IN334 Code: Culture and Practice Syllabus - Fall 2017

Monday and Wednesday 12-1:45 PM.
Room: 518 at Emerson College
4 Credits.

JUMP TO COURSE CALENDAR

Faculty

Dr. Angela Chang Phone: 617-871-9213

Office Hours:
Before class 11am-12pm in Walker 510D on Mondays before class or by appointment. Outside of class, please contact me at anjchang@gmail.com via email.

Course Description

This course offers an introduction to creative computation in media arts. Exploratory programming is introduced as a technique for artistic inquiry. This course covers the basics of computer programming (variables, conditionals, iteration, functions, and objects) and briefly introduces more advanced techniques such as image processing, data parsing, and animation.

This hands-on studio course is designed to teach basic programming skills in the context of critical and cultural media studies. The course requires no prior programming experience, simply a willingness to explore code at a technical level with the aim of using programming as an expressive, analytical, critical and visualizing medium. Students will be introduced to collaborative coding techniques, open source software tools, and critical inquiry regarding the implications of web technology on contemporary culture.

Course Learning Objectives

At the conclusion of the course, students will be able to

- analyze and describe fundamental programming techniques used in media works
- examine, discuss, and evaluate computational programs
- design, develop, and create their own expressive media works through code.
- employ design thinking and critique to inform their own programming creations.
- present original exhibitions of media and explain their work in relation to existing conceptual frameworks.
- communicate about their ideas professionally with collaborators and audiences.

Course Requirements

This is a hands-on studio course centered around presentations and peer collaboration, so your participation and presence are essential. This course is designed to introduce you to exploratory programming techniques by dissecting media art examples. You will learn about coding tools to connect people with communities by designing and developing your own media art works.

The course has three main topics:

1. **Media Arts Fundamentals** -An overview of media art pieces will be presented to establish a common vocabulary for discussing this work. Frameworks for thinking and examining media - design space thinking, observational prototyping, digital storytelling, and activity theory - will be introduced.
2. **Computer Science Fundamentals** - Computer science fundamentals, and working with computer programs will be taught. Students will use Python and Javascript to make exploratory programs. Instruction in Processing will be optional to those inclined to visual thinking.
3. **Discourse & Critique** - In the final part of the course, we will create media works and present them for discussion in the context of current events. We will also evaluate the work through comparative discourse to give us constructive feedback on avenues for future exploration.

This class emphasizes the practice of *coding* as a means to express, analyze, and critique media. By the end of this class, students will be able to discuss the technical aspects of contemporary media works.They will also be able to examine media art pieces through different conceptual frameworks. Most importantly, students will be able to conceptualize, design, and implement a media project on their own. At the conclusion of the course, students should feel confident tackling more challenging programming projects.

Technology Policy

Students are asked to bring laptops to all classes for use during class discussions. If you are Facebooking or engaging in other distractions I will ask you to close your computer. I will ask you to put away your cell phone if you are texting or talking on it in class.

Attendance Policy

Email me as soon as you know that you will be absent for any reason. Your participation grade will go down by 10% with each absence but there are opportunities to make up some lost points by doing extra credit assignments. If you miss an in-class assignment such as a presentation or group exercise you should be prepared to take a 0 for it. You may be able to make up the grade with extra credit, but please see me to arrange a makeup.

Grading Policy

Participation	15%
In-Class Quizzes	15%
Homework	15%
Peer Review	10%
First Project Poster and Presentation	20%
Final Project Playsentation (20%) & Report (5%)	25%

Assignments

The classes are organized to give students training in how computation is used as a creative medium. Readings will be assigned at the end of many class for discussions (15% of the grade), but ***most*** **of the classes will involve hands-on coding**. Every week there will be a guided in-class activity (class participation 15%) that leads to the take-home assignment (15% of the grade).

Homework is due at the ***beginning*** of class on the day it is assigned in order to contribute to discussions. If your homework is late without reason, be prepared for your grade to be deducted for each day it is late. After a week, I will no longer accept late homework and you should be prepared to take a 0 for that assignment. You may be able to make up extra credit assignment by independent arrangement.

In-class participation assignments will not be docked for lateness. However, it is in your best interest to submit participation work as soon as possible.

