



2018 Student Work

**DIGITAL FABRICATION**  
**ART 4642C Section: 2745**  
**Fall 2018 Syllabus**  
**Professor: Ernie Williams-Roby**

Room FAC 306  
Mondays & Wednesdays  
15:00-18:00

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Office Hours: Wednesdays 12:00 – 2:00 p.m.  
Office: FAC 302C

# Overview

Digital Fabrication is a hands-on course for students to explore machine-assisted creative processes.

Students can expect tutoring classes in basic and advanced techniques in Adobe Illustrator, Photoshop, Rhinoceros 5, 3D scanning, and modeling software.

Class will sometimes meet at the Infinity Fabrication Laboratory to get acquainted with the operation and maintaining of machines that will be used throughout the course including but not limited to laser cutters, 3D printers, CNC mill, and water-jet cutting. In addition to expanding our means and skills in production this course also encourages experimentation and invention through workflows.

This course also aims to improve the student's professional development offering equipment for high quality documentation and opportunities to engage communities.



# Course Objectives

- Develop prototyping and manufacturing techniques for the production of art concepts.
- Become adept at developing digital concepts to be realized into physical forms.
- Develop a hands-on understanding of the multiple functions and processes of a fabrication lab.
- Consider issues of commodity surrounding consumer and art objects.
- Design with precision software to fabricate
- Integrate digital fabrication into the traditional fine arts.
- Visit MakerSpaces located throughout Gainesville and attend the Orlando Maker's Fair in November.

# Materials Provided

- ANET A8 3D Printer Build Kit + Filament
- Computer Lab
- Infinity Fabrication Laboratory Credit
- Hand & Power Tools
- 3D Scanners
- Readings



The Marston Science Library and Arts & Architecture Library loans iPad with Structure Sensor kits to students. Marston also checks out power and handtools to all UF students as well as desktop 3D printers with filament free with the Gator1Card.

# Materials Purchased

- Infinity Fabrication Laboratory Membership \$120
- Semester Project Materials

A screenshot of the Material Shop website. The page has a dark header with navigation links: Services, Machining Capabilities, Material Shop, Gallery, and Contact. Below the header, the text "Material Shop" is displayed. A table lists various acrylic plexiglass options with their prices.

Acrylic Plexiglass	Thickness	1'x1'	2'x2'	2'x4'
Clear	1/16"	\$2.76	\$11.04	\$22.08
Clear	1/8"	\$3.76	\$15.04	\$30.08
Clear	1/4"	\$4.76	\$19.04	\$38.08
Clear	3/8"	\$5.76	\$23.04	\$46.08
Fluorescent Yellow	1/8"	\$3.50	\$14.00	\$27.99
Fluorescent Green	1/8"	\$3.50	\$14.00	\$27.99

<https://fablab.arts.ufl.edu/material-shop/>  
<https://www.estreetplastics.com/>

# Software

- Adobe Illustrator
- Adobe Photoshop
- Rhinoceros 5
- Meshmixer
- Fusion 360
- Simplify 3D

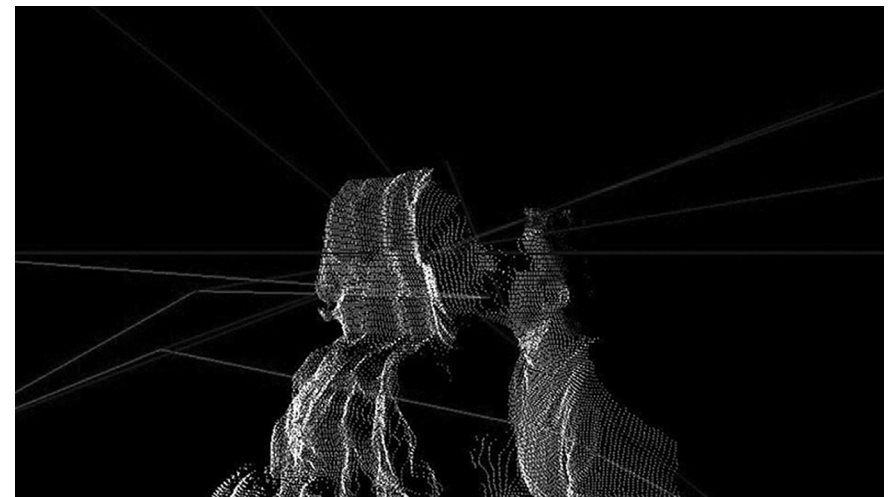
# Suggested Materials

- USB Flash Drive or other storage device
- Sketchbook

# Reading List

*Ripping Reality: Blind Spots and Wrecked Data in 3D* by Hito Stereyl  
*Mystory & the Image of Widescope* by Gregory Ulmer  
*A Rant About Technology* by Ursula K. Leguin  
*The Peripheral* by William Gibson  
*A Cyborg Manifesto* by Donna Haraway  
*AutoFAC & Pay for the Printer* by Phillip K. Dick  
*The 3D Printing Landfill of Opportunity* by Natasha Lomas

