CompuScholar, Inc.

Alignment to Tennessee **Web Design Foundations** Standards

Tennessee Course Details:

Course Name:	Web Design Foundations
Primary Career Cluster:	Information Technology (IT)
Course Code:	6100
Credit:	1
Grade Level:	10
Teacher Resources:	http://www.tn.gov/education/cte/InformationTechnology.shtml

CompuScholar Course Details:

Course Title: **KidCoder: Web Design**
Course ISBN: **978-0-9887070-3-0**
Course Year: **2015**

Note 1: Standards were derived from this document, dated January 30, 2015:
http://tn.gov/education/cte/pos/cte_std_web_design_foundations.pdf

Note 2: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 3: Additional requirements may be found in the Tennesee "Screening Instrument" designed for this course. Some specific "screening" requirements are cited at the end of this document. Other screening standards are met by the entire course as a whole, including all supplemental lessons (designed to meet unique state standards).

Course Description

Web Design Foundations is a course that prepares students with work-related web design skills for advancement into postsecondary education and industry. The course is intended to develop fundamental skills in both theory and practical application of the basic web design and development process, project management and teamwork, troubleshooting and problem solving, and interpersonal skill development. Laboratory facilities and experiences simulate those found in the web design and development industry; where interaction with a "client" is indicated in the standards, it is expected that students' peers or the instructor may serve as mock clients in lieu of an actual relationship with an industry partner. Upon completion of this course, proficient students will be prepared for more advanced coursework in the Web Design program of study. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects and Tennessee State Standards in Mathematics.*****

Course Standards

Safety	CITATION(S)
1) Accurately read, interpret, and demonstrate adherence to safety rules, including rules published by the (1) National Science Teachers Association (NSTA), (2) rules pertaining to electrical safety, (3) Internet safety, (4) Occupational Safety and Health Administration (OSHA) guidelines, and (5) state and national code requirements. Be able to distinguish between rules and explain why certain rules apply.	Chapter 16, Lessons 1 and 2 for Internet safety and security; n/a for the rest.

Client Relations	CITATION(S)
2) Create a questionnaire and conduct an interview with a client to gather specific information to guide the web development project. Develop interview questions that will determine the purpose; target audience; branding and perception goals; content sources; and any factors that will affect the project schedule.	Supplemental Lesson 4 (Project Mangaement) Supplemental Activity 4 (Your Client Docs)
3) Using the information gathered from the client interview, write a project brief that identifies the goals, audience profile, audience perception, primary message of the web site, and the competitive advantage of the client. Allow the client to review the project brief and make corrections based on client feedback.	Supplemental Lesson 4 (Project Mangaement) Supplemental Activity 4 (Your Client Docs)
4) Research the specifications that will be required to produce a web site that meets the needs of the project brief. Using the findings, produce technical specifications for the web site. For example, the specifications should consider the screen resolution, browser compatibility, download time for the web site, and accessibility.	Supplemental Lesson 4 (Project Mangaement) Supplemental Activity 4 (Your Client Docs)
5) Demonstrate an understanding of maintenance requirements for a web site that is aligned with the project brief. Develop a plan that thoroughly describes how the site will be consistently updated and reviewed. Write a text explaining the maintenance requirements and plan to a client. For example, a web site maintenance plan should include, but is not limited to, any automated processes for changing content, required training for content contributors, and assignments for specific updates (e.g., keyword, search engine, Meta data, and graphics).	Supplemental Lesson 4 (Project Mangaement) Supplemental Activity 4 (Your Client Docs)

Site Mapping	CITATION(S)
6) Conduct a brainstorming session to solicit a client's feedback on web site content. Create an outline that organizes the content into categories. Ensure that the outline is aligned with the project brief and that there is space for future expansion. Present the outline to the client for review and approval. For example, use a mind mapping process to capture all the ideas and topics for a web site development project.	Supplemental Lesson 4 (Project Mangaement) Supplemental Activity 4 (Your Client Docs)

7) Applying the content outline, develop a diagram that visually represents the web site structure. The site map (or web site wireframe) should show the interconnection of features such as the homepage, links, and content for each link. For example, use software like Google Drawings, Microsoft Visio, OmniGiraffe, Adobe Illustrator, or Microsoft Office to create a web site wireframe.	Chapter 13, Lesson 1 (Site Maps and Storyboards)
8) Convert the web site wireframes to individual web page wireframes. A wireframe should consider each element (e.g., navigation, images, content, functionality, and footer) and group the information of its corresponding page.	Chapter 10, Lesson 1 (Alignment discussion) Chapter 13, Lesson 1 (Site Maps and Storyboards)

