# UCSD StudenTECH 2020 Computer Science for Middle School Students Sponsored by the San Diego Supercomputer Center, University of California, San Diego

### Computer Silence Principles for Middle School Students mmmmmmmm Monday- Friday, June 15-19, 2020

Class meets on the campus of UC San Diego from 8:30am- 3:00pm.

#### Course Overview:

"You have used computers your whole life. Mostly you don't even think about it. Your phone has several computers in it, your i-Pad, kindle, TV, car, and more have several in it unless it is an antique. Most devices with an on/off switch contain computers these days." -Dr. Beth Simon, phD, Computer Science, UCSD.

Given the ubiquity of computers in our lives today, it is important for students to understand HOW computers receive instructions to do exactly what we want them to do. This course gives students an introduction to the foundational concepts of computer science and programming. We will learn how computers receive instructions, and the basic logical approaches involved in coding. This course will assume that students have little to no experience in programming, but will use familiar computer applications - such as cartoons and video games - to teach programming. We will also learn some basic computer science concepts by doing "unplugged" activities. By the end of the course, students should be able to show off more than one programs that he/she created from scratch. We will be using a block programming language, such as Scratch or Google blockly.

https://docs.google.com/document/d/1xCD9MjaHbHkA25reUEGEOVLuiQ4rU6sDKo\_o-X-IK\_E/edit?usp=sharing

## **Course Goals**

- Create simple cartoons & simple video games
- $\circ$  In their creation, use/apply standard control structures such as loops, if/else commands, etc.
- $\circ$  In their creation, use/apply different method types that use parameters
- Students will enjoy their experience and have a desire to study computer science further

#### Structure

This course is taught using classroom and lab instruction employing lecture/demonstration, in-class exercises, student participation, and class activities

leading to a final project. Classes will include introductory concept presentations, followed by in-class exercises. While students are invited to bring their own laptops to class, the UCSD lab will have all necessary hardware and software installed for their use each day.

## Topics to be Covered:...:

- Day One:
- Morning: Introduction to the Coding application
- Afternoon: Separating Code into methods
- Day Two:
- $\circ$  Morning: Using methods to tell a story
- $\circ$  Afternoon: Using parameters in methods
- Day Three:
- Morning: Introduction to using loops
- Afternoon: if/else commands
- Day Four:
- $\circ$  Morning: Boolean expressions
- $\circ$  Afternoon: Review, introduce project
- Day Five:
- Morning: Time to work on project
- $\circ$  Afternoon: Share, present to class