

STRANDS AND STANDARDS

WEB DEVELOPMENT 2



Course Description

Web Development 2 is a course designed to build on previous content knowledge and skills learned in Web Development 1. Students will expand on the fundamentals of how the Internet works. They will learn and use the basic building blocks of the World Wide Web: HTML5 coding, Cascading Style Sheets (CSS), and JavaScript. They follow the steps to create a more robust website by planning, designing, developing, deploying, and maintaining of the website projects. Students will learn and use different scripting technologies to create more dynamic and interactive websites.

In this course you will use and build upon all the skills you have learned in Web Dev 1.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	35.02.00.00.065
Concurrent Enrollment Core Code	35.02.00.13.065
Suggested Prerequisite	Web Development 1
Skill Certification Test Number	894, 993, 9451, 9454
Test Weight	0.5
License Area of Concentration	CTE and/or Secondary Education 6-12
Endorsement Qualifiers:	
Endorsement 1 OR	Web Development
Endorsement 2 OR	Programming & Software Development
Endorsement 3 OR	Business, Finance, & Marketing – Level 2
Endorsement 4	Business, Finance & Mktg. Comprehensive

STRAND 1

Fundamentals of HTML5: Students will create a multi-page website using good coding practice. (Such as those found in [W3Schools](#).) (Suggested time proportion 20%)

Standard 1

Use advanced HTML5 elements to create website.

- Add SVG images (i.e.: image map, icons, logos, etc.)
 - You can use original images or use a library of SVG images.
- Code HTML forms on websites (i.e.: radio, checkbox, text field, text area, field set, dropdown lists, legend, etc.)
- Submit Button (Students need to code the button, but it will not submit without access to a server)
 - GET - good for non-secure data & has a limited number of characters
 - POST - secure and no size limitations
 - Understand the action that will run on the server on the form submit button. (PHP file)
- Code iframes, embed, or add the canvas element on a website
- Incorporate JavaScript on a webpage
 - In-line
 - Internal
 - External JS
- Incorporate API's on websites. (ie: drag and drop, geolocation, webstorage, web works, etc.)

Performance Skills

Students will be able to code advanced HTML5 elements to create a website.

STRAND 2

Cascading Style Sheets (CSS): Students will style websites using CSS. (Suggested time proportion 35%)

Standard 1

Understand the use of various CSS selectors.

- Understand the cascade order for browser default, inline, internal, and external style sheet
- Code element selections to modify HTML elements (tag, ID, & classes)
- Code contextual selectors to modify nested elements (i.e.: footer nav {}, header ul {}, etc.)
- Code pseudo class selectors (i.e.: a: link, a:visited, a:active a:hover)
- Code pseudo element selectors

Here are some examples:

 - `::after{clear:both}`
 - `p::first-line{color: #00FF00;}`
 - etc.

Standard 2

Format page layout with advanced CSS.

- Use grids, flexbox, or a combination for page layouts
- Use width, height, or auto to adjust the size of the elements
- Code navigation bars
- Use text align, margin, and padding
- Use float to position elements

Standard 3

Build responsive websites.

- Media queries
- SVG & picture elements
- Responsive text size - using rem, vh, and vw in css
- Responsive navigation bar
- Introduce the concept of frameworks like: BootStrap, JQuery, Vue.js, Nodejs, etc.

Standard 4

Code animation and graphics with advanced CSS.

- Buttons. (i.e.: rounded, colored, etc.)
- Image overlay hover. (i.e.: Fade-in, slide-out, etc.)
- Image slider or carousel

STRAND 3

Site Planning and Design: Students will plan, design, implement, and maintain website(s).
(Suggested time proportion 10%)

Standard 1

Create a website plan and pitch for a client.

- Identify basic principles of website usability, readability, and accessibility
- Plan a website by using sketches, website hierarchy, wireframe, or a site map
- Communicate with others (such as peers and clients) about design and content plans
- Produce website designs that work on various devices and browser versions/configurations
- Plan, communicate, or present a client's website before, during or after website development

Standard 2

Create content for website.

- Create and prepare 2D images. .gif, .png, .jpg, .svg
- Prepare rich media, such as, video, sound, or animation
- Identify when to use various image and digital media file formats
- Optimize images for web content, such as resize, resolution, compress, thumbnails
- Understand the use of favicons
- Identify how to avoid violating copyright rules
- Demonstrate the use of semantic elements such as: audio, video, and figure

Standard 3

Uploading and maintaining a site.

