Procedural Expression

USC School of Cinematic Arts, CTIN 506, 2 units
Thursdays 1:30 to 3:20pm
Room: SCI L113

Professor	Student Assistant
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Office Hours: by Appointment. Ask 24 hours prior to requested time	Office Hours: Wednesday 2-4pm, or by Appointment here

Course Description

This course is an introduction to the practice of the creative coder. Today, computation - by way of software - touches nearly every human endeavour, and, in particular, has profoundly altered creative production and dissemination. But what distinguishes interactive media from other expressive forms is that it is not just made with software, it is software. The creative coder explores the computer's unique expressive potential by harnessing its unprecedented ability to execute rules. This will be our practice - writing instructions to make complicated systems out of simple processes. Further, the creative coder writes code that creates meaning and representation, as opposed to the film director, the playwright, and the novelist, who author the representation itself. This course is for the game designer, 3D modeler, interactive writer, digital musician, and installation artist to become procedurally literate.

Therefore, this class involves coupling a structured orientation of the programming language, Processing, with a weekly examination and discussion of relevant computational media and texts. In particular we will investigate what aesthetics and representations lend themselves to, and conversely, influence both the inherent structures of programming and the practices of the programmer. Learning to program has clear value in and of itself, but procedural literacy imbues the student with the ability to carefully read computational media. For example, one will recognize the patterns and behaviors of a given videogame as manifestations of general algorithms found in all sorts of software.

The open source programming language, Processing, was developed to address this need. It is powerful and simple. It provides the advantages of both a scripting and object-oriented language, so that the Processing programmer can focus on fundamentals while learning to create flexible building blocks. By nature of being open source, it is free, works on multiple operating systems, and is well-documented.

During the latter weeks of the semester we will begin again with a new language. With the fundamentals of coding fresh in hand, we will learn the language, C# (within the Unity environment) starting with its core principles.

Finally, through readings, screenings, and discussions we will examine the portrayal of computer programmers as protagonists and as villains. Starting with the earliest "hackers", we will consider the ethos and attitude of the programmer in fiction and culture.

Student evaluation will be based on assignments, projects, and readings.

Learning Objectives

- Learn and practice the fundamentals of computer programming
- Map out an individualized plan for subsequent semesters - what classes at USC that will further your computer programming interests
- Observe a shared interactive logic and aesthetics among software (especially media creation software) with an appreciation for code as language
- Articulate computational media theory through art and media examples
- Hone a critical eye and a literacy for digital media
- Study the cultural influence of the computer programmer in creative cultures and technology industries as well as fictional portrayals in media and literature
- Question systems of logic. Consider who were the early hackers and computer scientists in terms of power and privilege.
- Play and deconstruct video games with an interest in practicing above concepts

Evaluation of Student Performance

Participation and Reading	20
Weekly Assignments	60
Final Project	20
Total:	100

Readings

Learning Processing by Daniel Shiffman
Life In Code by Ellen Ullman
Expressive Processing by Noah Wardrip-Fruin
The Ones Who Walk Away from Omelas by Ursula K. Le Guin
Coders by Clive Thompson
Algorithms of Oppression by Safiya Umoja Noble
Making Games by Stefan Werning

Course Content

Week 1, Aug 26

definitions of procedurality
variables
functions
logical flow
conditionals

Due - Install Processing 3.5

The welcome survey

Week 2, Sept 2

- In class: Play Baba is You
- In class: Perforce (Download and Install P4V)

- For today - listen and be ready to discuss this podcast
Jia Tolentino on what happens when life is an endless performance (and then search in your browser - "Find" for "Jia")

- For today, watch: https://vimeo.com/320333977
- For today, watch: https://vimeo.com/320334218
- For today, watch: https://vimeo.com/320334385

- Due - Make an avatar in Processing. (512x512)

- Due - Install Quixel Mixer, Quixel Bridge and make an Epic account and log into Metahuman's website

Week 3, Sept 9

- Read for today: Read Life In Code by Ellen Ulman, Ch 1 (access with your USC account)

- In class: Play Slay the Spire and Crypt of the Necrodancer

- Due for grade - Wednesday at 9pm
  Add to this template to make this. The line of circles has about a 1 of 4 chance to 'step-down' at any given moment. But notice that it never takes more than 1 step down in a row.

