

# First Steps in Coding

## Course Progression

*This document isn't a substitution for lesson planning, please work through the course on the platform ahead of time to prepare for teaching.*

### Course Overview

In this introductory course for beginners, students will learn the basics of HTML, CSS, and JavaScript, which are three coding languages that real-world developers use to create websites, web-based applications, and web-based games.

Using the BSD Online learning platform, students will build a total of eight projects, which include:

- Eye chart
- Online poster
- Pattern Art with Code
- My First Website
- Chatbot Conversation
- Trivia Quiz
- Debug my Website (HTML & CSS)
- Debug my Trivia Game (JavaScript)

Students will develop fundamental skills in programming, learn about web development and design, and explore how to add further customizations to their projects.

They will end the course with a tech portfolio of the projects they've created, and will be able to use their new skills to move onto more complex projects in the future.

### Course Learning Objectives

The BSD First Steps in Coding Course aims for students to:

- Apply different uses of technology to multiple real-world scenarios
- Build digital artifacts using HTML, CSS, and JavaScript
- Expand their knowledge and understanding of the real-world application of technology tools across different industries
- Exercise the fundamental principles and processes of computational thinking, design thinking, and user experience design
- Communicate effectively with digital media
- Practice collaborative skills as an informed digital citizen

## Course Structure

First Steps in Coding is designed to be led by an instructor in a virtual, hybrid or offline learning environment, with the possibility of allowing students to complete Guided Projects self-paced or asynchronously. All lessons center around the completion of a Guided Project that, once finished, provides students with their own digital artifact customized to their individual creative vision and ideas.

Following our 3-step approach to curriculum **Explore, Learn & Create**, learning unfolds by *exploring* new concepts, *learning* tools and methods needed to produce a digital artifact and then *creating* the artifact in a Guided Project.



**Explore** coding concepts that are needed for basic web development and uncover the different elements of a simple web page.



**Learn** the fundamental languages HTML, CSS & JavaScript used to develop web pages and websites by using a simple web page.



**Create** a variety of simple projects, including a personal portfolio of posters, websites & trivia games. Each of the projects, once finished, can be shared online with friends.

## Course Level Standards Alignment

	Eye Chart	Online Poster	Pattern Art with Code	My First Website	Chatbot Conversation	Trivia Game	Debug My Website Challenge (HTML & CSS)	Debug my Trivia Game (Java Script)
<b>ISTE</b>	3c, 6b, 6d	1a, 1b, 2c, 3c, 4a, 6b, 6d, 7b, 7c	4a, 6b, 6d	1a, 2a, 2d, 3a, 3c, 4a, 6b, 6d	1a, 3c, 6b, 6d	1a, 3c, 6b, 6d,	4d	4d
<b>CSTA</b>	1A-AP-08 1B-AP-12 1B-AP-15	1A-AP-08 1A-AP-12 1B-AP-12 1B-AP-13 1B-AP-14 1B-AP-15	1A-AP-08 1B-AP-12 1B-AP-15	1A-AP-08 1A-IC-16 1A-IC-17 1B-AP-12 1B-AP-14 1B-AP-15 1B-IC-19	1A-AP-08 1A-AP-10 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19	1A-AP-08 1A-AP-10 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19	1A-AP-14 1B-AP-15	1A-AP-14 1B-AP-15

			1B-IC-21 2-AP-16 2-IC-23	2-AP-11 2-AP-12	2-AP-11 2-AP-12		
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## Course Summary

This guide is intended to help you set the pace for this course. Each project is broken down into 45-min to 1-hour sessions, but can be customized to meet your needs.

## Teacher Resources:

[Welcome to First Steps in Coding](#)

[Introduction to HTML and CSS](#)

[Online Poster Customization Guide](#)

[Pattern Art with Code - Customization Guide](#)

[My First Website - Customization Guide](#)

[Introduction to JavaScript](#)

[Chatbot Conversation - Customization Guide](#)

[Trivia Game - Customization Guide](#)

## Course Vocabulary

All vocabulary definitions are located in the glossary, which contains definitions, syntax, examples and interactive steps.

