2	October 4
	Single Board Computers, Microcontrollers vs. Microprocessors	Lab: Useless Box II
8	October 9	October 11
	FALL BREAK	Lab: Chatbot
9	October 16	October 18
	Networking/Communications/Distributed Applications	Lab: Video Doorbell
10	October 23	October 25
	Neural nets on Pi, Nik Martelaro	Lab: Seeing Machines

11	October 30 Open Source Software/Hardware	November 1 Studio time for Projects
12	November 6 Interactive Devices for Exhibits and Showcases, James Patten	November 8 Studio time for Projects
13	November 13 Refining Prototypes	November 15 Project check-in
14	November 20 Scaling Up, Manufacturing	November 22 THANKSGIVING RECESS
15	November 27 Product Viability	November 29 Project Functional check off
16	December 4 Final Project Presentations & Demonstrations	