UCSD StudentTECH 2016
Advanced Technology for Middle and High School Students
Sponsored by the San Diego Supercomputer Center, University of California, San Diego

The Art of Code: Creating Stunning Art And Music While Learning To Write Code

Monday-Wednesday, August 1-3, 2016 (three days)

Class meets on the campus of UC San Diego from 8:30 a.m. - 3:00 p.m.

Basics Of Computer Programming While Creating Art

Course Overview:

Learning to program can sometimes be intimidating, dull, and tedious experience. Imagine learning how to create beautiful generative art pieces as well as polished music tracks while learning the fundamentals of computer science! Two exciting programming platforms will be utilized

Processing is an open source programming language and environment for people who want to create images, animations, and interactions. Initially developed to serve as a software sketchbook and to teach fundamentals of computer programming within a visual context, Processing also has evolved into a tool for generating finished professional work. Today, there are tens of thousands of students, artists, designers, researchers, and hobbyists who use Processing for learning, prototyping, and production. You are invited to join the revolution as we learn skills for the 21st century.

Processing is a free, open source alternative to proprietary software tools with expensive licenses, making it accessible to schools and individual students. Its open source status encourages the community participation and collaboration that is vital to Processing's growth. Over the course of the class you will learn the basics of object orientated programming in a visual and exciting way, paving the way for start as a computer programmer. No prior coding experience needed nor expected.

Using the EarSketch platform to write your own computer programs to create music might seem strange at first, but it’s actually been an important part of the music industry since the earliest days of computers over 50 years ago. Musicians and computer scientists have always been writing computer code to try to create the next cool sound or effect or musical structure (from sci-fi soundtracks to dubstep grooves) and to design new ways to create and perform music (from intelligent computer musicians to unusual new musical instruments to iPhone apps). During this course students will explore ways in which writing code can help you more easily make music and make music that’s more unique to you. And once you learn to write computer code, you can take those skills with you to any career you can imagine, whether in the music industry or elsewhere.

What you can expect from this workshop:
* A patient knowledgeable instructor who understands that through the use of computer based languages that art can be created.
* In depth tutorials, guided instruction and support, and the opportunity for self-expression.
* Increased knowledge of basics of computer programming in a simple and easy way to understand and a chance to share your artwork with others.
* A solid foundation for the exploration of computer programming and an appreciation for the discipline.

Day-by-Day Schedule:

Monday, August 1, 2016 – Pixels and Computer Graphics, Processing, and Interaction
Participants will gently be eased in the concepts of computer graphics, lists, and instructions, while learning to create pixels, lines, and shapes to create their own drawings. Color basics and transparency will be discussed as
we dive into the language of Processing. Students will practice basic syntax and proper coding techniques for future success. Interaction will be discussed and students will post their first sketches online.

**Tuesday, August 2, 2016 – void setup() and void draw()? What does this all mean and how you can use these tools to create art?**

We will cover interaction with the mouse and how variables and randomness can be used to create dazzling effects. Conditionals and Boolean Expressions will be explained as we create a bouncing ball. Students will work in teams to create artwork that will be printed for them to keep.

**Wednesday, August 3, 2016 –** Students will explore the fundamentals of music, such as measures, beats, and structure, as they apply newly acquired programming skills to create and refine arrangements. Functions and loops will be incorporated in a meaningful way to maximize learning and understanding. By the end of the day all students will leave with a CD of the music that they created to share with friends and family.

Presented by Ray Kinne, San Diego Unified School District

Ray Kinne has taught various forms of programming for the last 15 years for San Diego City Schools and SDSU. He sees the computer as a way to create and generate art in a modern society. He invites you to join him.

**Prerequisites:**
- Must be a current middle or high school student in grades 7-10.
- Interested in learning the basics of computer coding in creative and fun manner
- Willingness to work in teams
- Eager to ask questions, share ideas, and help others in the class
- **No prior coding experience needed!**

**Course fee: $160.00**

**Registration is open until filled. Register early as space fills quickly. Space is limited.**

If you have any questions regarding this workshop or the application process, please contact Ange Mason via phone at 858 534-5064 or via email at amason@ucsd.edu.