

<b>Course</b>	<b>BD10 Multimedia and Webpage Design</b>		<b>Unit B</b>	<b>Interactive Website Design and Development</b>
<b>Essential Standard</b>	<b>4.00</b>	<b>B2</b>	<b>28%</b>	<b>Understand the fundamentals of web design.</b>
<b>Indicator</b>	<b>4.01</b>	<b>B2</b>	<b>18%</b>	<b>Understand the fundamentals of HTML5 and CSS.</b>
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How do web pages work?</li> <li>• What is HTML and how does it work?</li> <li>• How does CSS work with HTML?</li> <li>• What are the 3 types of CSS?</li> </ul>			

### UNPACKED CONTENT

- 1) How Web pages work
  - a) A **web page** is a document which can display text, graphics, audio, video and other elements through a web browser.
    - i) Web pages are documents stored on **web servers**.
    - ii) Web pages contain instructions on how to display content. The most common instructions are in **hypertext markup language** (HTML).
  - b) HTML code is interpreted by a **web browser**. (a software application designed to retrieve and present content on the Web)
    - i) The web browser displays the page by reading the instructions in the web document.
    - ii) The web browser fetches a Web page from a server by a request. A standard **http** request includes a page address. For example:  
<http://www.w3.org/standards/about.html>
  - c) **Website** – a collection of related webpages with a starting point or home page
    - i) Web pages are organized in a **directory structure** on a web server. The web server runs special software to serve up the content by responding to requests.
    - ii) The content on the Web is available because the **Web** is a **network** of computers all over the world.
    - iii) The interconnected devices on the Web use a communication standard known as **http** (hypertext transfer protocol).
    - iv) An address or **Uniform Resource Locator** (URL) is the method for locating a document on the Web. The URL typically points to the home page or default page (often index.html) that is located in the root folder of the website.
    - v) The **Domain Naming System** (DNS) translates domain names in the URL to IP addresses. Every device on the Internet has an **Internet Protocol** (IP) address. IP addresses are how devices find each other on a network.
    - vi) The documents within a website are typically **hyperlinked** and a navigation system (or menu) permits the user to move between pages.
  - d) Webpage Development Standards

- i) The **World Wide Web Consortium (W3C)** is an international community that develops open standards.
  - ii) An **open standard** is a standard that is publicly available and has various rights to use associated with it, and may also have various properties of how it was designed (e.g. open process).
  - iii) The W3C developed the **standards** for HTML and CSS.
  - iv) The W3C **mission** is to lead the World Wide Web to its full potential by developing protocols and guidelines that ensure the long-term growth of the Web.
  - v) The HTML standards are constantly evolving to meet the needs of Web users. (The current standard is HTML5.)
  - vi) The W3C also creates standards for **website accessibility**, mobile web, etc.
  - vii) The W3C has a **Web Accessibility Initiative (WAI)** which develops strategies, guidelines, and resources to help make the Web accessible to people with disabilities.
- e) File Management is essential in Web pages
- i) **Filenames** should be short, descriptive and without spaces. Some Web servers do not permit the use of blank spaces in folder and filenames.
  - ii) Web pages should always be saved into a **folder**. (Teacher note: Help your students by having them create a folder at the point they save their documents. All files related to the Web page need to be organized into this folder)
  - iii) A simple website could be organized in just one folder, but large websites need to be organized in some manner.
  - iv) Large websites typically create folders and subfolders contained within the **root** folder.
  - v) **Relative links** are located relative to the current document because the server knows the location of the current document.
  - vi) A relative link will look like this: (also known as a directory path)  
**<a href="/photos/photogallery.html">Home</a>**
  - vii) An **absolute link** defines the location of the document in total including the **protocol** required to get the document, the server to get it from, the directory it is located in and then the name of the document itself.
  - viii) An absolute link will look like this:  
 (1) **<a href="http://www.navegabem.com/index.html">Home</a>**
- 2) HTML Overview
- a) **HyperText Markup Language** is the primary language for building/creating web pages.
  - b) HTML uses markup **tags** which describe or define content in a Web document. (It is not a scripting or a programming language)
  - c) HTML documents contain HTML tags and plain text which are often simply called web pages.
  - d) HTML code is often referred to as **source code**.
  - e) HTML can be coded using a plain **text editor**.

