

CREATIVE PROGRAMMING 2

DETAILS

Instructor	Prof. Jeff Thompson
Email	jeff.thompson@stevens.edu
Office/hours	Morton 208, Mon/Wed 10am-12pm
Meeting times	Mondays 1-4.50pm
Location	Visual Arts & Technology Lab, Morton 201

Course materials <https://github.com/jeffthompson/creativeprogramming2>

COURSE DESCRIPTION

In this intermediate course, we'll build on creative uses of computer programming, with a focus on tools and processes for making more technically, creatively, and conceptually complex projects. You'll develop a series of projects examining images, cameras, computer vision, interactivity, and machine learning, as well as continue building a personal, creative practice. Like in Creative Programming 1, we'll also look at historical, contemporary, and theoretical issues around computation in the arts and our culture.

ATTENDANCE

Because this class will cover so much technical material, and because our process of experimentation and critique is collaborative, attendance is mandatory. You are allowed two absences per semester to use at your discretion – each additional absence will result in your final grade being lowered by ½-letter. Late arrivals will be marked tardy, with 3 tardies equaling one absence. The only exception is severe illness – if this is the case, please let me know as soon as possible and provide a doctor's note documenting your illness.

HOMEWORK

Homework in this class is meant to be exploratory, a way to expand on the experiences and ideas in class. Each project will be carried out over several weeks of iteration, prototyping, and refinement. You're encouraged to take wide-ranging interpretation of assignments: consider ways that you can complete the project that are creatively and intellectually exciting for you, not fulfilling the basic requirements. (That said, some assignments will

have restrictions on them – these kinds of constraints can spur creativity, so embrace them!)

Unlike tests, projects require considerable engagement and thoughtful work on your own, and you should be working each week on projects. All assignments are due by the start of class and should be turned in on Canvas – late projects will be marked down 10 points for each week they are late. Details of projects will be available on the class GitHub page, including details about how to turn in specific projects, what's to be included, etc.

You will have 24/7 access to the Lab and Studio and use of the Fab Lab during open hours for printing, equipment checkout, and to use the digital fabrication equipment. Please note! While every effort is made to make sure the Fab Lab is available, please don't wait until the last minute to print or cut something.

GRADING

The goal of all assignments is for you to think and make. Everyone comes from a different background and experience, so I'll be looking for improvement, curiosity, engagement, and a willingness to experiment. A grading rubric will be provided with each assignment to help you understand what is expected and how you did.

To get a C (an average grade) you should:

- Put time into your projects each week
- Complete everything on time
- Participate in critiques and discussions

For a B or an A, you should additionally:

- Take risks and try things enthusiastically
- Show improvement over the course of the semester, especially things that don't come easily to you
- Be an active and unsolicited participant in critiques and discussions
- Take assignments beyond their minimum requirements

Final grades will be determined as follows:

- Homework: 60%
- Class participation: 25%
- Final project: 15%

LEARNING ACCOMMODATIONS

The goal of this class is for everyone to succeed. Stevens and the VA&T program are dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical

disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

If you have any questions about learning accommodations, please don't hesitate to talk with me during or outside of class.

PRONOUNS

As this course includes lots of interaction between students, it's important for us to create an environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronouns and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform me of the necessary changes.

INCLUSION STATEMENT

Stevens and the VA&T program believe that diversity and inclusiveness are essential to excellence in academic discourse and creativity. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to me to make alternative arrangements.

REQUIRED MATERIALS

Required and suggested readings will be provided as PDFs on GitHub – there is no required textbook.

- Laptop capable of running class projects and code, power charger, and reliable internet connection – *bring every week, please!*
- External webcam, if your laptop doesn't have one built in (or it doesn't work). You may want to purchase an external one for class projects anyway, though we'll talk more about cameras in a few weeks, so don't get one now unless yours is broken.
- We will be using only free software during the semester: Chrome and JavaScript, Processing, Python, and several machine learning libraries
- A sketchbook for taking notes and drawing ideas – *bring every week, too!* You'll be asked to do regular drawings in preparation for assignments.
- An assortment of drawing/writing implements for working on project ideas
- Other art supplies (paper, etc) and printing as needed

COURSE CALENDAR

Please note this is subject to change – be sure to check GitHub and your email regularly. Homework and readings are listed for the days they are assigned.

WEEK 1

BLOCK PRINTS 1

In-class	Introductions, syllabus
Demo	Processing refresher, block-printing and laser-cutter basics
Homework	Create Block Prints sketch, laser-etch your printing block

WEEK 2

BLOCK PRINTS 2

In-class	Printing an edition of your blocks
Homework	Finish printing as necessary, scan one of your prints

WEEK 3

ERASURE 1

Critique	Group crit of Block Print projects, print exchange
In-class	JavaScript basics, CSS and the DOM
Homework	Erasure ideation, sign up for GitHub and install Desktop Client

FEB 18 – PRESIDENT'S DAY, NO CLASS (MEET THE NEXT DAY)

WEEK 4

In-class
Homework

ERASURE 2 – NOTE! We meet on Tuesday this week!

Further Javascript demos, creating GitHub repositories
Finish Erasure project, create repository and upload code

WEEK 5

Critique
In-class
Homework

IMAGE PROCESSING 1

Group crit of Erasure projects
Camera input, accessing pixel values, basics of image processing
Digital Mirror sketches, sign up for Vimeo or YouTube

WEEK 6

In-class
Homework

IMAGE PROCESSING 2

Further image processing, screen recording and documenting projects
Finish Digital Mirror project, record a video of it, install OpenCV for Processing

WEEK 7

Critique
In-class
Homework

COMPUTER VISION 1

Group crit of Digital Mirror projects
Extracting information from images, kernel processing, edge detection
Tracking project sketches and work-in-progress

MAR 18 – SPRING BREAK, NO CLASS**WEEK 8**

In-class
Homework

COMPUTER VISION 2

Detecting colors and blobs, cameras for installations
Finish Tracking project

WEEK 9

Critique
In-class
Homework:

COMPUTER VISION 3

Group crit of Tracking projects
Detecting faces, encoding an image as a vector
Faces sketches and work-in-progress

WEEK 10

In-class

Homework

MACHINE LEARNING 1

Python refresher, extracting features, feature reduction, searching, RAM limitations
Further iteration on Faces projects

WEEK 11

In-class
Homework

MACHINE LEARNING 2/FINAL PROJECT 1

Visualizing datasets, refining the model
Finish Faces project, write Final Project proposal and sketches

WEEK 12

Critique
Feedback
Homework

FINAL PROJECT 2

Group crit of Faces projects
Small-group feedback on final project ideas
Final Project work-in-progress

WEEK 13

In-class
Homework

FINAL PROJECT 3

Visit to Small Data Industries
Finish Final Project

WEEK 14

Critique
Homework

FINAL PROJECT DUE

Group crit of Final Projects
Record documentation of your project

EXAM

Online

DOCUMENTATION DUE

Turn in documentation of your finished project