

# ARTS 330: INTERMEDIATE ELECTRONIC ART

Professor: R. Lee Montgomery contact: [mrlee@unm.edu](mailto:mrlee@unm.edu) web:<http://www.lee-web.net/classes>

Art Studio 330.1 FA 2015

M/W 9-11:45am

Office/Hours: Room CFA 3016

Tuesday 12-2pm

## COURSE DESCRIPTION

In this class you will learn to use THE COMPUTER as a tool. There will be software (aka PROGRAMS) that you use on THE COMPUTER to make it your tool, but the priority will always be on you having some level of control over THE COMPUTER.

You may use any software you like ranging from open source programs available for free to very expensive programs we make available to you in the Electronic Arts labs.

You will be required to learn how to write computer CODE. This task will be somewhat simplified by the fact that you will be using the free and open source PROCESSING Integrated Development Environment or IDE. PROCESSING is designed to make it easy for artists to get started making interesting visual and interactive work with minimal coding requirements.

We will also discuss the culture, impact, and theory behind using THE COMPUTER and computer CODE to make ART. This exploration will be in four main parts.

Part I Two dimensional drawing

Part II Three dimensional drawing

Part III Interface

Part IV Output/Installation

You will be required to brush off your high school MATH skills. Advanced work may easily require you to learn some simple concepts involving trigonometry and calculus. You will not be expected to be a math genius, and you may in fact find that implementing mathematical concepts in code will make certain mathematical concepts clearer.

## COURSE REQUIREMENTS

Students are required to attend class and arrive on time!

More than 3 absences with or without legitimate excuse may result in a failing grade. My email is: [mrlee@unm.edu](mailto:mrlee@unm.edu) you must contact me in the event of your absence. Attendance during open lab is just as important as attendance on lecture days in fact some lab days may be more important than your attendance during lectures.

Assignments must be presented on time. Late assignments will be assessed the loss of one grade per class meeting. No late assignments will be accepted after 4 class meetings have passed.

Students' class participation grade will be based in part on their contribution to class discussions and critiques, as well as their ability to honestly and constructively receive and give criticism when appropriate. Additionally, there will be technical examples that you will be expected to complete. Failure to complete exercises counts against your participation grade.

This class requires students to engage significantly with conceptual strategies, and assignments will be evaluated on their engagement with those strategies. Assignments are meant to be experiments with ideas, and they will sometimes explicitly be described as such. It is expected that each experiment will go through numerous iterations before reaching its final state. Sometimes a project that effectively engages with concepts discussed in class but does not work perfectly may be rewarded for taking a chance. Assignments that show technical skill and understanding without further conceptual depth will be penalized for neglecting content.

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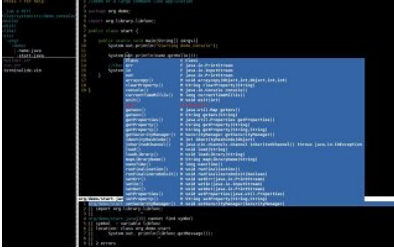
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## ASSIGNMENTS

There will be 4 major assignments in this class. The major assignments will be weighted evenly at 25% of your total assignment grade. Your fourth and final project will in addition to being averaged for your main assignment grade will also be counted independently as stated below.

## GRADING

Completion of the assignments and attention to the above requirements are necessary to complete the class successfully. It is important to participate in class discussions, give critical feedback to each other, and work collaboratively. Grades for each project are based on effective response to class concepts and technical concerns (35%), unique approach (35%) & technical proficiency (30%).

Your final grade for the class will be based on projects and attendance & participation weighted as follows:

Assignments Grade.....	35%
Final Projects.....	35%
Attendance & Participation.....	30%.



## TEXTS

required texts will, whenever possible, be available as pdfs online... or paper handouts ..full texts are available from the library as both e-books and traditional print.

