

## FA307D

Interactivity: Coding for Artists & Designers/MW 8-10:40  
Course Length: 15 Weeks  
Number of Credits: 3  
**Prerequisites: None**

Department of Fine Arts  
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## Course Description

This course uses Processing, an open source coding language designed as a way to introduce artists and designers to programming. Both the evolution of interactivity and the cultural implications of it will be introduced. Through hands-on projects, readings, lectures, discussions, and critiques students will develop the skills needed to create interactive work. Students will use Processing to draw, process images, visualize information, and use software as an expressive and communicative medium. No prior programming experience necessary, but proficiency in visual graphic applications recommended (ex., Photoshop).

## Expanded Course Description

This course is designed as an entry-level introduction to coding as a creative medium. The first part of the class will focus of the fundamental ideas inherent in many coding languages, including Processing. The vocabulary, syntax, and evolution of coding will be introduced. Also, critical writings and an exploration of relevant artists and designers working with the medium will be a focus of the early part of the class. Projects will include drawing, color, and introductory interactive drawing possibilities.

From there, interactivity will be expanded upon as issues of image processing, motion, and animation are introduced. Object-oriented programming will be introduced and will build upon the students understanding of the language. Importing images, video, and data will be introduced. Further research into media theory will continue to be a part of the class, including slide lectures and discussions on contemporary artists/designers of the student's choosing. The final component of the course will focus on students integrating what they have learned about Processing into individual and/or collaborative visual work.

## Learning Objectives

- Learns the history and evolution of coding relative to art and design practices as well as the potential for the medium to contribute to creative work;
- Begins to develop competency in Processing, including reading, writing, notating, and debugging code;
- Invents with a progressively more comprehensive knowledge of coding in general and Processing in particular;

- Develops an understanding of how Processing interfaces with other graphic imaging software (for ex. Photoshop, Illustrator, Final Cut Pro) and is related to other programming languages (especially Java);
- Becomes able to think critically about both the theory and practice of coding as a creative tool;
- Investigates and researches a variety of historical and contemporary media artists and designers in an effort to contextualize their own practice;
- Develops a familiarity with contemporary media theory relevant to the issues addressed in the course;
- Understanding the community surrounding Processing and utilizes it and works toward contributing to it;
- Participates in group critiques and individual meetings that explore and probe the limits and ranges of problem solving and challenge and advance skills of verbal articulation and critical analysis.

## **Performance Objectives**

- Develop an understanding of both the history of coding relative to art and design practices as well as the possibilities;
- Develop competency in Processing, including reading, writing, notating, and debugging code;
- Use coding and Processing in increasingly inventive ways;
- Understand the relationships between Processing and graphic imaging software and other programming languages;
- Think critically about coding as a creative tool;
- Incorporate directed research into their own practice;
- Become familiar with contemporary media theory relevant to the issues addressed in the course;
- Utilizes the community surrounding Processing and shares information, expertise, and innovation with peers both local and via the wider digital network;
- Effectively communicate visual ideas using appropriate vocabulary, relevant references in discussion, critical analysis, and critiques.

## Assignments

*The instructor reserves the right to modify and adjust the following assignments as necessary.*

**EXERCISES:** Building up to and complimenting the larger “Projects,” students will be assigned regular exercises that will provide an opportunity to creatively use the code learned and create processing sketches. The exercises will be assigned, reviewed and posted on the course website.

**Objectives:** To provide opportunities to use and practice coding methods learned in class. To give students experience using code creatively and tailoring the lessons to their individual interests and work.

**PROJECT 1. IMAGINE – Performance & Interaction:** After an introduction to issues surrounding interactivity and performance, students will work collaboratively to design an interactive media wall. The project will involve students selecting content, creating visuals, and deciding upon the method of interaction for the simulation.

**Objectives:** To introduce issues and potentials of interactivity at a high level without the burden of technical implementation of the project. To generate and make connections between creativity, imagination and computing. To give students experience articulating and presenting ideas relevant to the content of the class.

**PROJECT 2. FUNCTION– Create & Revise:** Students will individually create a component part of a larger, complex object by writing a unique function. The functions will then be shared with the group and students will select some or all of these functions to use in their final programs. Students will need to submit one (debugged) function that draws a complex and compelling image and includes some type of interactivity. They will then create 2-3 programs using the functions as starting points to create visually successful “exquisite corpse” programs.

