

ART 4642C Section: 1766: Digital Fabrication

University of Florida School of Art + Art History Fall 2014

Graduate Course Number: ART 5674C section: 09BH

Meets: M/W Periods 8-10 (3:00 – 6:00 p.m.) FAC 306

Instructor: Juan Griego

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Office Hours: Wednesdays 12:00 – 2:00 p.m. (or by appointment)

Office: FAC 302C

Fabrication Lab Manager: Mat Chandler - mpchandler@dcp.ufl.edu

Graduate Assistant: Thomas Storey - tstorey@ufl.edu

Class Site: TBA

A2 Fab Lab: ARCH 307

Fabrication Lab website: <http://www.arts.ufl.edu/aafablab/>

“The digital interface has become vital to the efficiency of human communication. The ability to manifest 21st century ideas and thoughts in a physical-digital form is necessary for the progress of art and well-being.”- Griego

DESCRIPTION

This course is a hands-on exploration and apprenticeship in the art and process of digital fabrication. The course will assist students in nurturing the ability to efficiently translate ideas and concepts into digitally produced physical objects. Students will be given the opportunity to develop the skills necessary to maintain, calibrate and troubleshoot equipment in a fabrication lab as well as learn what it takes to keep a lab in operation. Students will be given the opportunity to create objects utilizing industrial laser cutters, 3d printers and a Computer Numerical Control (CNC) mill as well as learn the vital maintenance procedures needed in the Arts and Architecture Fabrication Laboratory. We will consider digital fabrication and its role in the localization and production of global goods and explore its impact on the commodification of the art object. At such early stages of digital fabrication, students can take on great roles in fostering the development of alternative materials, the creation of more efficient digital production as well as the abstraction and deconstruction of the many digital fabrication processes. The future is present in the now. It is a magical time that we must take advantage of.

OBJECTIVES

- Learn to use advanced prototyping and manufacturing techniques in the production of art objects.
- Become adept at developing concepts that move from software to physical manifestations of form.

- Develop a hands-on understanding of the multiple functions and processes of a fabrication lab.
- Consider issues of commodity surrounding consumer and art objects.
- Learn to measure, print and cut with precision as well as produce error free objects.
- Apply research and methodologies from other content areas to the making of art works.

PROJECTS

The course begins with experiments in laser cutting and CNC milling using vector files and continues with 3D modeling and printing via CG models and 3D scanning. These projects allow students to become familiar with the technical processes as well as the use of software essential for digital fabrication. Over the duration of the term, each student will be given the tools necessary to learn the functionality of fabrication equipment through applying proper hands-on maintenance procedures. Successful projects reflect a foundational understanding of proper measuring and error-free design, thoughtful, playful engagement with course topics and innovative use of lab technology as artistic tools.

REQUIRED MATERIALS

- A Digital caliper
- Ear plugs and goggles
- USB flash drive, 2GB minimum, for storage and transfer of digital files
- Materials for laser cutting such as paper, Plexiglas and Basswood, all available in the A2 FabLab
- Readings (available in .pdf on class website)
- Software: Photoshop, Illustrator, Maya, Rhinoceros (all available in the FAC 306 lab)
- Each student is charged a \$140 fab lab semester access fee

***all charges for materials, 3D printing materials and fees go through ISIS**

PARTICIPATION

Participation, support, and respect in all phases of this course are imperative. The class dynamic depends on your energy, initiative, attitude, productivity, and willingness to get involved in group discussion and critiques. Participate in a responsive manner during critique and discussion. Complete all assigned readings and take notes so you can contribute to the discussion in class. Make safe and considerate choices with equipment and facilities. Become comfortable with the fabrication lab. Get to know the friendly Mat Chandler and helpful Thomas Storey. Do your part to keep the lab clean. Ask questions! Offer constructive feedback during group discussions, class workdays, and critiques. Reflect on the comments you receive to gauge the effectiveness of your work. Examine the way your ideas

change, evolve and influence formal and conceptual choices in your work. Development as an artist often hinges on your ability to make effective choices and express your ideas clearly. Lastly: have fun and invent!

GRADING AND EVALUATION

Grades are meant to reflect effort, ideas, and execution. Your overall grade will be based on your projects (including creativity, critical thinking, engagement with course information, research, presentation, technical proficiency with hardware and software, aesthetic application of technologies, and problem solving) and participation. Expectations will be explained in detail for each project when it is assigned. If anything seems unclear, you are responsible for asking the instructor for clarification far in advance of the due date. The most successful projects will exhibit close connections between their conceptual, technical, and aesthetic dimensions.

