Syllabus: Creative Approaches to Computing: Arts and Tech

- **Course Description:**
  - This class aims to bring the creativity back into computing by teaching basic art and design principles through the medium of coding. By bringing together Processing, a visual arts coding language, and different hallmarks of art theory, we want to teach an innovative class that empowers students to connect with their creative side. Students should come in with basic coding knowledge (we expect them to have taken CMSC216 and CMSC250) but can expect to leave with a greater appreciation for digital media.
- **Course Details:**
  - **Course: CMSC388-E**
  - **Prerequisites:** CMSC216 and CMSC250
  - **Credits:** 1
  - **Seats:** 30
  - **Lecture Time: 2:00 - 2:50 on Fridays**
  - **Location:** ESJ B0320 (Media Share Room?)
  - **Semester:** Spring 2019
  - **Textbooks:** None required but...
    - Recommended: *Processing: A Programming Handbook for Visual Designers, Second Edition* by Casey Reas and Ben Fry
    - *The Nature of Code* by Daniel Shiffman
    - *Generative Art: A Practical Guide using Processing* by Matt Pearson
    - *Steal like an Artist* by Austin Kleon
  - **Course Facilitators:** Astha Singhal, Sana Shah, Amy Zhao
  - **Faculty Advisor:** Dr. Roger Eastman
- **Topics Covered:**
  - Processing
  - Composition
  - Drawing inspiration from other sources
  - The Buzzword of "Design Thinking"
  - Mindless vs. Thoughtful Creativity
  - Art as Communication
  - Critiques + Iterative Design
  - Good documentation
  - Using external libraries (such as PDF, Twitter4j, sound/video libraries)
  - Fractals / Recursion
  - Efficiency

- Exploratory Coding
- Particle Systems

Topics To Cover	Students should be able to:	Assignment to Apply This
Processing	A) Describe the types of works Processing can do natively (Perlin Noise, layering, geometric shapes and designs) B) Understand the process of creating pieces in Processing (through setup(), draw, use of different classes C) Use it effectively to create pieces of their own	Projects 1 & 2 (Described in Grading Section) Sketches
Composition	A) Describe, recognize, and use the rule of thirds in their own pieces. B) Effectively use symmetry and geometry to create interest in their work. C) Effectively use simplification to create depth in their pieces. D) (More techniques will be covered)	Project 1 in particular (all assignments incorporate this)
Drawing Inspiration from other sources	A) Describe the pieces they are inspired B) Convey what exactly about them they want to incorporate into their own work	Project 3 Project 4

	C) Effectively use their inspiration to create new works of their own	
Buzzword of "Design Thinking"	A) Know the full design process B) Understand its uses in creativity C) Use the tools and techniques to approach projects	All projects and sketches
Mindless vs. Thoughtful Creativity	A) Understand the intention behind pieces of art (through color theory, center of interest placement, movement throughout a piece, etc.) B) Provide examples of pieces that have this sort of intention within it C) Use the tools and techniques and incorporate them into their work	All projects and sketches
Art as Communication	A) Understand art as a medium to convey thoughts and ideas	Projects 3 and 4 in particular
Critiques + Iterative Design	A) Understand how to take and give feedback B) Understand how to use feedback to improve a project	FINAL
Good documentation	A) Understand the importance of organizing information within code	ALWAYSSSSSSSS

Fractals and Recursion	A) Understand how to use recursion to create art pieces B) Understand fractal algorithms such as Mandelbrot and L Systems	Potentially their projects / sketches (Will do a demo in class)
Particle Systems	A) Use object oriented design to create systems that generate art B) Understand how to code physic simulations to create motion, force, etc in their pieces	More likely to be used in Projects 2/3/4 (Will do a demo in class)
Efficiency	A) Understanding the importance of writing efficient code, especially in relation to graphics B) Identify inefficiencies within their own code (IE n^2 solutions etc) C) Describe methods of increasing efficiency within Processing (Using sprites, deleting objects "off screen", usage of different data structures, collapsing for loops, etc)	ALWAYSSSSSSSS
Exploratory Coding	A) Understand the concepts behind exploratory coding (IE using libraries, looking at forums	Will have a sketch in particular about this but more likely for Projects 3 and 4

	for solutions, exploring different solutions and implementations for solutions) B) Identify how to import and use libraries within Processing C) Be able to use Processing forums / stackoverflow to find answers for their solutions	

- **Grading**:

Assignment	Percentage	Frequency	Description
Sketches	15%	Approximately 3 exploratory assignments. Submissions will be made to OpenProcessing.org, in the STIC class	Grade by timeliness and improvement at end of the semester. Goal: Encourage exploratory research / creative thinking
Project 1	10%	1	Basic Composition
Project 2: Midterm	15%	1	Data Visualization
Project 3: Interactive Art	15%	1	Purposeful Interaction / Interactivity as a medium
Project 4: Final Project	20%	1	Interactive Art 2.0
Critique Assignment	15%	1	Can be from Project 1 or sketchbook, but must critique another student's work
Revision Statement	10%	1	Reflect on Project 3. List intent of project and justify choices
Discussion Boards	Extra Credit	TBD	Mostly to foster discussion and expose students to interesting works in the generative art landscape