- Due for grade - 3D Doodle 1 (Metahuman)

Week 4, Sept 16

- Read for today - (Download) Expressive Processing by Wardrip-Fruin (pp 1-21). If bad link, search the library.
- Due today - think of 1 example of a Wardrip-Fruin effect (based on above reading).
- Due for grade - Wednesday at 9pm. Study this, in order to make this and this.

- Due for grade - 3D Doodle 2 (Mixer)

Week 5, Sept 23

- In class: Play Jazzpunk

- In clas: Models To Unity

- Due today: Install Unity Hub and Unity 2020.1

Week 6, Sept 30 (In an attempt to avoid significant project due date overlap in 506 and 534, a lot is due this week)

- Due today, watch: https://learn.unity.com/tutorial/create-your-first-unity-project#
- Due today, watch:
https://learn.unity.com/tutorial/exploring-the-editor-layout

- Due for grade - Notice how loops augment this, into this.

- Due for grade - Make this

- How do we capture game image and sound to video? OBS?
- How do you typically edit video? If nothing, we'll try DaVinci.
- Read for today: The Ones Who Walk Away from Omelas by Ursula K. Le Guin

Week 7, Oct 7

- Due for grade: Meme-maker. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it.
Examples

- Hint: How to import images in order to make sprites\
- Due today, watch: https://learn.unity.com/tutorial/scripts-as-behaviour-components#5c8924ededbc2a113b6bc373
- Read for today: Coders by Clive Thompson, Ch 2 (access with your USC account)

Week 8, Oct 14

HOLIDAY, NO CLASS

Week 9, Oct 21

- Build in Class: Bouncing Ball with Beautiful Background. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it.
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Learn about arrays. Yes, this is Processing, but he's a good teacher: https://www.youtube.com/watch?v=VIQoUghHSxU

Week 10, Oct 28

- Due for grade: Solar System Musical Magic. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it.

- Read for today: Algorithms of Oppression by Safiya Umoja Noble, Ch 1 (access with your usc account)

Week 11, Nov 4

- Due for grade: Absurd Popcorn Arena. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it.

- Listen to #1 for today. Be ready to argue why these songs are examples of the SimCity Effect. If you're inspired, you're welcome to listen to #2 and #3.

Week 12, Nov 11

- Read for today: Making Games (Ch 1) [link forthcoming]
- Due for grade: Mad Libs Therapy. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it. Template here.

Week 13, Nov 18

- Due for grade, Final Project, Alice in Wonderland Moment. It can realize characters from the book, but you should focus on an action, something that *happens* in the story. Submit the zipped OSX and Windows build to Perforce, but ALSO, submit a walkthrough youtube video of the experience with you talking us through it.

OR

Design a space in which players are compelled to find the "weenie". As we discussed, the player will draw a strong initial impression that they can seek out this far away but visible structure. Along the way, they encounter sounds, sights, and/or text that details their journey. The player discovers the (simple) story of the world at the same time they experience their own story as they explore. You can study Disney's "spoke and wheel" world design for inspiration, but you are not expected to design a level of such size.

Week 14, Nov 25

HOLIDAY, NO CLASS

Week 15, Dec 2

- Read: What is Game University For? by Robert Yang
- In class: Play Everything

Assignment Details

Weekly Assignments:
Students will typically have 1 or 2 assignments due every week, to be turned in through Perforce the night before class.

Missing an Assignment Deadline, Incompletes:
The only acceptable excuses for missing an assignment deadline or taking an incomplete course are personal illness or a family emergency. Students must inform the professor before the assignment due date and present verifiable evidence in order for a make-up to be scheduled. Students who wish to take incompletes must also present documentation of the problem to the instructor or teaching assistant before final grades are due. Incompletes are only available after the 12th week withdrawal deadline.

Additional Information

Academic Conduct
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards*
https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic

dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.
Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu/ or to the *Department of Public Safety* http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems
A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu/will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Disruptive Student Behavior:
Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

Syllabus Updates:
This syllabus is liable to change up to the beginning of class and possibly over the semester. Please check the posted syllabus regularly, and note all changes that are shared by the instructor in class.