Coding	<h3>	margin
HTML	<h4>	font-size
CSS	<h5>	id selector
Syntax	<h6>	<button>
Start Tag	<div>	onclick
End Tag	<p>	function
Element	Nested Element	alert
Output	font-size	prompt
Selector	text-align	String
Properties	width	Variable
Values	height	Conditional statement
<h1>	background-color	Arithmetic operators
<h2>	color	Bug
		Debug

## Hour 1:

### Explore/Learn:

1. Discussion Questions
  - a. What is coding?
    - i. how we “talk” to computers to tell them what to do.

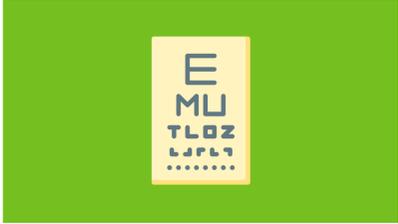
- b. Does anyone have coding experience?
      - i. Answers will vary
- 2. Introduce students to coding using **Welcome to First Steps in Coding.**
  - a. Vocabulary: Coding
- 3. Have student explore Explore First Steps in Coding to introduce them to the 6 projects that they will be working on.
- 4. Introduce students to HTML and CSS using **Introduction to HTML and CSS.**
  - a. Vocabulary: HTML, CSS, Syntax, Start Tag, End Tag, Element, Output, Selector, Properties, Values

## Hour 2:

### Create:

- 1. Review vocabulary
  - a. HTML, CSS, Syntax, Start Tag, End Tag, Element, Output, Selector, Properties, Values
- 2. Introduce Eye Chart Project: You will learn how to use HTML and CSS to recreate an eye chart, such as those used by an optometrist. You will learn 6 new HTML elements and some CSS styling.

### Guided Project - Eye Chart

Difficulty	1	
Learning Hours	1	
Languages(s)	HTML, CSS	
Theme(s)	Web design	
Description	Students will learn how to use HTML and CSS to recreate an eye chart, such as those used by an optometrist.	
ISTE	3c, 6b, 6d	
CSTA	1A-AP-08, 1B-AP-12	

### Extensions & Integration:

- 1. Extensions
  - a. Students can export this project into sandbox for their own creativity.
- 2. Subject Integration
  - a. ELA: Have students create a sestet poem

### Wrap Up:

- 1. Discussion questions:
  - a. What did we create today?

- i. recreated an eye chart, such as those used by an optometrist.
- b. What HTML elements did you use?
  - i. `<h1>` - `<h6>`,
- c. Did you have to do any CSS? If so, what?
  - i. Selector, font-size, text-align
- d. Did you create anything new?
  - i. Answers will vary

### Hour 3:

#### Explore/Learn:

1. Review vocabulary
  - a. `<h1>` - `<h6>`, Selector, Properties, Values
2. Discussion Questions
  - a. If I want to change the size of text, where do I go?
    - i. CSS
  - b. When writing a code in CSS, what symbol must I include at the end?
    - i. ;
3. Today's you will learn how to use HTML and CSS to create a digital poster for a fictional after-school coding club. In this project you will learn two new HTML elements and six new CSS elements.

#### Create:

1. Students will work on the guided project called Online Poster.

#### Guided Project - Online Poster

<b>Difficulty</b>	1	
<b>Learning Hours</b>	3	
<b>Languages(s)</b>	HTML, CSS	
<b>Theme(s)</b>	Web design	
<b>Description</b>	Students will learn how to use HTML and CSS to create a digital poster for a fictional after-school coding club.	
<b>ISTE</b>	1a, 1b, 2c, 3c, 4a, 6b, 6d, 7b, 7c	
<b>CSTA</b>	1A-AP-08, 1A-AP-12, 1B-AP-12, 1B-AP-13, 1B-AP-14	

### Hour 4:

#### Create:

1. Students will complete the guided project called Online Poster.

## Hour 5:

### Create:

1. Students will complete an extension activity of the Online Poster.

### Extensions & Integration:

1. Extensions
  - a. Use the **Online Poster Customization Guide** for directions on how to use Sandbox mode and how to customize this project.
2. Integration
  - a. Create an advertisement for a school club, school event, or community event.

