Creativity and Computation
PGTE 5250
CRN 4511
Fall 2014

Mondays: 9-11:40

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Course website:
http://portfolio.newschool.edu/mfadtlab/

Course Description:
This course is an introduction to various approaches and platforms for creative computing. Students will build a foundation in programming while exploring the creative potential of algorithms, microcontrollers, interactivity, sensors, and other unconventional inputs and outputs. We will work within the domains of the web (Javascript), physical computing (Arduino) and desktop applications (Processing/openFrameworks).

Learning Outcomes:
1. Understand the underlying concepts of logic, procedure, and objects as they apply to code and design using Processing
2. Use code to express ideas visually and interactively through the development of projects
3. Develop skills to independently research code and prototyping techniques
4. Effectively communicate ideas/concepts for projects through presentations
5. Demonstrate the ability to document projects through code, image, video and text
6. Render interaction on screen and in physical form, using electronic circuitry and embedded computing

Course Requirements:
Weekly Assignments:
Throughout the course there will be weekly programming and reading/response assignments that will be due the following week.

Midterm Project:
Concept / ideas due: October 6
Presentation of work: October 20
Delivery of documentation: October 27

Final Project:
Concept due: November 10
Presentations of work: December 8
Delivery of documentation: December 15

Grading Policies:
Students will be graded per the standard Parsons graduate letter grade scale (no grade of D, see the Parsons Catalog) based on the following calculation of course components:

Class attendance / participation: 20%
Weekly assignments: 20%
Midterm project: 25%
Final project: 35%

Course Outline:

Part I: Processing Fundamentals

September 1
Course introduction. Review of syllabus.
Review of programming basics. Objects and classes.

September 8
Exploring motion and physics.

September 15
Audio analysis / reactive audio.

September 22
Introduction to computer vision.

Part II: Introduction to Arduino
September 29
Introduction to electronics/microcontrollers.

October 6
Read / write to arduino. Midterm ideas due.

October 13
Sensor input. Servo motors. Firmata.

October 20
Midterm Presentations.

Part III: Interactivity and the Web
October 27
CSS. Javascript / JQuery.

November 3
Canvas.js, three.js

November 10
Web apis, json
Final project concepts due.

Part IV: Introduction to OpenFrameworks

November 17
Introduction to Openframeworks. Overview of libs and structure. Compiling examples. Project generator.

November 24
Creating classes. Using addons.

December 1
Audio, serial and computer vision in OF.
Final project working day

December 8
Final presentations.

Recommended Resources:

http://processing.org/
http://www.openprocessing.org/
http://natureofcode.com/
http://openframeworks.cc/
http://ofxaddons.com/
https://developer.mozilla.org/en-US/docs/Web/JavaScript
http://docs.webplatform.org/wiki/javascript
http://arduino.cc/en/Tutorial/HomePage
http://www.arduino.cc/playground/
http://threejs.org/
http://formandcode.com/
http://www.dataisnature.com
http://www.creativeapplications.net/

Making Things See, Greg Borenstein
Programming Interaction, Josh Noble
Processing: A Programming Handbook for Visual Designers and Artists, Casey Reas and Ben Fry
Generative Design, Hartmut Bohnacker, Benedikt Gross, Julia Laub, and Claudius Lazzeroni.
Generative Art, Matt Pearson
Making Things Talk, Tom Igoe
Physical Computing, Tom Igoe
Javascript: The Definitive Guide

Attendance Policy:
The University has a strict Attendance policy that encourages faculty to fail students who do not attend a minimum number of class sessions. In a studio course, attendance is crucial to cultivate active engagement and participation. Four absences will be grounds for failure. Tardiness, especially chronic tardiness, will constitute absences at the discretion of the faculty. A letter grade may be deducted from your final grade based on

frequent tardiness. The faculty will deliver a mid-term report to disclose the number of absences and late arrivals recorded. Absence at either the mid-term or final review is grounds for failure.

Academic Honesty Policy:
The university's student code of conduct covers academic honesty. Plagiarism is grounds for failure and punitive review per the Office of Student Rights and Responsibilities. In the Design and Technology program, plagiarism is not limited to text, but can include all forms of media and code. When in doubt, credit. See http://www.newschool.edu/studentservices/rights/

Disabilities Services:
Student must self-identify to the Disabilities Service Office to be considered for special dispensations. See http://www.newschool.edu/studentservices/disability/