



# CodeHS

## Utah Web Development 2 Syllabus

1 semester for High School (75 contact hours)

### Course Overview and Goals

The Utah Web Development 2 course is intended to teach students the fundamentals of web design and development in a project-based learning environment. Students will learn the basic elements of web development, such as web hosting, creating HTML/CSS files, and incorporating Javascript into HTML files. Over the course of the semester, students will collaboratively and independently design, develop and implement functional and responsive web pages using these foundational skills.

**Learning Environment:** The course utilizes a blended classroom approach. The content is fully web-based, with students writing and running code in the browser. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused 1-on-1 attention to students. Each unit of the course is broken down into lessons. Lessons consist of video tutorials, short quizzes, example programs to explore, and written programming exercises, adding up to over 70 hours of hands-on programming practice in total. Several units end with a comprehensive unit test that assesses students' mastery of the material from that unit as well as challenge problems where students can display their understanding of the material.

**Development Environment:** Students write and run HTML, CSS, and JavaScript files in the browser using the CodeHS editor. Due to the fact that different browsers treat HTML and CSS differently, we highly recommend that all student computers use an up-to-date version of the Chrome browser. You can download an up-to-date version of Chrome for free here: <https://www.google.com/chrome/browser/>

**More information:** Browse the content of this course at <https://codehs.com/course/20715>

**Prerequisites:** This course is the second course in a sequence. Students should have previously completed the Utah Web Development 1 course. In addition, the course is designed ideally for students who have an introductory knowledge of Javascript. Students who have completed the CodeHS *Intro to Programming in Javascript* course are well situated to complete this course. If students do not have an introductory level of knowledge around JavaScript, teachers can add the JavaScript Bootcamp into the course from the supplemental content section.

### Course Breakdown

#### Unit 1: Introduction to JavaScript in HTML (3 weeks / 15 hours)

Students learn about the script tag, and how it can be used to write JavaScript code in their HTML files. Students are also introduced to useful JavaScript methods that can be used to alter the state of the CSS and HTML of a webpage, as well as how the Document Object Model supports the ability to make such changes.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>• The Script Tag</li><li>• Using the DOM</li></ul> |
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|                            | <ul style="list-style-type: none"> <li>● Creating Elements Using the DOM</li> <li>● Styling Elements Using JavaScript</li> <li>● Functions in HTML</li> <li>● This Keyword</li> <li>● Keyboard Interactions</li> <li>● JavaScript Animations</li> <li>● Positioning and Animations</li> </ul>   |
| Example Assignments / Labs | <ul style="list-style-type: none"> <li>● Make a Quilt <ul style="list-style-type: none"> <li>○ Students practice iteration and appending elements to a web page. They also develop a randomizer set to initiate whenever the mouse hovers over an element.</li> </ul> </li> <li>● Challenge: Make a Keyboard <ul style="list-style-type: none"> <li>○ Students create a clickable keyboard using only JavaScript. This is a three part project, where students develop the keyboard, make it clickable, and finally get text to show up on a webpage.</li> </ul> </li> <li>● Add Div Animation <ul style="list-style-type: none"> <li>○ Students practice developing animations by creating a program designed to create and move divs across a webpage. Students will need to be able to access the height and width of the page, as well as the total distance that the elements have to move before stopping.</li> </ul> </li> </ul> |

## Unit 2: Bootstrap (3 weeks/15 hours)

This module introduces students to Bootstrap, an HTML and CSS framework for developing responsive, professional websites. Students use Bootstrap to develop several professional, mobile-responsive websites.