### Wrap Up:

1. Discussion questions:
  - a. What did we create today?
    - i. An online poster
  - b. Which HTML elements did you use?
    - i. `<h1>` - `<h3>`, `<div>`, `<p>`
  - c. Which CSS elements did you use?
    - i. width , height, background-color, color, text-align, margin, font-size
  - d. Did you create anything new?
    - i. Answers will vary

## Hour 6:

### Explore/Learn:

1. Review vocabulary
  - a. `<h1>` - `<h3>`, `<div>`, `<p>`, width , height, background-color, color, text-align, margin, font-size
2. Discussion Questions
  - a. What does text-align mean?
    - i. Placement of text, e.x. left side of page, center
  - b. What is the difference between width and height?
    - i. Width changes how wide images and `<div>` elements are, not text.
    - ii. Height changes how tall images and `<div>` elements are, not text.
3. Today's you will learn how to use HTML and CSS to create artwork. In this project you will learn one new HTML element and one new CSS element.

### Create:

1. Students will work on the guided project called Pattern Art with Code

## Guided Project - Pattern Art with Code

Difficulty	1	
Learning Hours	3	
Languages(s)	HTML, CSS	
Theme(s)	Web design	
Description	Students will learn how to use HTML and CSS to create a colorful, abstract art pattern consisting of concentric squares.	
ISTE	4a, 6b, 6d	
CSTA	1A-AP-08, 1B-AP-12	

### Hour 7:

#### Create:

- Students will complete the guided project called Pattern Art with Code

### Hour 8:

#### Extensions & Integration:

- Extensions
  - Use the [Pattern Art with Code - Customization Guide](#) for directions on how to use Sandbox mode and how to customize to this project.
- Integration
  - <div> elements are very important in HTML. This is a good time for students to experiment with this element.

#### Wrap Up:

- Discussion questions:
  - What did we create today?
    - Pattern art using squares (<div> elements)
  - Which HTML elements did you use?
    - <div>, id
  - Which CSS elements did you use?
    - Id selector, color, text-align, width, height, background-color, margin
  - Did you create anything new?
    - Student answers will vary.

### Hour 9:

#### Explore/Learn:

- Review vocabulary
  - <div>, id, <p>, margin, font-size

2. Discussion Questions
  - a. What is the difference between personal information and private information?
    - i. Personal information: about you, favorite subject, favorite hobby
    - ii. Private information: My phone number is, my address is
  - b. Which information, if any, is okay to share online or on a website?
    - i. Personal information ONLY, nothing that can identify me
3. Today's you will learn how to use HTML and CSS to create your own website. In this project you will use the HTML and CSS elements that you have already learned.

**Create:**

1. Students will work on the guided project called My First Website.

**Guided Project - My First Website**

<b>Difficulty</b>	1	
<b>Learning Hours</b>	5	
<b>Languages(s)</b>	HTML, CSS	
<b>Theme(s)</b>	Web design	
<b>Description</b>	Students will learn how to use HTML and CSS to create a single-page website about three of their favorite hobbies.	
<b>ISTE</b>	1a, 2a, 2d, 3a, 3c, 4a, 6b, 6d	
<b>CSTA</b>	1A-AP-08, 1A-IC-17, 1B-AP-12, 1B-AP-14, 1B-IC-19, 1B-IC-21, 2-AP-16, 2-IC-23	

**Hour 10:**

**Create:**

1. Students will continue to work on the guided project called My First Website.

**Hour 11:**

**Create:**

1. Students will complete the guided project called My First Website.

**Hour 12:**

**Extensions & Integration:**

1. Extensions
  - a. Use the [My First Website - Customization Guide](#) for directions on how to use Sandbox mode and how to customize to this project.

