

XO15

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Tuesday 9-3 / Spring 2015
S101-4 / dfabresearch.com

Digital Fabrication: Studio Research

Experimental Output

Digital Fabrication: Studio Research is an advanced course in the MICA dFab Studio. Each semester is organized around a special topic that guides the course workshops which expose students to new topics and skills. These workshops inspire student research throughout the semester, and these research projects become the main focus as the semester progresses.

This semester we are focusing on “experimental output.” We will take a close look at the low-level functions of the digital fabrication tools we have in the studio as a study of digitally controlled machines. We will learn the common language of machine control, g code. Rather than relying on existing software to convert our designs into g code, we will write our own code directly and then indirectly by creating our own scripts. From there we will step down to an even lower level and explore the function and control of stepper motors. Following these workshops, we will work collaboratively to build a “soft robotics toolkit,” exploring pneumatics and novel motion components. We will then implement this system in a simple collective project.

Along the way, students will be conducting research on topics related to the course, with the goal of creating their own experimental output apparatus of some sort as the final project. This can take the form of a machine, a hack, new material/process, a software flow, a performative object, or many other options. Students will have their own websites which serves as a creative process journal that collects a wide range of resources and documents their progress.

The course combines increasing technical skills, academic research practices, outlandish thinking, humor, and empathy. This complex brew and a rigorous work ethic will combine for interesting results, not only in the final projects, but also in the student’s development of their own research-based art practice.

Student Learning Outcomes

- Gain a greater understanding of the operation, construction, and use of digital fabrication tools and other digital system of control and output.
- Develop a research-based studio practice that moves into the unknown with a sense of excitement and play and is propelled by experimentation, directed study, and artistic intuition.
- Develop habits of continuously documenting research and process through a multimedia Creative Process Journal (CPJ).
- Recognize and engage in issues specific to interdisciplinary collaboration: communication, team-work and negotiation.
- Develop the ability to read and write g code and to interpret form into machine-readable code by writing scripts in Grasshopper.
- Learn about pneumatic systems on motion and control through the collaborative construction and use of a “Soft Robotics Toolkit”
- Apply new skills learned in class workshops and knowledge gained in research in a novel output apparatus.

Assessment Criteria

- The creative **Creative Process Journal** is a primary tool for the student and also serve as a means demonstrating the independent research central to this course.
 - frequency of posting
 - range of sources
 - documentation of experimentation
- Class **workshops** will form the primary substance of the first half of the semester and the student’s comprehension of the materials covered in these workshops is a significant factor in this course.
 - engagement during the workshop
 - successful completion of related exercises
 - ability to integrate these skills
- The final **experimental output apparatus** will be the culmination of the semester’s research and skill building.
 - completion and successful operation of the apparatus
 - application of research to the final project
 - craftsmanship
 - creativity
 - challenge
- Active **participation** in class meetings, group critiques, and presentations.
- **Independent drive** to pursue self-guided research and making in a thoughtful and committed manner.

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. The ADA statement is also available on the LRC website http://www.mica.edu/Academic_Services_and_Libraries/Learning_Resource_Center.html

Health and Safety

It is the responsibility of faculty and students to practice health and safety guidelines relevant to their individual activities, processes, and to review MICA's Emergency Action Plan and attend EHS training. It is each faculty member's responsibility to coordinate with the EHS Office to ensure that all risks associated with their class activities are identified and to assure that their respective classroom procedures mirror the EHS and Academic Department guidelines. All students and faculty must follow each of these policies and procedures. Most importantly, faculty are to act in accordance with all safety compliance, state and federal, as employees of this college and are expected to act as examples of how to create art in a way to minimize risk, and reduce harm to themselves and the environment. Faculty must identify, within each art making process, and require personal protection equipment use, by each student for each class, when applicable. Students are required to purchase personal protection equipment appropriate to their major. Those students who do not have the proper personal protection equipment will not be permitted to attend class until safe measures and personal protection is 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 acknowledgment. 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 the 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. Depending on the circumstances of the case, the department chair may then report the student to the Office of Academic Affairs, which may choose to impose further penalties, including suspension or expulsion.