Because collaboration is essential for the main projects, we will conduct peer reviews during the semester. Due to the size and time constraints of this semesters class, learning to work together productively is necessary. Peer reviews are ratings given by students to each other based on collaboration. We will practice giving feedback that is constructive, positive, respectful, and insightful.

There will be one in-class quiz to assess everyone’s understanding of fundamental programming concepts (15% of the grade) before we move on to more complex topics. The readings, class exercises, and quizzes will enable students to collectively create computational media projects for the midterm (15% of the total grade) and final projects (25% of the grade)

Calendar

Week 1. Introduction

Sep 6

Introduction to exploratory programming; We'll modify a Javascript program and use trial and error to learn about how programs work. Each student creates a Web-ready textual piece. These are read aloud in class.

Overview of the course. Programming concepts are presented, such as arithmetic expressions, syntax, semantics, and variables are introduced with in-class exercises.A skills survey will be conducted.

Homework assigned--due Monday, Sep 11:

1)Read the syllabus. Complete the student skills survey.

2) Modify a poetry generation program, putting your new understanding of programming fundamentals to develop a personal message using the concepts introduced. Keep it short, however — no more than 10 lines altered at the very most.

Week 2. Media Arts and Programming Fundamentals

Sep 11

Presentation of poetry generation programs as modified by students.

Review of students' textual messages and skills summary. Introduction to programming fundamentals: variables, arithmetic operators, and syntax. Work in iPython notebook.

Sep 13

Introduction to programs to explore abstraction, Iteration, and logic.

Discussion of medium and messages in media arts. In class, we dissect media arts pieces and draw functional block diagrams to analyze how they were created.

Homework assigned-- due Monday, Sep 18:

Work through ipython notebook homework. Work through some example programs demonstrating string representation.

Week 3. Hello, World!

Sep 18

We encounter traditional programs that learners often encounter. We input and run these, learn from them, make modifications to them, and also critically discuss the ideas about computation that they project.

Sep 20

Homework assigned-- due Monday, Sep 25

Write your own "starter program," informed by views of how computing should be presented. It should be concise — short enough for someone new to programming to easily type in.

Week 4. String manipulations

Sep 25

In-class exercises to explore and explain slicing, splitting, joining, and sorting strings. Large public-domain text files are loaded and used in exploring how strings can be manipulated and words counted. Create a secret message using encryption to present in class.
Presentation of student lexical checkers.

Sep 27

Discussion of string vs. arrays in python. We'll also discuss Queneau's *Exercises in Style* or McCloud's *Understanding Comics*.
Homework assigned--due Monday, Oct 2:
Develop code to detect strings and lexical phenomena in large text files. You should choose the phenomenon, and select one that is fairly easy to detect using simple text processing methods as discussed in class.

Week 5. Regular Expressions

Oct 2

Presentation of lexical analysis code by students.
Regular expressions are introduced, explored in text editors, and used in text analysis. In class, we will modify programs to dissect webpages using regex. Together we'll perform web scraping on a website to collect information programmatically.

Oct 4

Presentation of web-scrapers. Discussion about helpful programming resources. Review of Programming Fundamentals for Quiz 1.
Homework assigned-- due Wednesday, Oct 11:
1) Develop a program to compare a single poetry book and a single prose fiction book along whatever lines you see fit, extending the techniques used in the last two classes, including those involving regular expressions. Create a single slide to summarize the two, with a data visualization describing your findings.
2) Study for Quiz on Programming Fundamentals.

Week 6. Quiz

Oct 9 (Columbus Day no class)

Study for quiz.

Oct 11 (Tuesday), Quiz

In-class quiz on programming concepts. **Presentation** of poetry/prose comparison programs. Introduction to simple image generation with iPython. ·
Homework assigned-- due Monday, Oct, 16:
Read and answer questions from McCullough or Feenberg. Work through some programs to explore image representation. Read an excerpt on teamwork dynamics.
Homework assigned-- proposal due Oct. 26:

First project assignment

Think about a **meaningful message** and create a media art investigation using techniques learned so far. Make a plan of your project to explore a meaningful message using code.