- Understand and be able to describe the capabilities of web servers
- FTP pages to a web server (*Optional if security allows.)
- Differentiate between types of IP addresses
- Describe a static IP address
- Describe a Dynamic IP address
- Differentiate between ipv4 and ipv6
- Conduct basic technical tests such as validating the website (W3C compliant), accessibility, SEO, etc.
- Present webpages to others for quality assurances (QA) such as team members and clients for feedback and evaluation on technical merits and usability
- Identify methods for collecting site feedback, such as using counters, feedback forums, Google Analytics, Google Webmaster Tools
- Provide site maintenance using bug reports, backups, and promotion
- Document all aspects of website maintenance
- Identify internet protocols: http, https, ftp, tcp/ip

Standard 4

Work as a team to create a website.

- Use good oral and written communication skills as a team member

STRAND 4

JavaScript has become an essential web technology along with HTML and CSS, as most browsers implement JavaScript. Students will understand basic JavaScript in front-end and back-end development, mobile app development, desktop app development, and game development. (Suggested time proportion 30%)

Standard 1

Intro to JavaScript

- Introduce JavaScript and how it is used in web development
- Include some simple JavaScript in your website.

Standard 2

Functions in JavaScript

- Introduce functions
- Create custom functions – for example: `function myFunction() {alert("Hello World!");}`

Standard 3

Variables in JavaScript

- Introduce variables and uses – for example:
`var name = prompt("Enter you name: ");`
`alert("Your name is" + name);`

Standard 4

Input in JavaScript

- Learn how to gather input from the user
- Store user input into a variable

STRAND 5

Comprehensive website. (Suggested time proportion 5%)

Standard 1

Build an interactive responsive website

Standard 2

Participate in a CTSO, Utah Digital Media Arts Festival, or competition

Overall Performance Skills

Students must be able to:

- Create and validate website HTML
- Create and validate website CSS

Workplace Skills

The following workplace skills should be discussed, taught, and re-enforced in the course:

- Communication
- Teamwork
- Critical and Creative Thinking
- Problem Solving
- Dependability
- Legal requirements / expectations

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
Web Development 2	894	10	17	8	14	0						49	42

Vocabulary – Page 1

Strand 1 – HTML	
SVG (Scalable Vector Graphics)	A file extension for scalable vector graphics
iframe	(Short for inline frame) Is an HTML element that allows an external webpage to be embedded in an HTML document.
Embed	Defines a container for an external resource, such as a webpage, a picture, a media player, or a plug-in application.
GUI	Stands for "Graphical User Interface" and is pronounced "gooey." It is a user interface that includes graphical elements, such as windows, icons and buttons.

Strand 2 - CSS	
Class Selectors	Used to select multiple elements on a webpage.
ID Selectors	Used to select one element on a webpage.
Contextual Selectors	Are more specific than a single element selector Example #content h1 {background-color: red;}
Frameworks	Provides a foundation on which developers can build programs for websites. Example Bootstrap
Responsive Website	Will appear one way on a computer, another way on a tablet, and still another way on smartphone.
CSS Animations	To use CSS animation, you must first specify keyframes. An animation lets an element gradually change from one style to another.
CSS Graphic	Is essentially designing a vector graphic but instead of using vector illustration software you are using CSS code

Strand 3 – Site Planning	
Usability	Assesses how easy user interfaces are to use. The word "usability" also refers to methods for improving ease-of-use during the design process.
Readability	The ease with which a person can understand a passage of text. The complexity of your content, as well as the typographic elements used on your site.
Accessibility	The inclusive practice of ensuring there are no barriers that prevent interaction with, or access to, websites on the World Wide Web by people with physical disabilities, situational disabilities, and socio-economic restrictions on bandwidth and speed.
Validation	Validating a website is the process of ensuring that the pages on the website conform to the norms or standards defined by various organizations
Wireframe	A visual prototype of a webpage that focuses on content, layout, and behavior.
Site Map	A list of pages of a website.
Cross-Browser Compatibility	If your website is not tested and debugged on different platforms and browsers, it won't work the same on all of them.
Image Resolution	The detail an image holds. The term applies to raster digital images, film images, and other types of images. Higher resolution means more image detail. Image resolution can be measured in various ways.
Image Optimization	To optimize an image so that it will run at its utmost capacity in terms of speed and efficiency.
IP Address	Internet Protocol Address. A uniquely assigned numeric address for each computer connected to the Internet.