Copyright/Licensing	CITATION(S)
9) Explore the use of stock images and demonstrate an understanding of the various types of stock images like stock photography, microstock photography, and free (e.g., open source) images. Identify the advantages and disadvantages of using these images.	Chapter 11, Lesson 1 (Copyrights, licensing, finding vs. editing)
10) Compare and contrast royalty-free and rights-managed licensing and explain how each licensing affects the use of images. Research and describe the process to obtain permission to use copyrighted photography.	Chapter 11, Lesson 1 (Copyrights, licensing, finding vs. editing)
11) Investigate multiple photosharing services and how they embed metadata within images to assist in keyword searches. As a class, create a photosharing system (class use only) for student- created images that include embedded metadata.	n/a

Introduction to Design and Layout	CITATION(S)
12) Demonstrate an understanding for how specific characteristics affect the quality and size of a digital image. Define the following terminology and explain their effects on digital images:	See below
a. Pixels	Chapter 11, Lesson 1 (Image Characteristics)
b. Color depth	Chapter 11, Lesson 1 (Image Characteristics)
c. Resolution	Chapter 11, Lesson 1 (Compression and Image Resolution)
d. Palettes	Chapter 11, Lesson 1 (Image Characteristics)
e. Dithering	Chapter 11, Lesson 1 (Image Characteristics)

13) Compare and contrast raster and vector graphics and provide scenarios when it is best to use each format. Further, explore their applications to vector-based drawing and paint programs. Describe advantages and disadvantages of using each program type.	Chapter 11, Lesson 1 (Raster and Vector Graphics)
14) Research and identify the extensions of various image file formats like Bitmap, Tagged Image File Format, Windows Metafile, Joint Photographic Experts Group, Portable Network Graphics, and Graphics Interchange Format. Describe which file formats are supported by all browsers and which formats require special software or a plug-in to view an image. Explain when it is most appropriate to apply specific image file formats.	Chapter 11, Lesson 1 (Converting and File Types)
15) In teams, investigate image optimization and its importance. Describe how file formats influence image optimization and identify optimization guidelines and sources to apply to web graphics.	Chapter 11, Lesson 1 (Converting and File Types) Chapter 11, Activity 1 (Cropping and re-sizing)
16) Explain the graphic design concept of composition. Include various applications like visual hierarchy, grouping, visual cues, and integration of elements.	Chapter 10, Lesson 1 (Design Principles)
17) Explore the use of grid-based layout and why it is used to create coherent, organized web pages. Give examples of when it is suitable to use one-, two-, and three-column layouts to display content. For example, research and discuss how the golden ratio (golden mean) is used to create a design grid.	Chapter 10, Lesson 1 (Design Principles)
18) Drawing on multiple resources, demonstrate an understanding of typography, including related definitions like measure and lead. Explain a designer's application of the following typography characteristics to create balance and relationship between elements on a web page.	Chapter 10, Lesson 1 (Design Principles)
a. Legibility	Chapter 10, Lesson 1 (Design Principles)
b. Typeface	Chapter 10, Lesson 1 (Design Principles)
c. Case	Chapter 10, Lesson 1 (Design Principles)
d. Emphasis	Chapter 10, Lesson 1 (Design Principles)
e. Type size and accessibility	Chapter 10, Lesson 1 (Design Principles)

Composition	CITATION(S)
19) Conduct research to determine how various colors are perceived by specific audiences and cultures. Citing evidence from research findings, explain the following concepts:	Chapter 10, Activity 1 (Brand Research)

a. Symbols, objects and images that attract or repel audiences	Chapter 10, Activity 1 (Brand Research)
b. Color combinations that complement each other	Chapter 10, Activity 1 (Brand Research)
c. Smooth color transitions and the effects on download time	Chapter 21, Lesson 2 (Gradients)
20) Demonstrate an understanding of the relationship between pixels and display color. Explain how black and white are each created using color schemes CMYK (cyan, magenta, yellow, and black) and RGB (red, green, blue) respectively. Furthermore, describe the differences between subtractive and additive colors and how they are applied to print media versus a computer monitor display.	Chapter 6, Lesson 2 (Choosing Colors)
21) Consider the two standardized numeric formats for color on the computer screen—RGB values and Hexadecimal code. Compare and contrast the format of values for each and briefly explain how they are applied to represent color.	Chapter 6, Lesson 2 (Choosing Colors)