- **Schedule:**

Week	Topic	Assignment
1 (1/28/18)	Intro / Course Goals((Astha's Soapbox Day: *Comment or you get an F*)) / Art+Code Critiques Format Composition / Artistic Intent	Set Up Processing
2 (2/5/18)	Intro to Processing (Intro + Transforms + Movement)	*Discussion Board* Introduce Project 1
3 (2/12/18)	*Fractals Demo*	Work on Project
4 (2/19/18)	**GALLERY WALK +** *How to Steal Like An Artist -* Examples and drawing from other sources --Potentially talk about different art movements --	Basic Composition Project 1 Due
5 (2/27/18)	*Data Visualizations* How to Use Libraries (Twitter4j)	Introduce Project 2 *Sketch is Due- Have a sketch that expresses your mood and explain your choice of colors *
6 (3/5/18)	*Particle Systems* + Efficiency Demo	"Formal" Critique Assignment
7 (3/12/18)	**GALLERY WALK** (Amy's Soapbox Day)	Data Visualization MIDTERM Due
8 (3/19/18)	SPRING BREAK	ENJOY :)
9 (3/27/18)	Art as Communication --Potentially talk about different art movements --	Introduce Project 3 *Sketch is Due *
10 (4/4/18)	*Using Libraries: User Inputs* (Visual)	Work on Project

11 (4/11/18)	*Using Libraries: User Inputs* Inputs (Sound)	Work on Project
12 (4/18/18)	**GALLERY WALK** (Sana's Soapbox Day: Iterative Design)	Interactive Art Project 3 Due
13 (4/27/18)	STUDIO DAY	Introduce Project 4 *Sketch is Due - Choose a previous sketch and iterate on it*
14 (5/5/2018)	STUDIO DAY	Work on Final
15 (5/12/18)	Work on Final	Interactive Art 2.0 With Revision Statement FINAL PROJECT DUE: TBD

- **Communication with Course Staff**
  - We will interact with students outside of class in primarily two ways: in-person during office hours and email:
- **Course Facilitators:**
  - Astha Singhal - asinghal084@gmail.com
  - Amy Zhao - zhaoamy123@gmail.com
  - Sana Shah - sana@shah.org
- **Faculty Advisor:**
  - Dr. Roger Eastman - reastman@cs.umd.edu

Instructor	Hours	Location
Astha Singhal	By Appointment	TBD
Amy Zhao	By Appointment	TBD
Sana Shah	By Appointment	TBD
Dr. Roger Eastman	By Appointment	TBD

- **Additional Information:**
  - **Excused Absence and Academic Accommodations**
    - For more information, see the section titled ["Attendance, Absences, or Missed Assignments"](#) available at Course Related

Policies. As an addition to the regular University policy, everyone is entitled to one free unexcused absence.

- **Disability Support Accommodations**
  - See the section titled "Accessibility" available at [Course Related Policies](#).
- **Academic Integrity**
  - Note that academic dishonesty includes not only cheating, fabrication, and plagiarism, but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. In short, all submitted work must be your own. Cases of academic dishonesty will be pursued to the fullest extent possible as stipulated by the [Office of Student Conduct](#).
    It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.
- **Copyright**
  - Class lectures and other materials are copyrighted. They may not be reproduced for anything other than personal use without written permission from the instructor. Copyright infringements may be referred to the Office of Student Conduct.
- **Academic accommodations for students who experience sexual misconduct**
  - The University of Maryland is committed to providing support and resources, including academic accommodations, for students who experience sexual or relationship violence as defined by the University's Sexual Misconduct Policy. To report an incident and/or obtain an academic accommodation, contact the Office of Civil Rights and Sexual Misconduct at 301-405-1142. If you wish to speak confidentially, contact Campus Advocates Respond and Educate (CARE) to Stop Violence at 301-741-3555. As 'responsible university employees' faculty are required to report any disclosure of sexual misconduct, i.e., they may not hold such disclosures in confidence. For more information: http://www.umd.edu/ocrsm/
- **Diversity**
  - The University of Maryland values the diversity of its student body. Along with the University, I am committed to providing a classroom atmosphere that encourages the equitable participation of all students regardless of age, disability, ethnicity, gender, national origin, race, religion, or sexual orientation. Potential devaluation of students in the classroom that can occur by reference to demeaning stereotypes of any group and/or

overlooking the contributions of a particular group to the topic under discussion is inappropriate.

- **Other university policies**
    - For information on elms, counseling, health, learning workshops, tutoring, writing help, student rights in undergrad courses, questions about graduation or add/drop/withdraw, please see http://www.ugst.umd.edu/courserelatedpolicies.html
- **Course Evaluations**
    - If you have a suggestion for improving this class, don't hesitate to tell the course facilitators or faculty advisor during the semester. At the end of the semester, please don't forget to provide your feedback using the campus-wide CourseEvalUM system. Your comments will help make this class better.
    - Thanks to the writers of the CMSC389K , CMSC389L , & ARTT489Z syllabi for the wording of much of this document.