Vocabulary – Page 2

IPv4	An ip address is in the format of 4 sets of decimal numbers separated by dots. Example 70.89.31.226
IPv6	Typically written in hexadecimal separated by colon. Example 2002:4559:1FE2::4559:1FE2
Static IP	A permanent number assigned to a computer by an Internet service provider (ISP).
Dynamic IP	A temporary IP address that is assigned to a computing device or node when it's connected to a network.
TCP/IP	Transmission Control Protocol/Internet Protocol. A network communication protocol used on the internet and computer networks to transmit data using packets.
Domain	The "address" or URL of a particular website.
Protocol	The common set of standards and rules ensure that all computers connected to the network have a common ground from which to work.
Web Host (Server)	A computer that stores and sends requested webpages and other files.
Favicon	A file containing one or more small icons, associated with a website or webpage. Browser will display a page's favicon in the browser's address bar. Can be used to have a textless favorites site, saving space.

Strand 4 JavaScript	
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JavaScript	A web-scripting code that interacts with HTML code to create dynamic content, such as rollovers or interactive forms on a webpage; also called JS.
Variables	Containers for storing data values and must be identified with unique names.
Data Types	Numbers, strings, objects
Functions	Are executed when "something" invokes it (calls it)
Angle Brackets	<>
Brace Brackets	{}
Parentheses	()
Square Brackets	[]

Code List – Page 1

<audio></audio>	The <audio> tag defines sound, such as music or other audio streams. Currently, there are 3 supported file formats for the <audio> element: MP3, Wav, and Ogg	CSS - Continued	
<video></video>	The HTML5 <video> element specifies a standard way to embed a video in a webpage.	a:visited	Visited link
<canvas></canvas>	The HTML <canvas> element is used to draw graphics, on the fly, via JavaScript. The <canvas> element is only a container for graphics. You must use JavaScript to actually draw the graphics. Canvas has several methods for drawing paths, boxes, circles, text, and adding images	a:active	Selected Link
<figure></figure>	The <figure> tag specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.	a:hover	Selects links on mouse over
<mark></mark>	Use the <mark> tag if you want to highlight parts of your text.	Layout	The position property specifies the type of positioning method used for an element (relative, fixed, or absolute)
<picture></picture>	The <picture> element works similar to the <video> and <audio> elements. You set up different sources, and the first source that fits the preferences is the one being used.	width, height, auto	To format the page
<script></script>	Inserts Javascript	float	Positioning on the page
<source></source>	The <source> tag is used to specify multiple media resources for media elements, such as <video>, <audio>, and <picture>.	absolute positioning	The element is positioned relative to its first positioned (not static) ancestor element
<track></track>	The <track> tag specifies text tracks for media elements (<audio> and <video>).	relative positioning	The element is positioned relative to its normal position, so "left:20px" adds 20 pixels to the element's LEFT position
<form></form>	defines a form that is used to collect user input Examples Radio button, checkbox, text, submit, and reset.	fixed positioning	The element is positioned relative to the browser window
<svg> </svg>	SVG is used to define vector-based graphics for the Web using XML. SVG has some predefined shape elements that can be used by developers	understand static positioning	Browser defaults
<rect />	Rectangle	align	The text-align property is used to set the horizontal alignment of text. A text can be left or right aligned, centered, or justified.
<circle />	Circle	margin	Margin properties are used to create space around elements, outside of any defined border.
<ellipse />	Ellipse	padding	Padding properties are used to generate space around an element's content, inside of any defined borders.
<line />	Line	buttons	shape that is created using CSS that the includes interactivity (User Driven Events)
<meta>	Defines metadata about an HTML document. Metadata is data (information) about data. <meta> tags always go inside the <head> element, and are typically used to specify character set, page description, keywords, author of the document, and viewport settings.	rounded corners	border-radius - A shorthand property for setting all the four borders
		colored button	Example: button1 {background-color: #4CAF50; /* Green */
CSS		Navigation using CSS	list-style-type: none; - Removes the bullets. A navigation bar does not need list markers
internal stylesheet code	Defined inside the <style> element, inside the <head>< section of an HTML page	fade in/out	ease - specifies a transition effect with a slow start, then fast, then end slowly (this is default)
external stylesheet link	<link rel="stylesheet" href="mystyle.css">		linear - specifies a transition effect with the same speed from start to end
id #	#firstname { background-color: yellow; }		ease-in - specifies a transition effect with a slow start
class .	.intro { background-color: yellow; }		ease-out - specifies a transition effect with a slow end
contextual selectors	example footer H1	image slider	Code that creates a "slideshow" on the webpage
ID #	Used 1 time per page		
Class .	Used multiple times per page		
a:link	Unvisited link		