School of Visual Arts
Products of Design
PDG-5080-A **Making Studio**
Fall 2019
Class blog: http://makingstudio.blog

Instructor: Becky Stern

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, entrepreneurship, and other do-it-yourself areas. 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 products of design that are fully realized and fully functional.

Course Outline
Schedule may change to accommodate visiting instructors and field trips. Unless stated otherwise, **assignments are due via class blog post by 8pm the night before class**.

Week 1	Sept 4	Intros, syllabus & class blog overview, Project 1 assigned (Teardown)
Week 2	**Sept 11**	**no class**-- Instructor out of town
Week 3	Sept 18	Arduino workshop, Project 1 discussion
Thursday	**Sept 19**	Sewing/soldering workshop, introduction to Project 2 (plush night light)
Week 4	Sept 25	In progress critique
Week 5	Oct 2	Project 2 presentations, introduction of Project 3 (Halloween costume)
Week 6	Oct 9	Arduino workshop
Week 7	Oct 16	In class work time
Week 8	Oct 23	In progress critique, **midterm dossiers due** (required for passing grade)
Week 9	Oct 30	Project 3 presentations
Thursday	Oct 31	6pm Halloween Parade (optional)
Week 10	Nov 6	Video documentation presentation, Final Project discussion
Week 11	Nov 13	Arduino workshop, work time
Week 12	Nov 20	Final Project in-progress critiques
Week 13	Nov 27	Peer-supported writing workshop/1-1 meetings
Week 14	Dec 4	Final Project presentations
Week 15	Dec 11	Final Project presentations
Wednesday	Dec 18	**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, groups, blogs, and events
- Document projects through photography, video, and writing
- Experience publishing projects as how-to manuals online
- Learn to self-promote online
- Cultivate resources and confidence for creating a business around independent 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.

Some texts may also be assigned. They will be handed out in class or sent out by e-mail for discussion in future class meetings.

Materials and Supplies
You will need access to a digital still and video camera for this course. 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 will need a C-to-A 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 and may be available directly through the VFL. However, in the case of a workshop, supply acquisition may be organized by the instructor for convenience.

For our Arduino workshops, the department has prepurchased your electronics components. For more details about your kit, find product links in this Adafruit wishlist.

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 the classroom through 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. (For courses that are a full 15 weeks in duration, an additional midterm dossier is required on week 8.) You will not receive a passing grade unless you provide the dossier on time. Please find in this syllabus the precise date and time of the dossier submission deadline for this course. Project dossier instructions will be sent from our department staff. **Making Studio Midterm dossier due Wednesday, October 23 at 10am. Final dossier due Wednesday, December 19 at 10am.**

Instructor Addendum
Schedule office hours with me anytime you want to chat (in person or by email)— I can meet with you at SVA or via Skype/Google+ Hangout. 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).