- f) When using a text editor, save the HTML document using the file extension **.html** or **.htm**
- g) Rules for HTML tags (syntax)
  - i) HTML tags are enclosed inside angle brackets: **< >**.
  - ii) The tag name is keyed between the two angle brackets. Example: **<body>**.
  - iii) With a few exceptions, tags occur in pairs with an **opening** and a **closing** tag.  
Example **<body> </body>**
  - iv) The opening **<body>** indicates the start of the body section and the closing **</body>** marks the end of the body section.
  - v) The forward slash (**/**) always precedes the tag name in a closing tag. The closing tag is written like the start tag but with the forward slash before the tag name.  
**</body>**
  - vi) The text between the HTML tags is keyed in plain text
  - vii) The following tags do not have pairs and are often called **“empty tags”**: **<br>**, **<hr>**, **<img>**, **<meta>** (These tags do not have information that you would put between an opening and closing tag)
  - viii) While HTML tags are **not** case sensitive, they are generally keyed in all **lowercase** letters.
- h) An **HTML element** consists of everything between the start tag and the end tag including the tags. For example: **<h1>This is heading style 1</h1>**
- i) An **HTML attribute** gives elements additional meaning and context. For example: ****
- j) The image tag requires the **src** (source) attribute and the **alt** (alternative) attribute. The required alt attribute specifies an alternate text for an image, if the image cannot be displayed. The user defines the text in the alt tag.
- k) **Attributes** - provide additional information about tags and control how the tag will be interpreted by the browser.
  - i) Tags can have multiple attributes.
  - ii) Attributes have syntax rules:
    - (1) Attributes are entered inside the **opening** tag but not in the closing tag.
    - (2) Attributes are keyed in **name/value** pairs. Syntax: **name="value"**
    - (3) The attribute should have an **equal** symbol followed by the value or setting for the attribute.
    - (4) Attribute values are enclosed within **quotation marks**.
- l) In HTML5 there is a single doctype declaration **<!DOCTYPE html>**. The doctype is not technically an HTML tag. It is simply a declaration that tells the web browser the version of html in the document.
- m) An HTML document consists of two sections the **<head>** and the **<body>**.
  - i) The **<body>** is the **visible content** of the web document.
  - ii) The **<head>** section contains information **about the page**.
    - (1) For example the **<title>** displays in the web browser title bar—not in the actual web document. The title must be in the **<head>** section.
    - (2) The **<meta>** tag provides additional information about the document.

(3) Internal and External CSS files are referenced in the <head> section.

- n) HTML tag structure and **nesting of tags** is illustrated in the graphic shown below. Most html elements can be nested which means they can contain other html tags.



- o) HTML 5 and Audio
- HTML 5 introduced a standard way to embed an audio file on a web page using the <audio> tag.
  - The <audio> element allows multiple <source> elements. <source> elements can link to different audio files. The browser will use the first recognized format.
  - Currently, there are 3 supported file formats for the <audio> element: MP3, Wav, and Ogg
- p) HTML 5 and Video
- HTML5 defines a new element which specifies a standard way to embed a video/movie on a web page: the <video> element.
  - The <video> element allows multiple <source> elements. <source> elements can link to different video files. The browser will use the first recognized format.
  - Currently, there are 3 supported video formats for the <video> element: MP4, WebM, and Ogg
  - The purpose of the <object> element is to support HTML helpers (plug-ins). Plug-ins are often used by browsers to play audio and video. Examples of well-known plug-ins are Adobe Flash Player and QuickTime. Plug-ins can be added to Web pages through the <object> tag or the <embed> tag.

4) There are a total of 30 tags introduced and they are in two sections:

### First Set of 18 HTML Tags

HTML Tag	Description
<html>	Defines the root of an HTML document
<head>	Defines information about the document
<title>	Defines a title for the document. The title appears in the browser; not in the web page. The title must be in the head section.
<body>	Defines the document's body; the visible content.
<p>	Defines a paragraph
<img src=>	Image Tag; Defines an image; src is a required attribute.
<a href=>	Anchor tag; Defines a hyperlink; href is a required attribute
<hr>	Horizontal rule; Defines a thematic change in the content
 	Break tag; Defines a single line break

### 6 Heading styles

<h1>	Defines HTML headings; heading style 1 is the largest relative to the others
<h2>	Defines HTML headings
<h3>	Defines HTML headings
<h4>	Defines HTML headings
<h5>	Defines HTML headings
<h6>	Defines HTML headings; heading style 6 is the smallest relative to others

