School of Visual Arts
Products of Design
PDG-5080-A **Making Studio**
Fall 2021
Time: Wednesdays 10am to 12:50am ET
Class blog: http://makingstudio.blog
Instructor: Becky Stern
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Course Description
As the impacts and consequences of mass production become better understood, designers find new relevance in the fields of making, hacking, hand-crafting, and DIY. This course exposes students to techniques, tools, and resources for expanding what we can make ourselves, as well as sharing what we make. In-class workshops, field trips, and guest instructors will inform individual and group assignments around the creation of functional product prototypes. Students will combine traditional and novel techniques and materials in electronics, coding, crafts, fabrication, documentation, and other do-it-yourself topics. The course will provide great emphasis on participating in online communities about making, providing students with opportunities for exposure and access to a stellar network of innovators, hackers, hobbyists, and crafters producing DIY projects.

Course Objectives
Makers today have all the resources available to them to fully develop a product idea into a small business. Methods of fabrication like laser cutting, CNC milling, and 3D printing— once only available to large corporations— have recently become easily accessible for just about anyone. Likewise craft techniques like sewing and knitting can be simple to learn and open up a wide new ability to express creative ideas. This course will offer an introduction to many kinds of making, including electronics/physical computing with Arduino, and will give the student the confidence to move well beyond ideation and concepts to creating functional products of design.

Course Outline
Schedule subject to change. Unless stated otherwise, **assignments are due via Canvas and/or class blog post 14 hours before class (8pm ET)**.

Week 1	Sept 8	Intros, syllabus & class blog overview, Project 1 assigned (Teardown)
Week 2	Sept 15	Project 1 discussion, Arduino introduction
Week 3	Sept 22	Sewing/soldering introduction, introduction to Project 2 (Plush night light)
Week 4	Sept 29	In progress critique/ 1:1 meetings
Week 5	Oct 6	Project 2 presentations, introduction of Project 3 (Halloween costume)
Week 6	Oct 13	Arduino workshop
Week 7	Oct 20	In class work time with 1:1 meetings
Week 8	Oct 27	In progress critique/troubleshooting
	Oct 31	Halloween parade (time TBA)
Week 9	Nov 3	Project 3 presentations
Week 10	Nov 10	Video documentation watch-a-thon, Final Project discussion
Week 11	Nov 17	Arduino workshop, work time/office hours
Week 12	Nov 24	Peer-supported writing workshop/1:1 meetings
Week 13	Dec 1	Final Project in-progress critiques
Week 14	Dec 8	Final Project presentations
Week 15	Dec 15	Improvements and reflections - last class
1 week later (tent. Dec 22)		**Final dossiers due** (required for passing grade)

Learning Outcomes

- Experience new methods of making
- Develop knowledge and hands-on skills in basic electronics and physical computing
- Develop hands-on skills in student-selected crafts: sewing, soft circuits, knitting, jewelry, laser cutting, 3D printing, etc.
- Create portfolio-building products and projects
- Engage with a huge online maker community through sharing projects
- Document projects through photography, video, and writing
- Experience publishing projects as how-to manuals online
- Learn to self-promote online
- Cultivate resources and confidence toward creating a business around making

Required Reading

The course Arduino exercises will loosely follow the Instructables Arduino Class and Internet of Things Class.

The course book is *Getting Started with Arduino*. Use it to look up Arduino terms and questions, and read the background chapters at your own pace— you will not be explicitly assigned readings from the book, yet are expected to read the entire book during the course.

Students are encouraged to use an RSS reader such as NewsBlur to research DIY and maker-related blogs.

Canvas will include links to all required readings. Class will include asynchronous elements where possible, such as assignments to watch videos, read specific texts, and contribute to video/voice feedback opportunities.

Materials and Supplies
You will need access to a digital still and video camera for this course (your phone will likely suffice). Access to lighting equipment, microphone, and tripod are highly recommended. The computer(s) you use for this course must be capable of internet access, photo manipulation, and video editing. If your laptop only has USB C ports, you may need a C-to-A cable or adapter to work with Arduino. Use of platform-agnostic and open source technologies are highly encouraged. Materials and supplies will vary based on each student or team project's needs.

To get started, there are some tools and materials every student should have/have access to including a basic Arduino kit, soldering supplies, and sewing supplies. For our Arduino workshops, the department has prepurchased your electronics components. Find the list, with suggested suppliers, on airtable: https://airtable.com/shrXhB3CgbJcoZLSX

Some resources for further shopping/downloads/services:
Supplies/materials
Adafruit.com - NYC based components supplier (ship via UPS ground for fastest delivery, or use same-day delivery before 11am)
Sparkfun.com - Colorado based components supplier
lessEMF.com - upstate NY - interesting conductive materials such as fabrics and paints
Digikey.com - Minnesota based components supplier
Jameco.com - supplier of new and surplus electronics components
Mcmaster.com - utility hardware supplier
Polytek.com - moldmaking and casting supplier

Communities
Instructables.com - general making community owned by Autodesk
Hackster.io - electronics community owned by Avnet
Hackaday.io - electronics community owned by SupplyFrame

Services
Thingiverse.com - 3D printing files and other CNC files (laser cutter, etc.) sharing site
Shapeways.com - on demand 3D printing service
3dhubs.com - distributed on demand 3D printing, CNC machining, and injection molding service
Ponoko.com - on demand laser cutting service

Software
Arduino.cc - electronics prototyping ecosystem
Tinkercad.com - free browser-based 3D modeling and circuit prototyping software
Autodesk Fusion 360 - free for students - 3D design software
Gimp.org - free and open source photo editing software
Inkscape.org - free and open source vector drawing software
Openscad.org - free and open source programmatic 3D modeling software
Cura - free 3D slicer/printer file prep software

Criteria for Evaluation
Participation and communication: Your participation in class will be evaluated not just in discussions and group project work, but also online through the class blog and other sharing outlets including photo, video, tutorial, and social media sites. Plentiful, frequent, high-quality, and well-organized contributions to class and the web are essential.

Individual and group assignments: You will be evaluated on your production of four projects over the course of the semester. Your projects will be evaluated based on cultural merit (benefit/relevance to target community), writing, photography, videography, and documentation online.

Project Dossiers
In addition to other requirements for the course, a passing grade will require the submission of a project dossier 1 week after the final class concludes. You will not receive a passing grade unless you provide the dossier on time. Please consult with your instructor and the class Google calendar for dossier due dates. Project dossier instructions will be sent from our department staff.

Instructor Addendum
Schedule office hours with me anytime you want to chat (in video or by email)— I can meet with you over Zoom. Please let me know as far in advance as possible if you must miss a class or will be late (by email or text message if necessary).