- Identify a meaningful message and think about ways to use code to express the message.
- Make a poster with design sketches and text, and mock up some code for class presentation and discussion. Have a proposal for why your idea is interesting to implement.
- Each person will have 2-3 minutes to present their idea. (due Oct 25)
- After the individual presentations, you'll find partners (3 students/group minimum) to develop the idea further as a group. This second phase should make use of data sources and multimedia to convey your message. Together as a group, realize some form of the concept in code. (due Nov 13)

Week 7. Images

Oct 16

Image manipulation of images of any size, including lightening/darkening, increasing contrast, and flipping an image, done during in-class exercises.

Homework assigned-- due Monday, Oct. 23 (part 1);

Develop your own image manipulator to do something fairly simple (such as flip along a different axis) or something less usual (posterize the image).

Oct 18

Blurring an image. Manipulating composite images, analysis of many images.Manipulating and displaying sequences of images.

Given a directory of images, gather some data about all of these. For instance, which is the least red? Which is the lowest contrast? You should choose what to determine about the images; your program should work on any directory that has nothing but images of the correct format.

Homework assigned-- due Monday, Oct. 23 (part 2):

Submit your directory-level image processing code.

Week 8. First project media proposals

Oct 23

Presentation of student image manipulation and analysis programs. Overview of how to display images with text in Javascript, Python, and Processing. Essentials of probability and statistics. In class, we'll develop code to determine the median, mode, and variance/standard deviation of a sequence of numbers.

Oct 25

Presentation of first project proposals.

Bring posters and mockups. Peer review and informal design discussion of posters. Find partners for next week's presentation.

Reflect on the messages presented in class. As a group, look online and create a media collage or composition demonstrating effective messages relevant to those heard in class.

Homework assigned-- due Monday, Oct 30:

Install processing on your computers. Reading from contemporary media studies selection: Czikszenmihaly's Meaning of Things, Crampton Smith's *Hand that Rocks the Cradle*, Lubar's *History from Things*, McLuhan's *The Medium is the Message* or Bush's As *We May Think.*

Week 9. Animation

Oct 30

Essentials of probability and statistics. In class, we'll develop code to determine the median, mode, and variance/standard deviation of a sequence of numbers. Introduction to processing. Feedback from peers on topics proposed in class. Basics of animation through programming in class.

Nov 1

Homework assigned-- due Monday, Nov 6.

Write a creative program to animate text and images. Have your program take text files and images as input and produce an experience that has elements of each.

Week 10. Interaction

Nov 6

Presentation of animation programs. **Discussion** about multimodality and exploratory media investigations. Introduction to work by Ackerman, Chion, Strong & Gaver, or Dunne & Raby.

Homework assigned-- due Monday, Mar 13:

Read about activity theory and observational prototyping. Create an activity theory diagram for your first media project presentation. Write up a paragraph regardimg the problems or ideas you are trying to explore in relation to your first project proposal.

Nov 8

Group project check-in. The essentials of interaction are introduced, including accepting typed input, detecting sounds, and the use of the mouse. Activity theory and observational prototyping are introduced. An activity theory diagram is created as a class exercise to be shown during Nov 15 presentations.

Week 11. First media project presentation

Nov 13

We'll discuss the user interface design writings by Fitzmaurice, Ishii, Weiser, or Ullmer. Discussion of the messages being developed in group proposals.

Homework assigned-- due after presentation Nov.15:

1) Develop your multimedia creation, however simple, that combines sound, visual, and textual media. Upload your source code to GitHub and your media experience to Youtube.

2) Perform some observational prototyping and document your results for your presentation.

Nov 15

Presentation of completed media projects and design critique. Bring a poster summarizing your results with working prototypes or mockups. Each group will give a 5-10 minute presentation using the poster/prototypes/mockups. Peer review and critique.

Homework assigned-- due on Nov 20:

1) Look at another student's media repository and **create a modification** of their code or media creation that is your own. Describe what is different about your modification.
2) Submit media project and team evaluations.
3) Start thinking about your final project proposal.

Final project assignment:

Develop an interesting media experience through programming. Part of the challenge is selecting a project to do that will be interesting while the overall project is still quite tractable and concise. Based on your reflection of the first project, explore a new project in any or all of three directions:

1) Extend your project - Develop a hypothesis or guiding principle around your existing project message.
2) Solve a new problem - Identify a new message and describe how computation can aid its expression.
3) Combine projects - Create a hybrid message by collaborating with another group.