Writing, Critiquing, and Publishing Content for the Web	CITATION(S)
22) In teams, research writing styles on various web sites (include sites of well-known organizations and companies). Identify characteristics that are consistently used and include examples of what made the text memorable and easy to scan. Use the research findings to create guidelines for the class to apply to upcoming web design and development projects. During the survey of writing styles on the web, take notice of the following:	Chapter 14, Lesson 1 (Research Writing Styles)
a. Location of important information on the page	Chapter 14, Lesson 1 (Research Writing Styles)
b. Use of bulleted lists and tables	Chapter 14, Lesson 1 (Research Writing Styles)
c. Length and simplicity of paragraphs	Chapter 14, Lesson 1 (Research Writing Styles)
d. Headlines and introduction sentences	Chapter 14, Lesson 1 (Research Writing Styles)
e. Tone and voice used	Chapter 14, Lesson 1 (Research Writing Styles)
f. Accuracy of information (current or outdated)	Chapter 14, Lesson 1 (Research Writing Styles)
23) Given a specific topic from a web development project, write content for a web page and apply the class writing guidelines. Proofread and rewrite the content to align with the class guidelines. Give the writing assignment to multiple classmates for review. Revise the content based on reviewer feedback. Follow this multistep process until the written product is appropriate for publication on a web site.	Chapter 14, Lesson 2 / Activity 2 (Build Your Website) Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)

Marketing, Branding, Identity, and eCommerce	CITATION(S)
24) Research various logos of well-known companies and organizations on the web. Identify shapes and colors that are consistently used and include examples of what made the logos unique, attractive, and memorable.	Chapter 10, Activity 1 (Brand Research)
25) Drawing from various resources, identify several ways that a web designer can apply and strengthen brand management and identity. Consider the concepts consistent color and logo placement and explain the application of each.	Chapter 10, Activity 1 (Brand Research)
26) Investigate how to setup and implement a secure e-commerce site. Citing evidence from reliable resources, describe 1) measures to prevent shopping cart vulnerabilities, 2) pre-built shopping software, and 3) hosting options for shopping cart software.	n/a
27) In teams, examine how demographics, psychographics, and audience data are used to market a product or service online. Using this information, create a questionnaire to survey people about a product or service. For example, the questionnaire could survey alternative promotion methods, market growth drivers and barriers.	n/a
28) As a team, use the survey results and develop a marketing plan that identifies the following for a web development project.	n/a
a. Promotions for both global (mass) and niche (micro) markets	n/a
b. Web marketing strategies and goals	n/a
c. Market growth drivers and barriers	n/a
d. Product distribution and availability	n/a
e. Product or service pricing	n/a
f. Advertising options to be used (e.g., links, banner ads, viral marketing, social media)	n/a

Introducing Coding Skills	CITATION(S)
29) Research the history of markup languages; briefly describe the function of markup languages and why they are different from programming languages.	Chapter 1, Lesson 2 (The Language of "Mark-Up")
30) Explore the origin of the HTML standard and creation of the World Wide Web Consortium (W3C). Discuss the six versions of the HTML standard and how each differs from the other. Explain the role of standardization and provide examples of how it promotes universality for all web users.	Chapter 1, Lesson 2 (The Language of "Mark-Up")
31) Define HTML tags distinguishing between empty tags and container tags. Explain their application to web development, why Hypertext Markup Language (HTML) evolved, and provide examples of tags frequently used. Create a simple web page that consists of paragraph text, text hyperlinks, tables, and elements in frames.	Chapter 2, Lesson 3 (Essential HTML Symbols) Students will learn new tags and create multiple web pages throughout the course.

