

# **Socal Tech Academy**

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

### **Level 2**

#### **Summary:**

This level of Socal Tech Academy's specialty course is designed for students that have completed 1 year at Socal Tech Academy. In this course, students will continue to build their javascript skills as well as learn fundamental software development principles. Topics are similar to Level 1, but all projects are completed as a class. Students will collaborate in teams to create higher quality projects. These collaborate projects will expose students to the agile software development life cycle used by many modern software teams. In comparison to the level 2 course for primary school students, this course 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.

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

- **Programming Basics:**
  - Students will have a strong understanding of variables, if-statements, loops, functions and their applications.
  - Students will have a strong understanding of Object Oriented Programming.
  - Student will develop Javascript applications.
- **Web Development:**
  - Students will have a strong understanding of web languages such as HTML, JS, and CSS.
  - Student will develop their own website utilizing web languages.
- **Game Development:**
  - Students will have a strong understanding of 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 have a strong understanding of mobile design.
  - Students will develop their own mobile web app.
- **Robotics Programming:**
  - Students will understand the design, engineering, and programming aspects of robotics using a STM32 microcontroller.

- **Software Development:**
  - Students will understand and use the agile software development workflow.
  - Students will understand the benefits of working in teams on large projects.
  - Students will understand git and github in collaborative development.

### 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)
- **Agile Development:**
  - [tutorialspoint.com/agile](http://tutorialspoint.com/agile)
- **Github:**
  - [github.com](http://github.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)
- **Robotics STM32:** [St.com/en/](http://St.com/en/)
- **Github:** [github.com](http://github.com)

**Grading:**

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

**Topics & Schedule:**

- Programming Basics Review:
  - Variables
  - If-else Statements
  - Loops
  - Functions
  - Classes
- Software Development:
  - Agile Development
  - Github
- Web Development:
  - HTML
  - CSS
  - JS
  - Bootstrap
- Game Development:
  - Game Theory
  - Game Loop & Mechanics
  - Sprites & Collision Detection
- Mobile Development:
  - Responsive Web Dev.
  - PhoneGap
- Robotics.:
  - Robotics with STM32 Microcontroller

**Class Meetings:**

Classes will meet twice a week for 2 hours.

**Homework:**

There will be biweekly reading assignments given to students along with coding tasks assigned to students. Access to a laptop or computer is necessary. Tablets will not work.

**Projects:**

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

**Every project will be a class project(except programming review). Students will be split into groups, each with their own tasks to complete.**

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