Instructions:

- Find a partner (6 students/group maximum) (group list due Nov 29).
- Write a project proposal, draw sketches, and start mockup/prototype making (due Dec 6).
- As a group or individually, make a poster for class discussion about your new idea. (due Dec. 6)
- Create a working prototype of the experience and present it in class (due 12/11).

Week 12. Data visualization

Nov 20

Review of **media project presentations** in the context of Human-Computer Interaction. Reading data from websites to create visualizations. Data visualization with iPython notebook examples. Together we'll write code to read data from websites to create visualizations.

Presentation of student modification projects.

Homework assigned-- due on Nov 27:

Create or modify a program to include interaction or data visualization to investigate an insight or question.

Read and answer questions from HCI texts by Buxton, Weiser, Ishii, Fitzmaurice, Ullmer, or Schneiderman. Rekimoto's *World through the Computer*, Arias' *Enhancing Communication*, or Crampton Smith's *The Hand That Rocks the Cradle.*

Nov 22 (Thanksgiving Break, no classes)

Week 13. Video

Nov 27

Presentation of student visualizations. Design research methods are discussed: Observational prototyping, interviewing techniques, and online surveys to inform media design.

List of project group members due, along with project proposal.

Nov 29

Video manipulation using Processing is introduced and exercises are optional. Students will be given sample code that they might be able to use in their final projects.

Homework assigned-- due by Dec. 11th: final project presentations.

Week 14. Final project workweek

Dec 4

Think about how to extend the project’s impact outside of this class. Split up into groups to perform some design research on campus to inform your media projects. Project consultations.

Dec 6

Presentation as groups regarding insights and problems with final projects. Present your project proposal, sketches, and prototypes for class discussion. Demonstration of code progress.

Homework assigned, due at Playsentation:

Final project presentation and working code submission. Also, complete final project playsentation survey.

Week 15. Final project playsentation

Dec 11

Presentation of final projects is open to the public. Each project presentation will take 2 minutes followed by on-your-laptop demos where you may be asked to show the code working, allow others to play with your project, or answer questions. External judges may be invited to attend the critique.

Presentations will be video recorded for archival. Peer review and critiques will be documented. Class wrap up.

Homework assigned, due by Dec 18th: Write a few paragraphs on future programming projects you’d like to explore. Upload or archive the code you wrote for technical grading.

Write a self-critique of your project, and reflect on it as a piece of media art. Complete the class exit survey.

Disability Statement

Emerson College is committed to providing equal access to its academic programs and social activities for all qualified students with disabilities. While upholding this commitment, we require all Emerson students to meet the high standards of achievement that are essential to the College’s programs and services. To advance these dual aims, the College will provide reasonable accommodations to disabled students who request accommodations through the College’s Disability Services Office (DSO), if the DSO determines that accommodations are both medically necessary and reasonable. Please note that a requested accommodation will only be approved as ‘reasonable’ if it does not compromise any essential requirements of a course.Students who wish to request a disability accommodation must submit their request to the DSO, and not to faculty, since only the DSO is authorized to approve or deny any requests for accommodations. College employees and student’s family members cannot request accommodations on a student’s behalf. Rather, students who wish to request accommodations must themselves contact the DSO since Emerson’s philosophy is that its students are independent and self-determined and students with disabilities—like non-disabled students—have control over their lives here at Emerson and are ultimately responsible for making their own decisions. Students who know at the start of a semester that they will need accommodations must submit their accommodation requests to the DSO within the first two weeks of the semester. If a student becomes ill or disabled during the course of a semester, or discovers after the start of a semester that he or she needs a disability accommodation, he or she is encouraged to submit his or her request to the DSO as soon as possible since the process of approving accommodations takes time, and approved accommodations will not be granted retroactively. The Associate Director of Disability Services can be reached at: 617-824-8592, dso@emerson.edu, 5th Floor 216 Tremont Street.

Plagiarism Statement

I expect you to produce original work. Peer reviews are meant to be constructive, in the spirit of spurring better collaboration and insight on student work. Please try to read assigned materials before class to maximize discussion. If you have a problem with assignments, please notify me in advance of the due date.