### List Elements-Numbered and Bulleted

<ol>	Defines an ordered list
<ul>	Defines an unordered list
<li>	Defines a list item

### 5) Next 12 Tags to Introduce

HTML Tag	Description
<b>Multimedia Elements</b>	
<audio>	Defines sound content
<video>	Defines a video or movie
<embed>	Defines a container for an external (non-HTML) application
<object>	Defines an embedded object
<b>Head Elements</b>	
<style>	Defines style information for a document
<link>	Defines the relationship between a document and an external resource
<meta>	Defines metadata about an HTML document
<b>HTML Layouts</b>	
<div>	Defines a section in a document (block-level)
<span>	Defines a section in a document (inline)
<b>Structural Elements</b>	
<header>	Defines a header for a document or section
<footer>	Defines a footer for a document or section
<b>Html comment</b>	
<!--put comment text here-->	

## 6) Cascading Style Sheets

- a) **Cascading style sheets** are often referred to simply as CSS, styles, or stylesheets.
- b) CSS is a **separate language** from HTML. HTML was designed for structuring a web document. HTML has very few formatting tags so CSS was developed for **defining the display** of HTML.
- c) All modern browsers support CSS.
- d) CSS rules are typically saved in a separate file known as an **external CSS** file. This one file can control how every page in a website is displayed. For example, CSS rules can specify font-family, colors, margins, borders, and even the display of the document in various screen sizes (mobile web).
- e) There are 3 types of CSS: **Inline styles, Internal Styles and External Styles.**
  - i) **Inline Styles** – the code for the style is inserted inside the opening html tag.
    - (1) Syntax: `<p style="color:red">`
    - (2) Affects only the information between the opening and closing tag.
    - (3) **Overrides** internal and external style sheets.
  - ii) **Internal style sheet** – used to control the appearance of one webpage.
    - (1) The `<style>` tag is placed inside the `<head>` section of the webpage.
    - (2) Styles are defined between the opening and closing `<style>` tags.
    - (3) Internal style sheets **override** external style sheets.
  - iii) **External style sheet** – styles are defined in a **separate** text file saved with the **.css extension.**
    - (1) A link is inserted into the `<head>` section giving the location of the style sheet to be used. Example: `<head>`  
`<link rel="stylesheet" type="text/css" href="mystyle.css"></head>`
    - (2) Advantage of External CSS: Consistent look created across all pages and changes can be implemented by changing one file (the external CSS) and updating the look of all web pages linked to it.
- f) **CSS Syntax** for internal and external style requires that a rule has two main parts: a **selector**, and one or more **declarations.**
  - i) The selector is normally the **HTML element** you want to style
  - ii) Each declaration consists of a **property** and a **value.**
  - iii) The property is the style attribute you want to change. Each property has a value.
  - iv) A CSS declaration always ends with a **semicolon**, and declaration groups are surrounded by **curly brackets: { }**
  - v) The selector and declaration can be entered all on one line or each declaration can be on its own line.
- g) Comments in CSS are used to explain your code, and may help you when you edit the source code at a later date.
  - i) Comments are ignored by browsers.
  - ii) A **CSS comment** begins with `/*`, and ends with `*/`, like this:  

```
(1) /*This is a comment*/
```
- h) Cascading Style Sheets (CSS) is the preferred method of changing text color.
  - i) Colors are displayed combining RED, GREEN, and BLUE light.

- ii) CSS colors are defined using a **hexadecimal** (hex) notation for the combination of Red, Green, and Blue color values (RGB).
- iii) The lowest value that can be given to one of the light sources is 0 (hex 00).
- iv) The highest value is 255 (hex FF).
- v) Hex values are written as 3 double digit numbers, starting with a # sign.
- vi) 140 **color names** are defined in the HTML and CSS color specification (17 standard colors plus 123 more).
- vii) If colors are not styled, the default Web browser settings will be used.
- i) The CSS Box Model is a conceptual model for design and layout.
  - i) It explains the size of elements when margins, borders, and padding are used with content.
  - ii) All HTML elements can be considered as boxes. (the box consists of: margins, borders, padding, and the actual content.)
  - iii) The box model allows us to place a border around elements and space elements in relation to other elements.