32) Demonstrate understanding of Cascading Style Sheets (CSS). Investigate and report how CSS separate formatting elements from HTML and solve a number of design limitations like:	Chapter 6 (Cascading Style Sheets)
a. Proprietary HTML extensions	Chapter 6, Lesson 1 (Inline Styles)
b. Text-to-image conversion to retain fonts	Chapter 6, Lesson 1 (Inline Styles) Chapter 20, Lesson 4 (Custom Fonts)
c. Page layout using tables	Chapter 6, Lesson 1 (Inline Styles)
d. Images controlling white space	Chapter 6, Lesson 1 (Inline Styles)
33) Explore the use of Cascading Style Sheets (CSS) for page layout and cite evidence why CSS provides more flexible and precise layout capabilities than tables and frames. Explain and demonstrate coding for the following elements of CSS page layout.	Students will use CSS from Chapter 6 onwards in multiple coding projects.
a. CSS Box Model (e.g., inline, block)	Chapter 4, Lesson 1 (Dividing Up Your Page)
b. Document Flow and Positioning (e.g., static, relative, absolute, fixed, float, z-index)	Chapter 9, Lesson 1 (Arranging Containers) Chapter 9, Lesson 2 (Positioning Nested Elements) Chapter 9, Lesson 3 (Playing with Layers) Chapter 9, Lesson 4 (Floating Positions)
c. CSS Positioning Schemes (e.g., two-column layout, three-column layout)	Chapter 9, Lesson 4 (Floating Positions)

Organization	CITATION(S)
34) As a class, define the guidelines for effective use of file and folder management techniques to maintain directory structure for forthcoming web site class projects. The guidelines should address efficient methods for maintaining site root and subfolders for assets (e.g., images, templates, CSS), as well as the correct way to use file paths for relative, site root relative, and absolute links.	Chapter 1, Lesson 1 (Root Directories) Chapter 6 Activity (SiteStyle Directory) Chapter 11, Activity 1 (PagePhotos Directory) Chapter 25, Lesson 4 (Scripts Directory) Chapter 5, Lesson 2 (Internal, relative links) Chapter 5, Lesson 4 (Absolute links)

Troubleshooting & Problem Solving	CITATION(S)
35) Troubleshooting and formal testing is a systematic quality assurance process and should be routinely completed throughout the life cycle of a web site. There are various multistep testing procedures for a web site. The following recommendations provide a general approach to testing:	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback) Also, students are given troubleshooting tips throughout the course (e.g. Chapter 3, Lesson 2; Chapter 6 Activity; Chapter 12, Lesson 1; Chapter 25, Lesson 3)
a. Review the content for accuracy, spelling, and grammar	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
b. Review site for broken links	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
c. Test the functionality of the web site as defined by the project specifications	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
d. Validate the HTML and CSS coding	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
e. Check the accessibility using automated tools	n/a
f. Test site on various browsers that the target audience uses	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
g. Analyze the connection speed and size of web pages	n/a
h. Conduct usability testing with target audience	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)
i. Work with the server administrator to conduct load testing	n/a
j. Conduct authentication testing and review file authorizations	n/a
As a class, develop a quality assurance plan that incorporates the above testing procedures, as well as outlines how the testing will be managed, how the issues will be prioritized, and how problems will be solved.	Chapter 14, Lesson 3 / Activity 3 (Evaluation and Feedback)

From SECTION I(3) of the "Web Design Screening Instrument1-9-15": POSTSECONDARY AND CAREER READINESS	CITATION(S)
A. Technical skills are promoted within the context of applicable industries and work environments. They are not presented in isolation or without meaningful connections to aligned careers.	Chapters 14 and 28 (group projects) Supplemental Lesson 4 / Activity 4 (Project Management / Your Client Docs) Supplemental Lesson 8 / Activity 8 (Web Development Roles / Exploring Web Design Careers)
B. Materials showcase a diversity of career and postsecondary opportunities for students upon completion of high school, including all applicable levels of postsecondary training (i.e., technical schools, community colleges, four-year universities, etc.).	Supplemental Lesson 8 / Activity 8 (Web Development Roles / Exploring Web Design Careers)
C. Connections to relevant certifications and other credentials are clearly explained, and their value in industry is communicated where appropriate.	Supplemental Lesson 8 / Activity 8 (Web Development Roles / Exploring Web Design Careers)
D. Materials provide opportunities for students to practice and reflect upon 21st century (or "soft") skills.	Chapters 14 and 28 (group projects) Supplemental Lesson 4 / Activity 4 (Project Management / Your Client Docs) Supplemental Lesson 8 / Activity 8 (Web Development Roles / Exploring Web Design Careers)