Expanded Design - GD 535

Time: Wednesdays 8:30 am - 2:00 pm

Location: 1515 Mount Royal Ave. Room 102, Station Building, Digital Fabrication Lab

Class Blog: amandaagricola.com/17/ED

I will post everything that we are covering in class at the beginning of our class time. At the bottom of each day's posting will be your homework assignments due for the following class (unless otherwise stated). This will be an archive for you to return to as needed.

INSTRUCTOR

Instructor: Amanda Agricola

Office: No Office; e-mail and/or schedule to meet on campus

Office Hours: Tues./ Thurs. 2-4 pm

E-mail: aagricola@mica.edu

*If for some reason I do not respond in 2-3 days, e-mail again because there is a chance that your e-mail slipped past me unnoticed.

COURSE DESCRIPTION

This hands on course introduces students to a variety of topics related to expanded design, rapid prototyping, and interactivity through tutorials, workshops, collaborative experimentation, and guided studio time. The course will survey design centric techniques to utilize 3D softwares, Arduino/Processing and time-based media for the web. Students will learn how to prepare files for digital fabrication and prototyping via Illustrator and Rhino with 3d printers and laser cutters. In this class, students will learn to bridge to digital, screen-based world with physical, design objects. Lectures, visiting artists and readings will provide a cultural and technical framework for process-based projects. This course is open to novices and to those seeking to expand their practice by incorporating elements of interactivity.

COURSE GOALS

Students will gain an applied understanding of techniques and processes essential to expanded design for interactivity and rapid prototyping.

LEARNING OUTCOMES

By the end of this class you should be able to....

- Cultivate a working understanding of various processes and best practices for coding, physical computing and rapid prototyping.
- Apply expanded design thinking when ideating through project parameters to create connections between processes and concepts as they relate to a personal art/design practice
- Create and use digital files that conform to best practices in regards to format, compression, output and archiving.
- Apply principles and elements of composition and design to digital works in 2d graphics, 3d fabrication and 4d time-based formats.
- Create projects that effectively use various levels of interactivity, be it with a viewer, the environment, or each other.
- Identify, articulate, and support constructive criticism about your own work and the work of your colleagues.

Materials All Semester

- Computer with Processing 3, Arduino, some sort of text editor, and P5.JS editor (laptop preferred).
- External hard drive or cloud-based file backup
- (Dropbox, Google Drive, Github, BitBucket, etc.)
- Prototyping supplies (sketchbook & writing utensils, optional: cardboard, plexiglass, wood)

Second Section

- Arduino UNO or Leonardo & matching USB cable (kits are $25-$75 online)
- Small breadboard (>= 400 points)
- Small box or storage container with dividers (like a tackle, tool box, or caboodle)
- Choice materials for fabrication (plan for $20-$30 material costs of projects total in the semester)

Print Resources

- Form & Code by Casey Reas, Chandler McWilliams, LUST (REQUIRED)
- Learning Processing by Daniel Shiffman (also online!)
- The Nature of Code by Daniel Shiffman
- Processing: A Programming Handbook for Visual Designers and Artists by Casey Reas & Ben Fry

Online Resources

- Official Processing reference & examples: http://processing.org/reference/
- P5.JS official website: https://p5js.org/
- For Your Processing: http://fyprocessing.tumblr.com
- CreativeApplications: http://www.creativeapplications.net
- Prosthetic Knowledge: http://prostheticknowledge.tumblr.com
- OpenProcessing: http://www.openprocessing.org/
- D Fab Lab Website: http://staff.mica.edu/rmckibbin/index.html
- Lynda, Treehouse, or any tutorials online

Aug 30	Introductions, Syllabus Review, Intro to Processing - Partner Portraits (U102) Tour of Fab Lab (Station) Hw: Read
Sep 6	2D Design in Rhino, Design plant marker for Sumpter Community Garden (Station) HW: Finish Plant Marker File
13	Introduce laser cutter, steps and process, test materials, practice laser cutting, cut plant marker (Station)
20	Turn in HW. 3D Design in Rhino, 3D Printing __ Project 1 : Design and fabricate something Modular
27	Project Work Day (Station)
Oct 4	Critique (Station Classroom) HW: Bring sketchpad to class
11	Intro to Electronics, Paper Circuits, Soft Circuits, Demo Bare Touch (U102) HW: Finish your soft or paper circuit
18	Look at HW. Intro to Arduino, Buttons, LED's, Communicating with Processing __ Soldering (Station)
25	Communicating between Processing and Arduino, Analog input and output (U102) Project 2: Post Human
Nov 1	Project work day (U102 or your studio)
8	Critique (U102)
15	
22	Non-Linear Narrative using Twine and P5.JS (U102) HW: create an interactive narrative
29	Look at HW. Functions, Objects and Arrays in P5.JS (U102)
Dec 6	Styling and Hosting your sketches …. Mad Mapper Demo (U102) Project 3: Collaborative
13	Project work Day (U102 or Your Studio)
20	Critique (U102)