UF grading policies website: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Final grades are based on:

- 20% - Project 1: Laser Cutting
- 20% - Project 2: CNC mill
- 20% - Project 3: 3D Modeling
- 20% - Final Project
- 20% - A2 Fab Lab Participation

GRADING SCALE

- | | |
|----------------|----------------|
| •93 to 100 = A | •73 to 76 = C |
| •90 to 92 = A- | •70 to 72 = C- |
| •87 to 89 = B+ | •67 to 69 = D+ |
| •83 to 86 = B | •63 to 66 = D |
| •80 to 82 = B- | •60 to 62 = D- |
| •77 to 79 = C+ | •below 60 = E |

***Please note: a grade of C- or below will not count toward major requirements**

ATTENDANCE

Tardiness and/or lack of appropriate class materials are unacceptable and may count as unexcused absences. All students are expected to attend every class, prepared to participate. Up to three unexcused absences will be overlooked from a grading standpoint. The overall grade is lowered at the instructor's discretion for each unexcused absence thereafter. Six or more absences, whether excused or unexcused, will result in a non-passing final grade. Projects reflect learning, so you will succeed more easily with perfect attendance. Please refer to UF attendance policies:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

LATE WORK

Grades for late assignments and projects will be penalized by a one letter grade drop. No work will be accepted after two class periods from the due date. All digital fabrication equipment require maintenance and supervision. They may be unavailable at any time so do not wait until the last minute to begin a project. 3D printing takes a long time, so you MUST meet A2 FabLab print deadlines for your projects to be included in print batches. Always attend class on project due dates. Even if you are not prepared to turn in your assignment, you still need to participate in discussion to receive project participation credit.

ACADEMIC HONESTY

Please do your own work, or you will fail. Students are expected to abide by the UF Academic Honesty Policy, which defines an academic honesty offense as “the act of lying, cheating, or stealing academic information so that one gains academic advantage.” Familiarize yourself with the academic honesty guidelines set forth by the University of Florida: <http://www.dso.ufl.edu/sccr/honorcode.php>

UF MEDIA LABS

Never bring food or drinks into the lab, not even water. Class periods will always include breaks so you can step outside. Save your work onto a portable drive before logging off. Files left on lab computers will be erased without warning through an automated service.

FAC 306 lab hours: <http://plaza.ufl.edu/mchristo/306-schedule.html>

UF Academic Technology lab hours: <https://labs.at.ufl.edu/Hours.php>

ACCOMODATION FOR STUDENTS

Students requesting classroom accommodation must first register with the Dean of Students office. The Dean of Students will provide documentation to the student who will then provide this to the instructor when requesting accommodation. The ADA office is located in Room 232 Stadium. Phone: (352) 392-7056 TDD: (352) 846-1046 <http://www.ada.ufl.edu>

UF STUDENT GUIDE

This resource covers important policies and procedures for students: <https://catalog.ufl.edu/ugrad/current/Pages/academic-regulations.aspx>

UF COUNSELING CENTER/COUNSELING SERVICES

Counseling and Wellness Center
3190 Radio Rd.
PO Box 112662
Gainesville, FL 32611-2662

Phone: (352) 392-1575.

<http://www.counseling.ufl.edu/cwc/Default.aspx>

HEALTH AND SAFETY

Please familiarize yourself with the UF SA+AH Health and Safety Handbook, available online: <http://arts.ufl.edu/art/healthandsafety>. Sign and return the waiver distributed on the first day of class. You are responsible for helping maintain the safety of the labs, especially by keeping them clean and free of trash and debris. Pick up after yourself, or your final grade will be lowered at the instructor's discretion. Michael Christopher (mchristo@ufl.edu) is the area contact for health and safety issues. The following is an overview of the health and safety information specific to digital media art classes.

Area Specific Information: Digital Media

1. Hazards of Materials Batteries, old monitors, lamps from digital projectors if broken may release mercury. THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.

2. Best Practices Though not much is generated, the Digital Media technician is certified for handling Hazardous Waste by the University of Florida. For installations or sculptural elements, please cross-reference with other area specific information as needed.

3. Area Rules • Follow all SA+AH Health and Safety handbook guidelines. • Alcohol is not permitted (open or closed containers). • No smoking in the building or within 50 feet of the entry. • No eating or drinking in the lab. • Shoes must be worn at all times. • Protective equipment must be worn for

hazardous work. • Do not block aisles, halls or doors with stored items or when working. This is a violation of fire codes. • Do not store anything on the floor. This impeded cleaning and creates a hazard. • Do not park bikes in the building. • Clean up spills immediately. • Take items which do not fit into the trash to the dumpster, follow dumpster guidelines.

SA+AH CONTAINER POLICY

There are 2 types of labels used in the SA+AH-- Yellow and White. Both labels are found at the red MSDS box and are supplied by the SA+AH. Each is used for a different purpose.

White: All new and or used product in containers (hazardous or what might be perceived as hazardous - i.e. watered down gesso, graphite solutions, satellite containers of solvents, powders, spray paints, fixatives, oils, solvents, etc...) must be labeled within the SA+AH to identify their contents. Labels can be found at the MSDS box in each studio and work area. All containers must be marked with your name, contents and date opened. All secondary/satellite containers for hazardous materials must be marked with content, your name and the date opened. All unmarked containers will be disposed of with no notice.

Yellow: WHEN HAZARDOUS ITEMS ARE DESIGNATED AS TRASH. All containers must have a yellow label identifying the contents that are designated as trash for weekly EHS pick up.

- Flammable solid containers (red flip top) must have a yellow hazardous waste label on the outside (top).
- 5 gallon jugs must have a yellow hazardous waste label on the outside.
- Fibrous containers must have a yellow hazardous waste label on the outside (top).
- Each item in the blue bin must have a yellow hazardous waste label.

Note: Hazardous Waste labels should include all constituents in the waste mixture as well as an approximate percentage of the total for that item and must add up to 100%. Labels should also include the Building and room number of the shop generating the waste along with the Waste Manager for your area, this is located on the SWMA sign posted at the sink or at the Waste Management Area.