**Objectives:** To introduce fundamental issues of programming, including vocabulary, syntax, and using and creating functions. Introduce how to code and how to use coding to draw both simple and complex shapes as well as the beginnings of interactivity. Introduce and utilize basic and necessary mathematical concepts. Introduce how Processing interfaces with other visual imaging tools, including Illustrator.

**PROJECT 3. ACTION & REACTION :** Together with the instructor, students will design an interactive final project based on their own interests. Issues in image processing, arrays, animation, and video may be selected.

**Objectives:** To build upon programming ideas introduced, including fundamental concepts like interactivity and arrays and begin to creatively use coding to articulate visual ideas. Continue to work both collaboratively and individually and begin to develop

skills in troubleshooting. Build an understanding of how motion works within Processing and connect this to ideas of animation in other forms (manually, digitally, stop-motion, etc.)

**WEB PORTFOLIO:** Students will be required to post both exercises and projects to a shared course website. Students will be gathering the semester’s work into web-based portfolio.

**Objectives:** To create a digital gallery of student work that can be easily shared both within the class and with the larger community. To give students relevant experience exporting and digitally presenting their final work for exhibition. To provide a cumulative experience showcasing how the student’s have progressed throughout the semester.

**ARTIST/DESIGNER PRESENTATION:** Students will be asked to conduct research and become familiar with artists working in new media. From this research, each student will prepare a shore lecture/discussion on a selected artists’ work. The presentation will include images, an annotated outline and a student-led discussion of the artist and their contribution to the media and contemporary art discourse.

**Objectives:** To have the students become more familiar with the field of “New Media” and the resources for continual study and investigation of the field. To encourage students to conduct in-depth research into an artist of their choosing and present their research to the group. To facilitate group discourse by incorporating student-led visual presentations and discussion. To give experience speaking orally and articulating ideas and issues relevant to the course. To give students the opportunity to lead the content of the course in directions of interest to them.

*Unless otherwise noted, reading is from “Processing” by Reas and Fry. Instructor reserves the right to adjust calendar as needed.*

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Readings</i>
1	M - 8/30	Intro to programming	pp. 1-7;17-21; Appendices F & G pp. 37-50
	W – 9/1	Drawing primitives, complex shapes	pp. 23-35; 69-77
		MEDIA READER, “Happenings”	pp. 83-88

Week	Date	Topic	Readings
2	M - 9/6	<b>LABOR DAY - NO CLASS</b>	
	W - 9/8	LYNN IN COLORADO - WORK DAY X1 MEDIA READER, "The Construction of Change"	pp. 127-132
3	M-9/13	REVIEW - X1 Color & coding, Text	pp. 85-93; 101-104; 111-116
	W - 9/9	Data & basic math Iterations  MEDIA READER, "The Garden of Forking Paths"	pp. 37-41;43-59 pp. 61-68 pp. 29-34
4	M - 9/20	Coding: Continuous; Functions	pp. 173-180; 181-196
	W - 9/22	Interactivity: Mouse input	pp.205-215, 217-221
5	M - 9/27	Math: Random Matrices: Translate, rotate, scale	pp. 127-132 pp. 133-143
	W - 9/29	<b>PROJECT 1 DUE</b>	
6	M - 10/4	Importing from Illustrator Kinetic Forms	pp. 149-171 pp. 413-419
	W - 10/6	MEDIA READER, "2 Selections by Marshall McLuhan"	pp. 193-209
7	M - 10/11	Interactivity: keyboard, events, time/date	pp. 223-236/ 245-249
	W - 10/13	<b>PROJECT 2 DUE</b> MEDIA READER, "Constituents of a Theory of the Media"	pp. 261-275
8	M - 10/18	FALL BREAK	
	W - 10/20	Motion: Lines, curves, machine, organism	pp. 279-299

Week	Date	Topic	Readings
9	M - 10/25	Arrays; Animation	pp.301-314; 315-320
	W - 10/27	MEDIA READER, "Requiem for the Media"	pp. 277-288
10	M - 11/1	<b>ORAL PRESENTATIONS</b> Image processing	pp. 321-326; 337-346; 347- 366
	W - 11/3	<b>ORAL PRESENTATIONS</b> Video	<u>Learning Processing,</u> Chapter 16 pp.275-302
		MEDIA READER, "from A Thousand Plateaus"	pp. 405-409
11	M - 11/8	<b>FINAL PROJECT PROPOSALS DUE</b>	
	W - 11/10	MEDIA READER, "Will There be Condominiums in Data Space"	pp. 463-470
12	M - 11/15	Object Oriented Programming Introduction	pp. 395-411
	W - 11/17	MEDIA READER, "Video Games and Computer Holding Power"	pp. 499-513