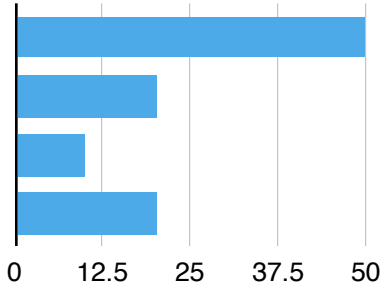
GRADES

Assignments: 50 %

Projects: 20%

Documentation: 10%

Attendance & Participation: 20%



PROJECT EVALUATION

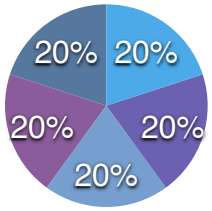
20% **Fulfills the assignment**

20% **Thoughtful presentation**

20% **Demonstrates technical ability**

20% **Conceptual thoughtfulness**

20% **Process and problem solving**



DEADLINES

All projects and homework are to be completed by the start of class on the assigned due date. You will put your project in the appropriate file format in your google drive folder.Unfinished work will not be discussed in class, however, once completed, documentation of late work can be submitted directly to me with a PENALTY OF A LETTER GRADE PER WEEK.

ATTENDANCE POLICY

0-1	2...	3...
GREAT	CONCERN	UGH
	LOWER GRADE	FAIL

15 minutes late = 1/2 Absence

Leaving over 15 minutes early = 1/2 Absence

If you miss a class you are still responsible for all of the material covered as well as any assigned homework. BE SURE TO CHECK OUR BLOG FOR WHAT YOU MISSED!!!

GOOGLE DRIVE FOLDER

Documentation (at least 5 images or 1-5 minute video) of each homework assignment and project should be put in your respective google drive folder for full credit.

COURSE STRUCTURE

At the beginning of each class we will look at the previous week's homework if that applies. The rest of class will be spent following along with technical demos, and sometimes in class assignments that reinforce the material being taught. As with anything, what you put in is what you get out. I will provide you with an introduction to several new skills, and it will be up to you to take it further, which sometimes means learning more through your own self-driven research outside of class time. The first third of the semester will be spent learning rapid prototyping and digital fabrication. The second third will be spent learning physical computing, and the last third will be screen based interactivity.

FINAL PROJECT

The final project is intended to give you the opportunity to further explore some of the concepts and materials we learn in a more personally exciting and interesting way. This is your opportunity to demonstrate your handling of the skills learned, to learn new skills as needed, and to ask questions and get help along to way. The final project emphasizes collaboration, so be thinking about who you might want to work with as the semester goes along.

PARTICIPATION

As a citizen of the classroom, you are expected to actively participate in class exercises, discussions, and critiques. In addition, this class is intended to function as a peer learning environment. I encourage you to support and talk to one another during class, particularly if you are experiencing any difficulty.

COLLABORATION

Collaboration on projects is welcomed and encouraged! However, each team member must carry their own weight in the development and documentation of a project. Afterwards, each collaborator will fill out a brief Peer Review form, which will

allow you to discretely provide feedback on your collaborators. Grades will be given individually, and this feedback will be taken into account when factoring grades.

HELP!

We'll be covering a lot of material this semester which may be completely new to you. Please keep in mind that acquiring any new skill can be a slow and difficult process. Whenever you think you need help outside of class, please let me know as soon as possible and we can schedule a time to meet, or if you provide me with enough details I can sometimes assist through e-mail...

Include:

- All necessary files
- Detailed explanation of what you are trying to do
- Don't forget to consult your peers and the Internet when you run into problems as well!
- Please start your homework ahead of time so that any questions can be directed to me at least 48 hours before class.
- As much as I'd like to assist you, requests on the night before may go unanswered. This will not be an acceptable excuse for missing a deadline.