It is the responsibility of all Emerson students to know and adhere to the College’s policy on plagiarism, which can be found at: http://www.emerson.edu/policy/plagiarism. If you have any question concerning the Emerson plagiarism policy or about documentation of sources in work you produce in this course, speak to your instructor.

Diversity Statement

Every student in this class will be honored and respected as an individual with distinct experiences, talents, and backgrounds. Students will be treated fairly regardless of race, religion, sexual orientation, gender identification, disability, socioeconomic status, or national identity. Issues of diversity may be a part of class discussion, assigned material, and projects. The instructor will make every effort to ensure that an inclusive environment exists for all students. If you have any concerns or suggestions for improving the classroom climate, please do not hesitate to speak with the course instructor or to contact the Office of Diversity and Inclusion at 617-824-8528 or by email at diversity_inclusion@emerson.edu.

Course Materials

Design Notebook - at least 6"x 6" in size or larger. Please use unruled (blank or gridded) pages, to support sketching. You can opt to have blank copier sheets in a folder. Each page should be dated and titled.

Laptop or computer access is necessary for using Processing, iPython Notebook, and Google Drive. Please make sure you have the administrator privileges to install tools like Sublime Text or Notepad++ on the device.

Although there is no required textbook, I recommend you read Exploratory Programming for the Arts & Humanities by Nick Montfort, as this course is directly influenced by the book. We will read many of the items on the reading list. You do not need to purchase books on the reading list, as they will be available at the library course reserves or on the course homepage.

Reading List

- *Arias, E., Eden, H. and Fischer, G. (1997). Enhancing Communication, Facilitating Shared Understanding, and Creating Better Artifacts by Integrating Physical and Computational Media for Design. in Proc. of Designing Interactive Systems, Amsterdam, August 1997, ACM, 1-12.*
- *Bush, V. (1945). As we may think.*
- *Buxton, W. (1995). Integrating the Periphery and Context: A New Model of Telematics. in Proceedings of Graphics Interface '95, 239-246.*
- *Chang, A., Resner, B., Koerner B., Wang, X and Ishii, H., LumiTouch: An Emotional Communication Device (short paper), in Extended Abstracts of Conference on Human Factors in Computing Systems (CHI '01), (Seattle, Washington, USA, March 31 - April 5, 2001), ACM Press, pp.313-314.*
- *Chang, A., O'Modhrain, S., Gunther, Jacob, R., Gunther, E., Ishii, H., ComTouch: Design of a Vibrotactile Communication Device, in Design of Interactive Systems (DIS '02), (London, United Kingdom, June 25 - 28, 2002).*
- *Chion, M (1994). Audio-Vision: Sound on Screen.*
- *Crampton Smith, G. (1995). The Hand That Rocks the Cradle. I.D., May/June 1995, 60-65.*
- *Csikszentmihaly, M., and Rochberg-Halton, E. (1981) The Meaning of Things: Domestic Symbols and the Self (, Cambridge University Press.*
- *Dunne, A. & Raby, F., Fields and Thresholds, November 1994, http://www.mediamatic.nl/Doors/Doors2/DunRab/DunRab-Doors2-E.html*
- *Feenberg, A. (1999). Questioning technology. London: Routledge.*
- *Fitzmaurice, G., "Situated Information Spaces and Spatially Aware Palmtop Computers," CACM, July 1993, Vol. 36, No. 7, pp. 38-49.*
- *Fitzmaurice, G., Ishii, H., Buxton, W., "Bricks: Laying the Foundations for Graspable*

User Interfaces," Proceedings of Conference on Human Factors in Computing Systems (CHI '95), ACM, Denver, May 1995, pp. 442-449.