13	M/W - 11/22 & 11/24	Working with OOP/Final quizzes	
		MEDIA READER, "A Cyborg Manifesto"	pp. 515-541
14	11/29	Work day/Debugging	
	12/1		
14/15	12/6 & 12/8	Work day/Debugging	
15	12/13 & 15	Pre-critiques/Debugging	
		<b>FINAL PROJECTS DUE</b>	

### Criteria for Evaluation

The student's final grade will consist of four parts:

1. 40% Completion and quality of exercises. These will be assigned and posted on the course website. You will use these to learn to code and to learn to integrate your coding abilities with your visual and creative skills. They are equal

parts technique and concept. A successful exercise is both operational (coded effectively) and aesthetic (well composed/conceived).

2. 10% Class participation. This is based on how proactively you participate in the community, including sharing code, helping debug code, exchanging resources, participating in group discussions, critiques, and individual meetings.
3. 10% Oral presentation on an artist of your choice. This will be an in-depth research project you conduct throughout the semester on a single artist or group of artists. You will present your research to the group, including visuals and a student-led discussion of the issues addressed.
4. 40% Project grades. We will do 3 larger-scale projects. You will be graded on these, as follows:
  - How well the programs use and explore the processes and techniques introduced in the assignment
  - The degree of resolution of the code (or idea/visuals)
  - The degree of innovation (formal or conceptual) taken in completing the project

Late work is accepted only after an individual meeting with me. If work is not shown in critique or posted on the website by the deadline, it is considered late and the final grade will be lowered by 1/2 of a letter grade for the first occurrence, a full letter grade after this.

Everyone should plan on attending and participating in all critiques. Critique is a significant part of the course. Missing critique will lesson your experience in this class and lower your grade.

## **Materials and Supplies**

Portable hard drive for backing up data (as large as you can afford)

Sketchbook/notebook for taking notes, sketching ideas, etc.

Access to input devices (digital camera, digital video camera) and necessary tapes for storage

## **Bibliography**

*Processing*, Casey Reas & Ben Fry, The MIT Press, 2007. (REQUIRED BOOK)

The following are on reserve at the library:

*Learning Processing*, Daniel Shiffman, Morgan Kaufmann, 2008.

*Processing: Creative Coding and Computational Art*, Ira Greenberg, Friends of Fred, 2007.

*The New Media Reader*, The MIT Press, 2003.

## COURSE POLICIES

### Attendance

MIAD considers attendance crucial to the successful completion of a course. If a student's absences total more than 10% of the number of classes scheduled for the semester, the instructor may elect to lower the student's grade for the course.

### Tardiness

Classes usually begin with announcements, new information, revised deadlines, and other important information. Students will be considered late 15 minutes after the scheduled start of class. Three unexcused occurrences will be noted as one absence.

**NOTE: Being late for critique will also lower your project grade.**

### Deadlines & Critiques

If a project is not "up" for critique or the student was late for critique, the project grade will be lowered by 1/2 a letter grade. If the project is excessively late it will be difficult to complete subsequent projects and your success in this course may be affected.

Because of this, no work later than 1 week will be accepted without consent of instructor. Work submitted more than 1 class period late will be lowered by a full letter grade.

**All assignments must be completed to pass this course.**

**Critiques:** Participation in critique is a vital part of each project and this course. Missing a critique will lower your project grade by 1/2 a letter grade (see paragraph above).

Additionally, since a portion of the criteria on which the project is graded (verbal presentation, participation in critique – see "Criteria for Evaluation" section above) missing critique will also negatively affect the grade itself for the particular project. Exceptions to this will be made only at the discretion of the instructor.

### Late Work Policy

Late work will ONLY be accepted after an individual meeting with me. After this meeting, late work may be accepted in accordance with the policies listed above.

### **Grading Policy / Criteria**

All assignments turned in on time are graded with a rubric based on the objectives of the assignment. This rubric is in writing and is handed back before the next project due date.