2. Integration
  - a. Human respiratory system.
  - b. Famous person in history.
  - c. Landmarks around the world
  - d. Theme or era specific

### Hour 13:

#### Create:

1. Students will complete the extension called My First Website.

#### Wrap Up:

1. Discussion questions:
  - a. What did we create today?
    - i. We create our own website..
  - b. Which HTML elements did you use?
    - i. `<h1>` - `<h3>`, `<div>`, `id`, `<p>`, `<img>`
  - c. Which CSS elements did you use?
    - i. Background-image, font-family, font-size, color, color, text-align, background-color
  - d. Did you create anything new?
    - i. Student answers will vary.

### Hour 14:

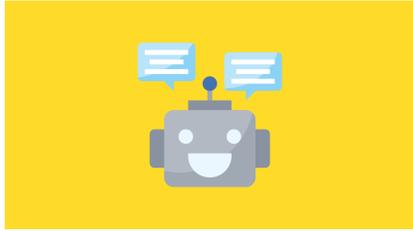
#### Explore/Learn:

1. Review vocabulary
  - a. Are there any HTML or CSS elements that you need explaining or are struggling with?
    - i. Answers will vary. (common responses: text-align, font-family, id selector)
2. Discussion Questions
  - a. How do we measure font-sizes?
    - i. Px = pixels (fun fact: 1 inch size font is on average 72 px.)
3. Today you will learn a new language called JavaScript or JS.
  - a. Introduce students to JavaScript by using the **Google Slides called Introduction to JavaScript.**

#### Create:

1. You will learn two new HTML elements and six JavaScript references.
2. Students will work on the guided project called Chatbot Conversation.

## Guided Project - Chatbot Conversation

Difficulty	1	
Learning Hours	5	
Languages(s)	HTML, CSS, JS	
Theme(s)	Web design	
Description	Students will learn how to use HTML and JavaScript to program a chatbot that can have a dynamic conversation with users.	
ISTE	1a, 3c, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-10, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-IC-19, 2-AP-11, 2-AP-12	

### Hour 15:

#### Create:

- Students will continue to work on the guided project called Chatbot Conversation.

### Hour 16:

#### Create:

- Students will complete the guided project called Chatbot Conversation.

### Hour 17:

#### Extensions & Integration:

- Extensions
  - Use the **Chatbot Conversation - Customization Guide** for directions on how to use Sandbox mode and how to customize to this project.
- Integration
  - Letting the students experiment with this project will prepare them for the next project's extension activity.

### Hour 18:

#### Create:

- Students will complete the extension called Chatbot Conversation.

#### Wrap Up:

- Discussion questions:
  - What new language did we learn today?
    - JavaScript/JS the brains of coding, the action
  - What did we create today?

- i. We created a chatbot conversation with the computer
- c. Which HTML elements did you use?
  - i. <Button>, onclick
- d. Which CSS elements did you use?
  - i. None
- e. Which JS elements did you use?
  - i. Function, alert, prompt, string, variable, conditional statement.
- f. Did you create anything new?
  - i. Student answers will vary.

## Hour 19:

### Explore/Learn:

1. Review vocabulary
  - a. What is JS coding language?
    - i. JavaScript, brains, the action
2. Discussion Questions
  - a. What is the difference between prompt and alert?
    - i. **alert** is a type of pop-up message box. It is used to display a message to the user, and users must click "OK" to close the pop-up.
    - ii. **prompt** is a type of pop-up message box with an input field, used when we want to ask users for information.

### Create:

1. Today you will continue practicing JavaScript including one new JS element.
2. Students will work on the guided project called Trivia Game.