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| Objectives / Topics Covered | <ul style="list-style-type: none"> <li>● Creating page layouts</li> <li>● Open source software</li> <li>● Reading Bootstrap documentation</li> <li>● Bootstrap components</li> <li>● Navigation bars</li> <li>● Bootstrap grid system</li> <li>● Creating mobile responsive websites</li> <li>● Utilizing Bootstrap examples</li> </ul>   |
| Assignments / Labs          | <ul style="list-style-type: none"> <li>● Example exercises: <ul style="list-style-type: none"> <li>○ Create a Bootstrap alert that appears when a user first navigates to your web page</li> <li>○ Use Bootstrap to create a web page with a sticky top navigation bar</li> <li>○ Use Bootstrap to create a web page with a sticky bottom navigation bar</li> </ul> </li> </ul> |

### Unit 3: Bootstrap Project (2 weeks/10 hours)

In this project, students work in teams to create a professional, responsive website using Bootstrap.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>● Combination of the concepts learned thus far</li><li>● Allow students to think creatively about applications of the concepts they have learned</li><li>● Designing a web page from scratch</li><li>● Collaborating when developing websites</li></ul> |
| Assignments / Labs          | <ul style="list-style-type: none"><li>● In this project, students work in teams to create a professional, responsive website using Bootstrap.</li></ul>   |

### Unit 4: Storing and Collecting Data (3-4 weeks / 15-20 hours)

This unit will explore the role that data plays in creating websites. Students will learn about the various ways that data is taken from web pages, as well as ways to secure themselves from unwanted data collection. Students will also learn how to incorporate data collection into their own websites, and collect simple information from users.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>● Collecting and Storing Data</li><li>● Storing Data with Local Storage</li><li>● Storing Data Structures with Local Storage</li><li>● JavaScript Objects</li><li>● Using Input Fields</li><li>● Server-side Languages</li></ul>  |
| Example Assignments / Labs  | <ul style="list-style-type: none"><li>● Saving Active Divs<ul style="list-style-type: none"><li>○ Students will learn how to save which elements on their page are active at a given time, and reproduce the same active state the next time a user loads the page.</li></ul></li><li>● Contact List<ul style="list-style-type: none"><li>○ Students will create a phonebook that stores and collects information about users' names and numbers, as well as retrieve information about users in their phonebook.</li></ul></li><li>● Birthday Tracker<ul style="list-style-type: none"><li>○ Students will create a Birthday Tracker to log birthdays. If a user enters a date, it will generate a list of all users who have that birthday.</li></ul></li></ul> |

### Unit 5: How to Build and Maintain a Website (2 weeks / 10 hours)

While students can run functional and responsive websites on CodeHS, this unit explores how students can create and run websites without the help of CodeHS. This unit will explore how to store web files, secure a domain name, and maintain a website. The majority of the lessons will be explanatory - students will not be expected to host and maintain a webpage off CodeHS, but will be given the tools needed to do so if they desire.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>● Choosing a Domain Name</li><li>● Personal Servers vs Web Servers</li><li>● Choosing a CMS</li><li>● Web Accessibility</li></ul>  |
| Assignments / Labs          | <ul style="list-style-type: none"><li>● Comparing CMS Systems<ul style="list-style-type: none"><li>○ Students compare popular CMS systems and make decisions about which CMS is best suited for their own personal needs..</li></ul></li></ul> |

### Unit 6: Final Project (1-2 weeks / 5-10 hours)

Students are tasked with creating a website based on an innovative technology. The website will have to follow specific criteria. Students go through a storyboard process to help generate ideas for the website. Students will go through a design process and learn about planning out their site before building it.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>● Plan your site using storyboarding</li><li>● Create your site</li></ul>   |
| Assignments / Labs          | <ul style="list-style-type: none"><li>● Site planning<ul style="list-style-type: none"><li>○ Students research an innovative technology and plan a multi-page website using storyboarding techniques</li></ul></li><li>● Create your site<ul style="list-style-type: none"><li>○ Students use their storyboarding and planning to build out their website using many of the techniques that they learned throughout the course.</li></ul></li></ul> |

### Unit 7: Computer Science Careers (0.5 weeks / 2 hours)

Students explore various careers in computer science and the role of CTSOs.

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| Objectives / Topics Covered | <ul style="list-style-type: none"><li>● Computer Science Careers</li><li>● Computer Science CTSO</li></ul>   |
| Assignments / Labs          | <ul style="list-style-type: none"><li>● Students explore computer science careers and the role of CTSOs</li><li>● Example exercises:<ul style="list-style-type: none"><li>○ Explore computer science careers and how computer science is used in other fields</li><li>○ Explore the roles of different CTSOs in Utah</li></ul></li></ul> |