

# Programming for Artists | IDC 3500C/6505C

Spring 2015

University of Florida | SA + AH

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<b>Instructor:</b>	Thomas Storey	<b>Time:</b> M/W 8-10 (3:00-6:00 pm)
<b>Room:</b>	FAC 306	<b>Credit:</b> 3
<b>Email:</b>	thomasrstorey@ufl.edu	
<b>Office Hours:</b>	Mon 10:40 – 11:30am (or by appointment) FAC 302A	
<b>Class Website:</b>	<a href="http://art-tech.arts.ufl.edu/~tstorey/wiki/S15-Programming">http://art-tech.arts.ufl.edu/~tstorey/wiki/S15-Programming</a>	

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## Course Description

This course introduces the use of the computers and programming to create art. It assumes minimal prior experience in programming, and asks for only a little math (If you remember some algebra and trigonometry you'll be ahead of the curve). Programming for Artists will be highly practice/project based. We will be doing a lot of in-class work and exercises. In addition we will take some time to become acquainted to the worlds and histories of computer science, computer art, net art, generative art, etc for inspiration, and so that we can contextualize our work in the larger computational milieu. We will get introduced to various programming languages, but all work and projects will be done in Processing ([processing.org](http://processing.org)). This class will not make you a computer scientist, but if you apply yourself with interest and enthusiasm, you will start on your way to becoming a programmer.

## Objectives

Students taking this course will:

- Practice the basics of programming languages and structure.
- Develop and implement software projects.
- Implement basic object-oriented programming techniques.
- Practice professional programming best-practices and documentation.
- Gain a proficiency in Processing and Java programming languages.
- Harness concepts of computational aesthetics in artmaking.
- Interface custom code with existing APIs and libraries.
- Apply basic trigonometry and linear algebra to graphics and interactive programming.
- Survey past and contemporary computational art.
- Analyze, deconstruct and build potential solutions for projects/problems.

## Course Components

As a student in this class, you are expected to:

- Attend every class and being attentive and enthusiastic!
- Work on programming exercises and activities in class.
- Work on programming projects and assignments in and out of class.
- Turn in your work on time via your page on the wiki.
- Read, watch videos and engage in discussion about computer art in and out of class

## Topical Course Outline

### Week 1 → Introduction

- What is programming?
- What are programs?
- What is "code"?
- How do I write code?
- What is Processing?

### Week 2 → The basics

- Values
- Types
- Operators
- Variables
- Expressions
- Program Structure and Flow
  - Conditionals, Loops
- The Processing Environment

### Week 3 → Building on the basics Part 1

- Functions
- Objects

### Week 4 → Building on the basics Part 2

- Arrays

### **Week 5 → Building on the basics Part 3**

- Algorithms
- Debugging
- Libraries

### **Week 6 → Techniques Part 1**

- Trigonometry
- 3D

### **Week 7 → Techniques Part 2**

- Pixels
- Image, Video

### **Week 8 → Techniques Part 3**

- Text
- Data

### **Week 9 → [SPRING BREAK]**

### **Week 10 → Techniques Part 4**

- Sound
- Exporting

### **Week 11 → Techniques Part 5**

- Object Oriented Programming
  - Encapsulation
  - Inheritance
  - Polymorphism

### **Week 12 → Techniques Part 6 | Applications Part 1**

- Java
- Physics
  - Vectors
  - Forces

## Week 13 → Applications Part 2

- Particles
- Autonomous Agents

## Week 14 → Applications Part 3

- Cellular Automata
- Fractals

## Week 15 → Applications Part 4

- Genetic Algorithms
- Final Critique

## Required Textbooks, Materials, and Equipment

- Learning Processing, by Daniel Shiffman
- Processing 2 (<http://processing.org/download/>)

## Recommended Readings

The Nature of Code, Daniel Shiffman

- Form + Code, Casey Reas, Chandler McWilliams
- Java: The Good Parts, Jim Waldo
- Generative Art, Matt Pearson
- Eloquent Javascript, Marjin Haverbeke
- <http://openprocessing.org/>
- <http://www.eyebeam.org/>
- <http://rhizome.org/>
- <http://fffff.at/>
- <http://eyeofestival.com/>
- <http://www.codecademy.com/learn>

## Grading Breakdown

**Assignment Grades** → 50% – Eleven Weekly Assignments (4.5454...% each)

**Project Grades** → 20% – Final Project

**Documentation and Notes** → 15% – Documentation of what you learned each week, placed in the appropriate section of the wiki

**Participation** → 15% – Attendance and class participation (involvement in discussion, helping classmates, answering questions, sharing ideas)

## Attendance Policy

Attendance is required. I am going to take role at the start of class each day, and if you're not here at that time, you will lose 1 point from your participation grade. It is very simple and straightforward. This class is extremely in-class-work intensive - missing a class could potentially set you back significantly. Be smart. Come to class, and do it on time. You will have a much better semester for it. If you absolutely must be absent or late for some event or emergency, **please let me know**, and if it is a legitimate excuse for being late or absent, I'll see what I can do for you.

