**AT 101: Creative Codes**

**Fall 2024**

**Ammerman Center for Arts and Technology Connecticut College**

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SYLLABUS IS SUBJECT TO REVISION DURING THE SEMESTER

*Course Description:* This introductory course presents a wide range of interdisciplinary art practices - music, visual art, and poetry - and contextualizes them with (and against) paradigms in computer programming. By focusing on thematic resonances, such as recursive structure, physical computing, and object-oriented programming, the intent of this course is for students to create meaning in working with code, rather than approaching computers as a default solution to every problem.

This course provides a foundational introduction to music programming languages. Max MSP, SuperCollider, Python, and Processing and Open will be explored through hands-on and creative applications. Students will gain experience with interactive visual art, audio/music signal processing, and machine learning.

*Lecture Time:* Wednesdays, 7:00 pm — 9:40 pm

*Lecture Location:* Cummings 227 (Manwaring Computer Lab) / Online as needed

*Instructor:* Daniel Fishkin

*Office Hours:* **by appointment (IRL or Remote)**

*E-mail:* [daniel.fiction@gmail.com](mailto:daniel.fiction@gmail.com) / dfishkin@conncoll.edu

*Materials Fee:* $50

*Textbooks:* Valle, Andrea. *Introduction to Supercollider. Logos Verlag Berlin. 2016. 3832540172*

Manaris, Bill. *Making Music with Computers: Creative Coding in Python.* Routledge. 2014. 1439867917

Shiffman, Daniel. *The Nature of Code. Creative Commons. 2012. 0985930802*

Software **Max**

<https://cycling74.com/>

Max is an object-oriented programming language that makes easy prototyping of sound environments/instruments accessible without needing to learn to code on levels like JS or C. It is a type of coding language in its own way, but the coding is done primarily with virtual representations of wires. It’s very fun and many of my class demos will get you excited about what’s possible—download it and see what you can get working off the bat!

*Note: you can try Max for free for 30 days, and thereafter you’ll need to purchase it, or sign up for a monthly or yearly student subscription. It is affordable.*

**Max comes with an extensive body of educational materials, tutorials, help files, and project examples that can easily be copy/pasted into your own sketches.** Students will be expected to read and study Max / MSP tutorials on their own and learn the syntax of the software throughout the course of the semester!

**Enter the MAX file browser and search:**

**collection:"Tutorials/Max Tutorials@cycling74"**

**collection:"Tutorials/MSP Tutorials@cycling74"**

**Supercollider**

<https://supercollider.github.io/downloads.html>

Supercollider is a platform for audio synthesis and algorithmic composition, used by musicians, artists and researchers working with sound. It is code-based, completely free, light in size, and a little hard to work with.

**Spear**

<https://www.klingbeil.com/spear/>

Spear performs Fourier Analysis in sound files. This is free software that allows you to turn recordings into individual sine waves and edit/select them.

**Audacity**

<https://www.audacityteam.org/>

Audacity is a basic editing program that is excellent for transforming individual sounds.

Hardware: <https://www.frommdesign.com/product/ad-1-dsp-dev-board>

AD-1 is a DSP development board based around an ESP32-s3 microcontroller and an es8388 audio codec. Designed for experimenting with digital audio, the AD-1 can generate sound on its own or manipulate incoming stereo audio. This board costs around $50 and will be the basis for many hardware projects

**Grading Rubric**

Class Participation / Attendance 20%

Weekly Corpus 20%

Etudes / Projects/ 20%

Presentations 20%

Final Project 20%

**Grading Descriptions**

**Class Participation / Attendance 20%**

Class attendance is mandatory. We work and experiment in class. Discussions, critiques lectures and demonstrations provide the basis for the successful completion of projects, and they are difficult to re-create outside of class. In order to participate, you must be in attendance. You have one unexcused absence permitted for the semester. Your final grade will drop by 4 points for each further unexcused absence. More than four absences will result in a failing grade for the course. You are expected to participate actively in class by asking questions, bringing energy to discussions and arriving with prepared homework/projects. Independent motivation is expected.

**Weekly Corpus 20%**

Students are expected to keep a weekly audio “journal”. Every week, students will collect/record/curate sound file collections. The collections each week will total up to 5 minutes of sound (or more), featuring at least 5 different recordings. (ie, Week 1, you record five 1 minute recordings. Week 2, twelve 10 second recordings, and one 3 minute recording). It is expected that you carefully label these files and keep good file management, in additional to normalizing audio and trimming the beginning and endings of each file. You can record with a high quality field recorder you borrow from the university, you can record with your phone. You can also “sample” music or recordings found online.

**Etudes / Homework 20%**

Short reading assignments or creative prompts will be assigned each week. Students will be expected to complete them and come to class ready to discuss their progress. You cannot “get ahead” of these assignments by doing them all ahead of time—they are meant to be part of a weekly practice that is customized to the flow of the class.

**Artist Presentation 20%**

Do a short research presentation on an artist or piece of art that inspires you. 10 min. The purpose of this assignment is to aid the development of your final project by creating an opportunity to research something that interests you for your own creative purposes and research agenda. The

**Final Project 20%**

**AI Policy**

The use of Machine Learning tools such as ChatGPT and Claude are permitted, generally. In some cases we will explore them deliberately. In some instances you will be discouraged from using these tools.

Failure to cite your utilization of ChatGPT or other machine learning algorithms will be considered

*SCHEDULE*

*Class 1 Wednesday 9/4*

**Introductions**

Syllabus Review

*Student Introductions*

Introduction to Acoustic & Electronic Sound

Introduction to MAX MSP <https://cycling74.com/>

In class exercise: Introduction to SPEAR / Fourier Analysis <https://www.klingbeil.com/spear/>

**First Etude**

make a recording / find a recording of a drone and edit it inside SPEAR. (you can use your phone to record!). Try to record the drone in a noisy location. Use spear to isolate the frequencies of the drone, remove it, and listen to each with and without drone in isolation. Bring prepared to show to the class!

**Begin playing with Max!**

**Corpus Prompt:**

Record sounds from your life