- 7) Layout
- a) Most web site content is organized in columns using either a **<div>** tag or a **<table>**. While it is possible to use tables for layouts, tables are designed to be used for presenting tabular data and not as a layout tool.
  - b) The **div** element is a **block level** element used for grouping HTML elements. The first **<div>** in a document is the **container**.
  - c) **Block level elements** normally start (and end) **with a new line** when displayed in a browser. Block level elements can contain other elements.
  - d) The **<header> tag (new in html 5)** specifies a header for a document or section. The **<header>** element should be used as a container for introductory content or set of navigational links. You can have several **<header>** elements in one document.
  - e) The **<footer> tag (new in html 5)** defines a footer for a document or section. A **<footer>** element should contain information about its containing element. A footer typically contains the author of the document, copyright information, links to terms of use, contact information, etc.
  - f) The **<nav> tag (new in html 5)** defines a set of navigation links.

#### 4.01 Resources:

<a href="http://computer.howstuffworks.com/web-page.htm">http://computer.howstuffworks.com/web-page.htm</a>	Explanation and reference for students
<a href="http://www.w3.org/">http://www.w3.org/</a>	Web standards
<a href="http://w3schools.com/">http://w3schools.com/</a>	Reference for html and css
<a href="http://joshduck.com/periodic-table.html">http://joshduck.com/periodic-table.html</a>	Html list
<a href="http://www.htmlinstant.com/">http://www.htmlinstant.com/</a>	Real-time web editor
<a href="https://thimble.webmaker.org/">https://thimble.webmaker.org/</a>	Real-time web editor
<a href="http://cssvalues.com/">http://cssvalues.com/</a>	CSS Values help
<a href="http://notepad-plus-plus.org/">http://notepad-plus-plus.org/</a>	Notepad++ download
<a href="http://www.20thingsilearned.com/en-US/dns/3">http://www.20thingsilearned.com/en-US/dns/3</a>	Google online book
<a href="https://kuler.adobe.com/create/color-wheel/">https://kuler.adobe.com/create/color-wheel/</a>	Adobe kuler website
<a href="http://hotpot.uvic.ca/">http://hotpot.uvic.ca/</a>	Hot Potatoes software download (creates HTML quiz)
<a href="http://www.google.com/fonts/#ChoosePlace:select">http://www.google.com/fonts/#ChoosePlace:select</a>	Google fonts

## 4.01 Key Terms

Web page	A document which can display text, graphics, audio, video and other elements through a web browser.
HTML	A language which means that special codes are used to define elements.
Web browser	Special software that displays the page by reading the instructions in the web document.
Web server	A computer that runs special software to serve up Web content by responding to requests.
Website	A collection of related webpages with a starting point or home page.
Uniform Resource Locator (URL)	The address used for locating a document on the Web.
Hypertext Transport Protocol (http)	The underlying protocol for how content is communicated on the Web.
Domain Name System (DNS)	Internet service that translates domain names into IP addresses.
Internet Protocol (IP) Address	A numeric string that identifies a device on a network
Open standard	A standard that is publicly available and has various rights to use associated with it, and may also have various properties of how it was designed
World Wide Web Consortium (W3C)	An international community that develops open standards for the Web.
Web Accessibility Initiative (WAI)	A program for developing strategies, guidelines, and resources to help make the Web accessible to people with disabilities
World Wide Web or Web	A worldwide network of computers that communicate through http
Nesting	Putting an object inside another object; such as an HTML tag inside another HTML tag.
HTML Tag	Special codes which describe or define content in a Web document
HTML Element	The opening and closing tags including the text in between.
HTML Attribute	Provide HTML attributes with additional meaning and context.
Cascading Style Sheet	A language for defining how to display HTML elements
CSS Selector	The HTML element that you want to style.
CSS Declaration	The style property and value
CSS Property	The style attribute you want to change
CSS Value	The attribute you want applied to the property
Absolute Link	A link that specifies a complete path to a file, including the protocol, server, directory, filename.
Relative Link	A link that specifies the name of the file to be linked to as it relates to the current document.
Hexadecimal color codes	Color values written with the # sign followed by six digits using the numbers 0 to 9 and A to F to represent the amount of red, green and blue.
Rgb color codes	Color values using the combination of red, green, and blue values ranging from 0 to 255.