Shifman, Daniel. Learning Processing  
(The Morgan Kaufmann Series in Computer Graphics).  
Greensboro: Morgan Kaufmann, 2008. Print.  
ISBN 978-0-12-373602-4

Burrough, Xtine ed..Net Works:Case Studies  
in Web Art and Design  
Routledge, 2012.  
ISBN 978-0-41588222-4

Reas, Casey, and Ben Fry. Processing: A  
Programming Handbook for Visual Designers and  
Artists.  
New York: MIT, 2007. Print.  
ISBN 9978-0-262-18262-1

Maeda, John. Design by Numbers.  
New York: MIT, 2001. Print.  
ISBN 978-0-262-63244-7

*n.b. all unm students have access to lynda.com which contains numerous well constructed video tutorials with demo files. If you are having trouble grasping technical issues you should take the initiative to research the tutorials on lynda.com.*

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## AUGUST

17	19
2D Drawing Assignment	
24	26
31	

## OCTOBER

5	7
12	14
19	21
3D Printing Days	
26	28
critique	

## NOVEMBER

2	4
Physical Computing Assg	
9	11
16	18
Final Assignment	
23	25
30	

## SEPTEMBER

	2
7	9
LABOR DAY	Printing Days
14	16
	critique
21	23

## 3D Drawing Assignment

28	30
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## DECEMBER

	2
7	9
final critique	

Collaborative Projects will be given a final grade based on the average of two assigned grades. One grade will be given to the project, and another grade will be given to each collaborator based on my perception of their participation.

Readings will be assigned in class and/or on the class blog.

Students should be prepared to discuss the readings based on the schedule which will be updated regularly -- in class.

It is YOUR responsibility to keep up with changes to the schedule.

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## 2D DRAWING ASSIGNMENT

Using Processing develop a GENERATIVE or INTERACTIVE drawing program. Your program can exhibit a consistent style every time it is run, but should be capable of giving different visual results each time it is run. Drawing code should also save out frames at a high enough resolution that we can print them. September 9th we will prepare images for printing, and we will print images as they become ready on the 9th and the 14th.

Examples will be shown in class to give you some ideas of appropriate directions to take this work. Keep in mind that a generative work will not always give you predictable results, and that is okay.

**DUE: Wednesday September 16th**

## 3D DRAWING ASSIGNMENT

Using Processing develop a program that generates imagery in three dimensions. Do not expect or seek realism. I expect a certain amount of abstraction and glitchiness for us to experiment with with our 3D printers. October 19th we will prepare images for 3D printing, and we will print images as they become ready on the 19th and the 21st.

Examples will be shown in class to give you some ideas of appropriate directions to take with this work. Keep in mind, as with your previous assignment, that a generative work will not always give you predictable results, and that is okay.

**DUE: Monday, October 26th**

## PHYSICAL COMPUTING ASSIGNMENT

Using Processing and Arduino you are expected to develop an interface either between the computer and an external technology, or between an external user/phenomenon and the computer. You will be expected to use sensors, variable resistors, Leap motion controllers, the Kinect, or any other interface you can hack or otherwise rig to interface with a processing sketch.

We will have a show and tell day for these projects on November 9th, leading into the next assignment, the Interactive installation assignment. I expect people to brain storm various types of interactive "games" they can develop around each of their peers' interfaces.

**DUE: Monday November 16th**

## INTERACTIVE INSTALLATION ASSIGNMENT

Using your Physical Computing interface and all the skills you have learned so far: create an interactive installation that a viewer can walk up to and interact with, without being prompted. You should feel free to work collaboratively if you are inclined. Screen based projects must devise a method of presentation that engages a viewer who is not already sitting in front of a computer. Installations should seek to change our perspective on how we use the computer.

Critique will require you to have a complete installation set up in the classroom for everyone to walk up to and interact with. If all goes according to schedule we will have an install day on December 7th and a critique discussion on the 9th.