- *Fry, B. (2008). Visualizing data. Beijing: O'Reilly Media, Inc.*
- *Heiner J; Hudson, S & Tanaka, K(1999) "The Information Percolator: Ambient Information Display in a Decorative Object", ACM Symposium on User Interface Software and Technology, pp. 141-148, November 1999.*
- *Ishii, H., and Ullmer, B., Tangible Bits: Towards Seamless Interfaces between People, Bits, and Atoms, in Proceedings of Conference on Human Factors in Computing Systems (CHI '97), (Atlanta, March 1997), ACM Press, pp. 234-241.*
- *Kawasaki, G., Presentation Zen. 2011.*
- *Krueger, M., "Artificial Reality II," Addison-Wesley, 1991*
- *Lubar, S, and Kingery, W. D. (ed.) (1995). History from Things: Essays on Material Culture. Smithsonian Institute Press.*
- *MacKenzie, C. L., and Iberall, T. (1994) The Grasping Hand, Advances in Psychology, 104, North- Holland, Elsevier Science B. V.*
- *McCloud, S (1994). Understanding Comics.*
- *McCullough, M. (1996) Abstracting Craft: The Practiced Digital Hand. The MIT Press, Cambridge, MA. 6th ed.)*
- *Montfort, N. (2003). Twisty little passages: An approach to interactive fiction. Cambridge, Mass: MIT Press.*
- *Montfort, N. (2016). Conceptual Computing and Digital Writing*, Postscript edited by Andrea Andersson. http://dspace.mit.edu/handle/1721.1/92876
- **Montfort, N. *(2016)*. *Exploratory programming for the arts and humanities*.**
- McLuhan, M., & Fiore, Q. (1967). *The medium is the message. New York*, *123*, 126-128. http://web.mit.edu/allanmc/www/mcluhan.mediummessage.pdf
- *Norman, D. A. "Things That Make Us Smart," Addison-Wesley, 1993.*
- *Norman, D. A., "Psychology of Everyday Things," Basic Books, 1988.*
- *Pedersen, E., and Sokoler, T. (1997). AROMA: Abstract Representation Of Presence Supporting Mutual Awareness. in Proceedings of Conference on Human Factors in Computing Systems (CHI '97), Atlanta, March 1997, 51-58.*
- *Pedersen, E & Sokoler, T "AROMA: Abstract Representation Of Presence Supporting Mutual Awareness" Proceedings of CHI '97 (March 22-27, Altanta Georgia*
- *Pentland, A. P. (1996). Smart Rooms. Scientific American. 274, 4 (1996), 54-62.*
- *Resnick, M. (1993). Behavior Construction Kits. Communications of the ACM. 36, 7 (1993), 64-71.*
- *Queneau, R. (1981). Exercises in style. New York: New Directions.*
- *Reas, C., & Fry, B. (2010). Getting started with Processing. Beijing: O'Reilly.*
- *Shneiderman, B. (1997). Designing the User Interface: Strategies for Effective Human-Computer Interaction, Third Edition, Addison-Wesley, Reading, Mass. (1997).*
- *Strong, R. and Gaver W.W. (1996) "Feather, Scent, and Shaker: Supporting simple intimacy" Proceedings for CSCW'96 (Nov.16 - 20, Boston)*
- *Ullmer, B., and Ishii, H. Emerging Frameworks for Tangible User Interfaces. In IBM Systems Journal, v393n3, 2000, pp. 915-931.*

- *Weiser, M., "The Computer for the 21st Century," Scientific American, 1991, 265 (3), pp. 94-104.*
- *Weiser, M., and Brown, J.S., Designing Calm Technology, December 1995, http://www.ubiq.com/hypertext/weiser/calmtech/calmtech.htm*
- *Wellner, P. (1993). Interacting with Paper on the DigitalDesk. Communications of the ACM. 36, 7 (1993), 87-96.*
- *Wellner, P., Mackay, W. and Gold, R. (1993). Computer Augmented Environments: Back to the Real World. Communications of the ACM. 36, 7 (1993), 24-26.*

Useful Resources

processing.org
ipython.com
youtube.com
stackoverfow.com
python.org
github.com
wordpress.org
flowingdata.com
opencv.org
twitter.com

Video tutorials
http://lynda.emerson.edu
Lynda.com Programming Fundamentals in the Real World
Lynda.com Learning Regular Expressions
Lynda.com Processing Interactive Data Visualization
Trevor Payne's "Let's Learn Python" tutorials
https://www.youtube.com/playlist?list=PL82YdDfxhWsDJTq5f0Ae7M7yGcA26wevJ
Trevor Paye's Regular Expressions Tutorial
https://www.youtube.com/watch?v=ZdDOauFIDkw

Programming fun
checkio.org
pythonchallenge.com
practicepython.org