RESIDENT ENGINEER WORKSHOPS

Saturdays, from 3 to 5pm, with 5 to 6pm available for free play with the materials and for consultation on how to implement ideas.

Week 4, Sept 23: Electronics: Control and Power.
Week 5, Sept 27 (Unravel) & 30: Arduino: Control and Automation.
Week 6, Oct 7: LED and Neopixel Extravaganza.

4. Introduction to Electronics:
Control and Power:
Circuits, Passives, Transistors
Strategies for making your circuits work reliably

5. Introduction to Arduino
Control and Automation:
Getting control of your Arduino
Controlling motion: servo motor
Reading reality: a simple sensor
Automate a system:
sense reality, consider what to do, act
input, processing, output

6. LED and Neopixel Extravaganza
Ooh! Pretty Colors!
Ooh! Flashing Patterns!
Seriously, how much voltage?
Even more seriously, how much current?
Shopping for LED lighting components.
Controlling high power LEDs

A WORD FROM OUR SPONSORS:

Americans with Disabilities Act

Any student who may need an accommodation based on the potential impact of a disability should contact the Learning Resource Center at 410-225- 2416, in Bunting 458, to establish eligibility and coordinate reasonable accommodations.

Environmental Health and Safety (EHS): Students are responsible to follow health and safety guidelines relevant to their individual activities, processes, and to review MICA's Emergency Action Plan and attend EHS training. Students are required to purchase personal protection equipment appropriate for their major or class. Those students who do not have the proper personal protection equipment will not be permitted to attend class until safe measures and personal protection are in place.

Plagiarism

Each discipline within the arts has specific and appropriate means for students to cite or acknowledge sources and the ideas and material of others used in their own work. Students have the responsibility to become familiar with such processes and to carefully follow their use in developing original work.

Policy

MICA will not tolerate plagiarism, which is defined as claiming authorship of, or using someone else's ideas or work without proper acknowledgement. Without proper attribution, a student may NOT replicate another's work, paraphrase another's ideas, or appropriate images in a manner that violates the specific rules against plagiarism in the student's department. In addition, students may not submit the same work for credit in more than one course without the explicit approval of all of the

instructors of the courses involved.

Consequences

When an instructor has evidence that a student has plagiarized work submitted for course credit, the instructor will confront the student and impose penalties that may include failing the course. In the case of a serious violation or repeated infractions from the same student, the instructor will report the infractions to the department chair or program director. Depending on the circumstances of the case, the department chair or program director may then report the student to the appropriate dean or provost, who may choose to impose further penalties, including expulsion.

Appeal Process

Students who are penalized by an instructor or department for committing plagiarism have the right to appeal the charge and penalties that ensue. Within three weeks of institutional action, the student must submit a letter of appeal to the department chairperson or program director, or relevant dean or provost related to the course for which actions were taken. The academic officer will assign three members of the relevant department/division to serve on a review panel. The panel will meet with the student and the instructor of record and will review all relevant and available materials. The panel will determine whether or not to confirm the charge and penalties. The findings of the panel are final. The panel will notify the instructor, the chairperson, division, the student, and the Office of Academic Affairs of their findings and any recommendations for change in penalties.

Title IX Notification

Maryland Institute College of Art seeks to provide an educational environment based on mutual respect that is free from discrimination and harassment. If you have encountered sexual harassment/misconduct/assault, please know that there are multiple ways to report it and you are encouraged to do so (www.mica.edu/equal_opportunity). Additionally, in order to meet our commitments to equity and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, faculty and staff members are required to report disclosures of sexual violence made to them by students, except when prior notice regarding a specific classroom assignment or discussion is provided. If you require academic accommodations due to an incident involving sexual harassment or discrimination, please contact Student Affairs at 410.225.2422 or Human Resources at 410.225.2363.

Students with Extended Illness or Cause for Legitimate Absence

In the case of extended illness or other absences that may keep the student from attending a class for more than three meetings, undergraduate students must contact the Student Development Specialist in the Division of Student Affairs. The Student Development Specialist will then work with the student to determine the cause and appropriateness of the absences and subsequently notify instructors as necessary. Graduate students must contact the instructor, program director, and the Office of Graduate Studies. Students in art education or professional studies programs must contact the Dean for the Center for Art Education or the Associate Dean for Open Studies, respectively. The appropriate administrator will facilitate a conversation with relevant faculty to determine whether the student can achieve satisfactory academic progress, which is ultimately at the sole discretion of the faculty member.