## Late Policy

- Assignments are due at 11:59pm on Sunday night each week. I check what is turned in first thing in the morning on Monday, and if it's there, it's turned in. Exception: the final project is due at 11:59pm on the night before the final crit day.
- No late submission! If you miss a due date, you miss the assignment. The end.

## Grading Criteria – Assignments

- **Feature completeness: 60%**
  - Does your project meet the feature requirements of the assignment?
- **Documentation/Code Quality: 40%**
  - Code compiles, runs smoothly and as intended.
  - Complete documentation and comments
- **Inventiveness: BONUS 20%**
  - Did you go beyond the basic requirements of the project or try new techniques?

## Grading Criteria – Final Project

- **Concept: 30%**
  - What is the conceptual/theoretical underpinning of your work/why should I care about it? This must be documented on your wiki page, and present in critique.
- **Implementation: 50%**
  - The quality of your code. Please leave plenty of comments to make my life easier. The harder it is for me to read your code, the harder it will be for you to earn a favorable grade.

- **Presentation: 20%**
  - Your level of preparedness on the day of critique.

**NOTE:** The grading of your final project is intentionally on more or less objective grounds, rather than subjective/aesthetic considerations. This class is about learning programming techniques for making art, and your grade shall depend on your ability to use those techniques.

## UF Grading Policies

University of Florida official grading policies can be found at:

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

Please note: A grade of C- or below will not count toward major requirements.

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	S
4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0

## Students with Disabilities

Students requesting classroom accommodation must first register with the Dean of Students Office. The DSO will provide documentation to the student who must then provide this document to the instructor. The DSO can be contacted at: 352-392-1261 or <http://www.dso.ufl.edu/drp>

## SA + AH Health and Safety Policy

The School of Art and Art History Safety Manual will be reviewed in class. Students and instructors are responsible for following policy and procedures for making art safely at all times. The entire document is available online at <http://saahhealthandsafety.weebly.com/handbook.html>. All students are required to sign and turn in the signature page to the instructor on the first day of class.

## Digital Media Area Rules

All users of the studio classrooms are expected to follow studio area rules at all times. If you have any questions, ask your instructor.

- Follow all SA+AH Health and Safety handbook guidelines (the handbook should be reviewed by your instructor and can be found at: [www.arts.ufl.edu/art/healthandsafety](http://www.arts.ufl.edu/art/healthandsafety))
- Follow the SA+AH Satellite Waste Management Chart in the classroom and other health & safety guidelines posted for your media.
- In case of emergency, call campus police at 392-1111
- File an incident report (forms may be found in the SAAH H&S handbook, the SAAH faculty handbook and in the main office.)
- Turn completed forms into the SAAH Director of Operations within 48 hours of the event.
- Alcohol is forbidden in studios

- Familiarize yourself with the closest eyewash unit.
- No eating or drinking in computer the lab.
- Do not use spray adhesive in the studios or in the building. There is a professional and safe paint spray booth in FAC-211A for your use.
- 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 impedes cleaning and creates a hazard.
- Installations must be removed as soon as possible after critique.
- Clean up spills immediately.
- Take items which do not fit into the trash to the dumpster, follow dumpster guidelines.
- Follow the SA+AH CONTAINER POLICY(see policy below)

## White

All new and or used products 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 the user's 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 are subject to immediate disposal.

## Yellow

WHEN HAZARDOUS ITEMS ARE DESIGNATED AS WASTE.

- 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 Bldg 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.

## Academic Honesty Policy

The university's policies regarding academic honesty, the honor code, and student conduct related to the honor code will be strictly enforced. Full information regarding these policies is available

at <http://www.registrar.ufl.edu> and <http://www.dso.ufl.edu>.

## Online Course 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 <http://evaluations.ufl.edu/results/>.