All readings are available in PDF form at:



# Grading & 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>

## 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. 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!

## 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. On the 4th unexcused absence the Participation Grade drops by 50% (5 pts), the 5th at 100% (10pts) and 6th is failure of the course. 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>

## Final grades are based on:

- 10% - In Class 1: Laser Cutter
- 20% - In Class 2: 3D Printer
- 20% - In Class 3: CNC & Waterjet
- 30% - Semester Project
- 20% - 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

## 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>

**\*The calendar is subject to change at any time throughout the semester.**

Week 1-5		
	Monday	Wednesday
8/20-8/22	No Class	/whois - Ernie Williams-Roby Workshop: Additive Manufacturing Build: Anet A8 3D Printers
8/27-8/29	Workshop: Paper Raster Vector Laser Extrusion Workshop: Curves MeshOutline Tolerances Create: Laser-doodle Build: Anet A8 3D Printers	Infinity Fabrication Laboratory Orientation Students pre-register online: <a href="https://fablab.arts.ufl.edu/">https://fablab.arts.ufl.edu/</a>
9/3-9/5	No Class	Workshop: Surface Solid Mesh Polygons Polysurface Cake Boolean Operations and Repairing Workshop: Mining 3D Model Vaults Create: Chimera Reading: <i>Ripping Reality: Blind Spots and Wrecked Data in 3D</i> by Hito Stereol
9/10-9/12	Discussion: <i>Ripping Reality: Blind Spots and Wrecked Data in 3D</i> by Hito Stereol Adventures in 3D Scanning - Xbox 360 Kinect & ReconstructMe Reading: <i>Mystory and the Image of Wide Scope</i> by Gregory Ulmer	Workshop: Repairing Color 3D Scans Discussion: <i>Mystory and the Image of Wide Scope</i> by Gregory Ulmer Video: Metatoot.mov Create: Full-Color Self-Portraits
9/17-9/19	Adventures in 3D Scanning - Structure Sensor scanning on campus Create: Full-Color "Self Portraits" Semester Project Research & Rubric	Semester Project: Ideation Color - UV Layout Textures Materials Digital Painting Self-Portraits due on Wednesday
Week 6-10		
	Monday	Wednesday
9/24-9/26	Field Study: LiDAR scanning @ Paracosm 12 S. Maine St. Finish Self-Portraits Reading: <i>A Rant About Technology</i> by Ursula K. Leguin	Discussion: <i>A Rant About Technology</i> by Ursula K. Leguin Workshop: Raster Voxels Create: Volumetric Expression
10/1-10/3	Reading: <i>AutoFAC &amp; Pray for the Printer</i> by Phillip K. Dick Video: <i>Do Androids Dream of Electric Sheep: AutoFAC</i> Writing: Answer questions for <i>AutoFAC</i>	Discussion: <i>AutoFAC</i> Due: Laser-doodle Semester Project & Research
10/8-10/10	/whois - Zach Randall 3D Scan technician for Florida Meseum of Science Field Study: NanoScale Research Facility CT Scanner Semester Project & Research	Semester Project & Research
10/15-10/17	/whois: Charlie Cummings (Innovation Academy, ceramics, technology) Semester Project & Research Reading: Excerpt from <i>The Peripheral</i> by William Gibson	Discussion: Excerpt from <i>The Peripheral</i> by William Gibson In-Progress Critique: Semester Project Prototypes
10/22-10/24	Semester Projects	Semester Projects Reading: <i>A Cyborg Manifesto</i> by Donna Haraway



## 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.

## UF Media Labs Policy

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>

## Evaluations

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>

## Cell Phone Policy

UF requires all students have phones on silent, not off due to using this as an emergency notification system.

## Accommodations for Students

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

## 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>

## UF Student Guide

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

# Health & 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](mailto: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.

## 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.
- 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.

# 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.

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.