

# **Socal Tech Academy**

## **Inspire High School Specialty Coding Course**

### **Level 1**

#### **Summary:**

This level of Socal Tech Academy's specialty course is designed to introduce students in high school to the world of computer science, software development and engineering. In comparison to the course for primary school students, it will be more advanced and in-depth. High school students will be held to a higher standard in their software products and the quality of their code. This is a computer science course with topics including from web, game, mobile development and other tech topics. The students will be learning and using the programming language Javascript. Students will be coding with Javascript in a similar fashion to the language's usage at top companies such as Facebook, Google, Youtube, etc.

#### **Course Learning Outcomes:**

- **Computer Basics:**
  - Students will understand how computers work, their internal components, and get hands on experience working on a computer.
  - Students will understand the software components of a computer and how they work to provide a usable computational device.
  - Students will understand how custom software runs within the computer.
- **Programming Basics:**
  - Students will understand differences in programming languages and their unique applications.
  - Students will know the uses, limits, and applications of different data types.
  - Students will understand and write variables, if-statements, loops, functions and their applications.
  - Students will write pseudo-code to create algorithms in order to solve problems.
  - Student will develop Javascript applications.
- **Web Development:**
  - Students will understand web languages such as HTML, JS, and CSS.
  - Student will develop their own website utilizing web languages.
- **Game Development:**
  - Students will understand basic game development techniques and methods such as the game loop and the computations ran within it.

- Student will understand sprites, rendering, collision detections and other game mechanics.
- Students will develop their own Javascript game.
- **Mobile Development:**
  - Students will understand mobile design.
  - Students will develop their own mobile web app.
- **Drone Programming:**
  - Students will understand drone flight time and patterns.
  - Students will write their own drone flight programs.

### Course Readings and References:

- **Javascript:**
  - [javascript.info](http://javascript.info)
  - [w3schools.com/js/default.asp](http://w3schools.com/js/default.asp)
  - [geeksforgeeks.org/javascript-tutorial](http://geeksforgeeks.org/javascript-tutorial)
- **Terminal:**
  - [geeksforgeeks.org/introduction-linux-shell-shell-scripting](http://geeksforgeeks.org/introduction-linux-shell-shell-scripting)
  - [tutorialspoint.com/unix/unix-file-management.htm](http://tutorialspoint.com/unix/unix-file-management.htm)
- **HTML:**
  - [w3schools.com/html/default.asp](http://w3schools.com/html/default.asp)
  - [geeksforgeeks.org/html-tutorials](http://geeksforgeeks.org/html-tutorials)
- **CSS:**
  - [w3schools.com/css/default.asp](http://w3schools.com/css/default.asp)
  - [geeksforgeeks.org/css-tutorials](http://geeksforgeeks.org/css-tutorials)
- **Game Development:**
  - [phaser.io](http://phaser.io)
  - [phaser.io/tutorials/getting-started-phaser3](http://phaser.io/tutorials/getting-started-phaser3)
  - [github.com/asornoso/phaser3-tutorial](https://github.com/asornoso/phaser3-tutorial)
- **Mobile Development:**
  - [Phonegap.com](http://Phonegap.com)

### Technologies:

- **Node.js & NPM:** [Nodejs.org/en/](http://Nodejs.org/en/)
- **Atom Editor:** [Atom.io](http://Atom.io)
- **Sublime Editor:** [Sublimetext.com](http://Sublimetext.com)
- **PhoneGap:** [Phonegap.com](http://Phonegap.com)
- **Phaser3:** [Phaser.io](http://Phaser.io)

**Grading:**

- Proficient: Completes work beyond satisfactory
- Satisfactory: Completes work in a satisfactory manner
- Unsatisfactory: Completes work in an unsatisfactory manner

**Topics & Schedule:**

- Computer Basics:
  - Computer Hardware
  - Operating Systems
  - Computer Software
- Programming Basics:
  - Variables
  - If-else Statements
  - Loops
  - Functions
  - Classes
- Web Development:
  - HTML
  - CSS
  - JS
  - Bootstrap
- Game Development:
  - Game Theory
  - Game Loop & Mechanics
  - Sprites & Collision Detection
- Mobile Development:
  - Responsive Web Dev.
  - PhoneGap
- Drones & 3D Printing:
  - Drone hardware & Programming
  - 3D Printing & 3D Modeling

**Class Meetings:**

Classes will meet twice a week for 2 hours.

**Homework:**

There will be biweekly reading assignments given to students.

**Projects:**

**Each topic above shall have its own project**

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