**DUE: Monday, December 9th**

# READINGS AND MILESTONES-

## AUGUST

**17** Welcome -- read syllabus thoroughly - log into to UNM library, find Daniel Shiffman "Learning Processing" e-book - For Wednesday's class read Matt Pearson's "Generative Art" sample chapter, available at <http://www.lee-web.net/classes>

**19** Getting Started -- In "Learning Processing" read and do the exercises for Lesson One (Chapters 1-3 Pixels, Processing, and Interaction. Homework: create a gridded drawing on graph paper that you translate to code.

**24** for Wednesday's class read Philip Galanter's "What is Generative Art?" available at <http://www.lee-web.net/classes> . Also begin Lesson 2 in "Learning Processing" (Chapters 4, 5 and 6 - Variables, Conditionals, and Loops)

**26** By Monday complete Lesson 2 (Chapters 4, 5 and 6) in "Learning Processing". Homework: Complete all exercises in Lesson 2, complete a generative drawing based on the exercises in the book to be presented.

**31** for Wednesday's class read: Net Works - Part 1 "Formalism and Conceptual Art" chapter and excerpt from "10 PRINT" available at: <http://www.lee-web.net/classes> -- Begin doing exercises and reading Lessons 3 and 4 in "Learning Processing" (Chapters 7,8, and 9 Functions, Objects, and Arrays)

## SEPTEMBER

**2** By Monday complete reading and exercises in Lessons 3 and 4 in "Learning Processing". Homework: Incorporate one or more of the following into your generative drawing algorithm: a function, an object or an array .

**7 Labor day** - work on final projects, be prepared to print on Wednesday when class meets

**9 Printing Day** - if possible, bring a file or files that are ready to be printed. If not possible we will try to get files prepared for printing in class. We will try to have all drawings printed by the start of class on the 14th.

**14** Final Printing and Critique

**16 NO PRINTING!!!! -- Critique only!!!**

for Monday read the online catalog for the Art2Make show curated by v1b3 available as a link on <http://www.lee-web.net/classes>. Also read Lesson 5 (Chapters 10,11 and 12 Algorithms, Debugging, and Libraries) in "Learning Processing".

**21** various 3D projects will be linked at <http://www.lee-web.net/classes>. Complete Lesson 5 (Chapters 10,11 and 12 Algorithms, Debugging, and Libraries) in "Learning Processing".

**23** for Monday complete Lesson 6 (Chapters 13 and 14, Mathematics and Translation and Rotation (in 3D)) in "Learning Processing" attempt to create a 3D model based on a series of graph paper drawings using the method described in class.

# READINGS AND MILESTONES-

## SEPTEMBER

**28** read Parts IV and V in NetWorks available at <http://www.lee-web.net/classes> think about which of these approaches might be best for your project. Begin Lessons 7 and 8 in "Learning Processing" (Chapters 15 - 19 covering video and Data input)

**30** complete Lessons 7 and 8 in "Learning Processing" Homework: based on the examples in Lesson 8 create a sketch that generates an image or video based on data.

## OCTOBER

**5** check out Blender tutorials on lynda.com (free to you through UNM) "Blender Essential Training with George Maestri" is about 7 hrs of video exercises to get you started with 3D modelling. Blender will be useful in fine tuning the objects you generate in Processing so that they can more easily be printed. Complete at least the first 3 lessons (approximately 2.5 - 3 hours) by Monday the 12th.

**7**

**12** continue with lynda.com tutorials through Lesson 9 (approximately 4.5 hours) of "Blender Essential Training"

**14**

**19 3D printing week. We will try to print all models before class on Monday October 26th**

**21**

***OCTOBER 26 and 28 will be critique days***

## NOVEMBER

**2** on lynda.com watch the 2 hour "Up and Running with Arduino" lesson

**4** Read NetWorks Part X "Performance and Analog Counterparts" available at <http://www.lee-web.net/classes> and Lesson 9 "Making Noise" (chapters 20 and 21) in "Learning Processing"

**9 present and discuss arduino projects**

**11 present and discuss arduino projects**