### **Re-Working Assignments**

All assignments turned in on time may be re-worked for a better grade. Both the original and the re-worked assignment will be graded and the final grade will be an average of the two grades.

### **Academic Honesty Policy**

Academic work that is submitted to an instructor is assumed to be the result of one's own work, thought, research, or self-examination. Further, when wording, organization, images, music, lyrics, audio sources, or ideas are borrowed from another source, that source is to be adequately acknowledged according to proper academic conventions.

Academic dishonesty can exist in visual work as well as in written work. In the interest of avoiding the perception of academic dishonesty, images copied, scanned, collaged, or otherwise appropriated from existing sources, must be cited according to proper academic conventions. This will be the case even when the appropriated images are re-configured to make a different organization and/or meaning than the original piece.

Projects completed for an assignment in one course cannot be turned in for another course, unless the two courses have assigned a joint project. Collaborative works should acknowledge the contribution of each of the collaborators.

Plagiarism is the failure to acknowledge the use of words, ideas, images, music, and/or organization of another. Anyone engaged in plagiarism may face a disciplinary hearing, possibly leading to dismissal from MIAD.

### **Email Policy**

Students are given a MIAD Username and password, which provides access to a number of secure systems, including [zmail.miad.edu](mailto:zmail.miad.edu) (the MIAD Email System), [courses.miad.edu](https://courses.miad.edu) (the Moodle Course Management System), and the MIAD computer network. Use of these credentials by anyone other than the person to whom they were issued is strictly forbidden. Such use may result in all services connect to that account being locked.

All MIAD faculty and students have MIAD email addresses that they are required to use. When using the MIAD email, students only need to type in the instructor's name in the "To" line in order to access the address. Students should be aware that some instructors only access the MIAD email when on campus. Therefore students should not expect immediate response to an email communication.

Because educational emails can contain sensitive information about a student's academic performance (e.g., grades, indications of academic progress, etc.), faculty and staff can only respond to students through MIAD email addresses. For this reason, and for ease of use, we require that students use their MIAD email address provided through [zmail.miad.edu](mailto:zmail.miad.edu). MIAD email accounts will be set up by the IT staff.

**Moodle:** Many courses require student access the Moodle open source course management system. Students must use MIAD email accounts to participate in this system.

When contacting an instructor or staff member by email, students should consider the email to be a formal communication. Students must be sure to give faculty and staff the respect they deserve. Such emails should be polite, respectful, necessary, and considerate of the faculty or staff's time.

**Faculty and Staff:** Faculty and staff should only respond to currently-enrolled students via MIAD Zimbra accounts.

## **MOODLE Instructions/Information**

This course has a moodle, located at:

<http://courses.miad.edu>

the password is 'coding'

The course will also have a website built dedicated to exchanging code and sharing student work.

## **Academic Resources/Services**

### **Accommodations for Students with Disabilities**

It is MIAD policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have documented disability conditions (e.g., physical, learning, psychiatric, vision, hearing, or systemic) that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact Sara Blair, Student Accessibility Coordinator to have a confidential discussion of their individual needs for accommodations (Office R100, [sblair@miad.edu](mailto:sblair@miad.edu)).

### **The Learning Resource Center: Tutoring services (Room R100)**

The Learning Resource Center provides students a place to study, to congregate in discussion and writing groups, and to receive learning assistance from tutors. The tutors help students with papers, proposals, artist statements and other writing assignments as well as reading assignments, time management strategies, and presentation and critique strategies. Working in collaboration with the Library, the tutoring staff also provides research and documentation assistance. The room is open during Library hours.

### **Tutoring Hours**

Monday – Friday, 10:50 a.m. – 1:30 p.m. (and by appointment)

### **English Language Learners**

If English is not your first language, please inform your instructor. Individualized tutoring and English language instruction are provided in MIAD's Learning Resource Center by professional tutoring staff. Please contact Jennifer Crandall, Associate Dean of Students, for information on English language tutoring ([jcrandal@miad.edu](mailto:jcrandal@miad.edu), Room R95).

## **Institutional Policies**

In addition to the above course policies, all MIAD students are expected to adhere to MIAD's institutional policies. These policies appear uniformly in the student handbook and on MIAD's website. If you have any questions regarding these policies please ask your instructor.