### Guided Project - Trivia Game

<b>Difficulty</b>	1	
<b>Learning Hours</b>	5	
<b>Languages(s)</b>	HTML, CSS, JS	
<b>Theme(s)</b>	Web design	
<b>Description</b>	Students will learn how to use JavaScript to create a trivia game where players score points based on how many questions they answer correctly.	

ISTE	1a, 3c, 6b, 6d,
CSTA	1A-AP-08, 1A-AP-10, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-IC-19, 2-AP-11, 2-AP-12

## Hour 20:

### Create:

1. Students will continue to work on the guided project called Trivia Game.

## Hour 21:

### Create:

1. Students will complete the guided project called Trivia Game.

## Hour 22:

### Extensions & Integration:

1. Extensions
  - a. Use the [Trivia Game - Customization Guide](#) for directions on how to use Sandbox mode and how to customize to this project.
2. Integration
  - a. Change the theme of the questions to meet your subject area.
    - i. E.x. What is 8x8?

## Hour 23:

### Create:

1. Students will complete the extension called Trivia Games.

### Wrap Up:

1. Discussion questions:
  - a. What did we create today?
    - i. We created a Trivia Game
  - b. Which HTML elements did you use?
    - i. <Button>, onclick, <h1>, <h2>
  - c. Which CSS elements did you use?
    - i. None
  - d. Which JS elements did you use?
    - i. Function, alert, prompt, string, variable, conditional statement, arithmetic operator
  - e. Did you create anything new?
    - i. Student answers will vary.

## Hour 24:

### Explore/Learn:

1. Review vocabulary
  - a. What are the three coding languages that we learned?

- i. HTML: Hyper Text Markup Language - coding language used to build websites. Specifically, HTML's job is to label and organize content such as headings, paragraphs, lists and images, so that the web browser (e.g. Chrome, Firefox, etc.) knows how the page should look.
- ii. CSS:Cascading Style Sheets - coding language that pairs with HTML. It works by defining a series of rules for how the HTML should look (colors, spacing, etc). CSS is helpful for establishing the layout and personality of a website.
- iii. JS: JavaScript - combined with HTML and CSS to bring websites to life! JavaScript is a versatile programming language that can be used for animation, dynamic apps, interactive games and more.

**Create:**

- 1. Today you will complete a Debugging Challenge.
- 2. What does the word debugging mean?
  - a. Find and fix errors

**Guided Project - Debug My Website Challenge (HTML & CSS)**

<b>Difficulty</b>	2	
<b>Learning Hours</b>	1	
<b>Languages(s)</b>	HTML, JS	
<b>Theme(s)</b>	Programming	
<b>Description</b>	Students will apply what they've learned about HTML and CSS to debug a website. Each step of the project will contain code with incorrect syntax, and students will be required to debug the code.	
<b>ISTE</b>	4d	
<b>CSTA</b>	1A-AP-14, 1B-AP-15	

## Hour 25:

### Explore/Learn:

1. Review vocabulary
  - a. What does “bug” mean when referring to coding?
    - i. An error
  - b. What does “debug” mean when referring to coding?
    - i. To find and fix errors

### Create:

1. Today you will complete a Debugging Challenge.
2. What does the word debugging mean?
  - a. Find and fix errors

### Guided Project - Debug My Trivia Game (JavaScript)

<b>Difficulty</b>	2	
<b>Learning Hours</b>	1	
<b>Languages(s)</b>	HTML, JS	
<b>Theme(s)</b>	Game development, Programming	
<b>Teacher Resources</b>	Teaching guide	
<b>Description</b>	Students will apply what they’ve learned about JavaScript to debug a trivia game. Each step of the project will contain code with incorrect syntax, and students will be required to debug the code.	
<b>ISTE</b>	4d	
<b>CSTA</b>	1A-AP-14, 1B-AP-15	