TN Department of Education | College, Career and Technical Education

May 2023

Web Site Development

Primary Career Cluster:	Information Technology (IT)
Course Contact:	CTE.Standards@tn.gov
Course Code(s):	C10H17
Prerequisite(s):	*Web Design Foundations* (C10H16)
Credit:	1
Grade Level:	11-12
Focus Elective Graduation Requirement:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other IT courses.
Program of Study (POS) Concentrator:	This course satisfies one out of two required courses that meet the Perkins V concentrator definition, when taken in sequence in the approved program of study.
Programs of Study and Sequence:	This is the third course in the *Web Design* program of study.
Aligned Student Organization(s)	SkillsUSA: http://www.skillsusatn.org/ Technology Student Association (TSA): http://www.tntsa.org
Coordinating Work-Based Learning:	Teachers are encouraged to use embedded WBL activities such as informational interviewing, job shadowing, and career mentoring. For information, visit https://www.tn.gov/education/educators/career-and-technical-education/work-based-learning.html.
Promoted Student Industry Credentials:	Credentials are aligned with post-secondary and employment opportunities and with the competencies and skills that students acquire through their selected program of study. For a listing of promoted student industry credentials, visit https://www.tn.gov/content/tn/education/educators/career-and-technical-education/student-industry-certification.html.
Teacher Endorsement(s):	037, 041, 055, 056, 057, 070, 153, 157, 173, 203, 204, 230, 231, 232, 233, (042 and 043), (042 and 044), (042 and 045), (042 and 046), (042 and 047), (042 and 077), (042 and 078), (042 and 079), (043 and 044), (043 and 045), (043 and 046), (043 and 047), (043 and 077), (043 and 078), (043 and 079), (044 and 045), (044 and 046), (044 and 047), (044 and 077), (044 and 078), (044 and 079), (045 and 046), (045 and 047), (045 and 077), (045 and 078), (045 and 079), (046 and 047), (046 and 077), (046 and 078), (046 and 079), (046 and 047), (046 and 077), (047 and 079), (047 and 077), (047 and 078), (077 and 078), (077 and 079), (078 and 079), 311, 434, 435, 436, 470, 475, 476, 477, 516, 519, 582, 583, 595, 543, 711, 740, 953, 982
Required Teacher Certifications/Training:	All endorsements except for 173 will require either the Individuals teaching this course will require either the NOCTI test code 5934: Web Design certification **or** hold the CIW Web foundations Associate certification or CIW Site Development Associate certification.
Teacher Resources:	https://www.tn.gov/education/educators/career-and-technical-education/career-clusters/cte-cluster-information-technology.html Best for All Central: https://bestforall.tnedu.gov/

Course at a Glance

CTE courses provide students with an opportunity to develop specific academic, technical, and 21st century skills necessary to be successful in career and in life. In pursuit of ensuring every student in Tennessee achieves this level of success, we begin with rigorous course standards which feed into intentionally designed programs of study.

Students engage in industry relevant content through general education integration and experiences such as career and technical student organizations (CTSO) and work-based learning (WBL). Through these experiences, students are immersed with industry standard content and technology, solve industry-based problems, meaningfully interact with industry professionals, and use/produce industry specific, informational texts.

Using a Career and Technical Student Organization (CTSO) in Your Classroom

CTSOs are a great resource to put classroom learning into real-life experiences for your students through classroom, regional, state, and national competitions, and leadership opportunities. Below are CTSO connections for this course, note this is not an exhaustive list.

- Participate in CTSO Fall Leadership Conference to engage with peers by demonstrating logical thought processes and developing industry specific skills that involve teamwork and project management.
- Participate in contests that highlight job skill demonstration, interviewing skills, community service activities, extemporaneous speaking, and job interview.
- Participate in leadership activities such as Student2Student Mentoring, National Week of Service, Officer Training, and Community Action Project.

For more ideas and information, visit Tennessee SkillsUSA at http://www.skillsusatn.org/.

Using Work-Based Learning (WBL) in Your Classroom

Sustained and coordinated activities that relate to the course content are the key to successful work-based learning. Possible activities for this course include the following. This is not an exhaustive list.

- **Standards 1.1-2.1** | Invite an A/V worker to give a safety demonstration.
- **Standards 3.1-3.2** | Informational Interview with an industry partner
- **Standards 4.1** | Complete an integrated project with multiple interactions with professionals in the Arts, A/V Technology and Communications field.
- **Standards 5.1-5.6** | Participate in a student run enterprise with team involvement.
- **Standards 6.1-6.2** | Do a virtual portfolio exchange with an industry partner.
- **Standards 7.1-7.3 and 8.1-9.1** | Present final presentation to a potential industry employer.

For more ideas and information, visit https://www.tn.gov/education/educators/career-and-technical-education/work-based-learning.html.

Course Description

Web Site Development builds on the skills and knowledge gained in *Web Design Foundations* to further prepare students for success in the web design and development fields. Emphasis is placed on applying the design process toward projects of increasing sophistication, culminating in the production of a functional, static website. As students work toward this goal, they acquire key skills in coding, project management, basic troubleshooting and validation, and content development and analysis. Artifacts of the work completed in this course will be logged in a student portfolio demonstrating mastery of skills and knowledge. Upon completion of this course, proficient students will be prepared to pursue a variety of postsecondary programs in the computer sciences, sit for industry certification, or apply their skills in a capstone *Web Design Practicum*.

Course Standards

1. Safety

1.1 Safety Rules: 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.

1.2 Responsible Technology Use: Throughout the course, **practice safe habits and procedures when sharing and sending files, navigating websites, and connecting to servers and networks**. As a class, work collaboratively to develop a professionalism policy that outlines rules regarding responsible technology use in the classroom. The policy must adhere to all school and district technology policies.

1.3 Safe Use and Transfer of Data: Determine **how companies, organizations, and individuals keep their data secure from theft and identity fraud**. Summarize and produce a list of best practices from industry magazines and professional organizations such as the World Wide Web Consortium (W3C). Identify steps for safe use and transfer of data that can applied in the Web Design classroom.

2. Career Exploration

2.1 Career Growth: Investigate **opportunities for personal and professional growth in the web design and computer science fields**, including but not limited to opportunities to enter design contests, assist with the maintenance or development of the school's website, and participate in initiatives such as the national Hour of Code. In addition, explore postsecondary programs in the computer sciences, such as web design and development, animation and graphics, or website administration, and document the search in the course portfolio.

3. The Design Process

3.1 Website Evaluation: **Select a website whose content is appropriate** and adheres to the course policy, as approved by the instructor. **Critically evaluate the site on the merits of**

its design features, applying knowledge and skills related to webpage composition (learned in *Web Design Foundations*) to critique the following:

a. navigational hierarchy;
b. balance;
c. color unity;
d. typography, formatting, and other aspects of text layout and style;
e. compatibility across multiple browsers and devices; and
f. flow and arrangement of content.

Develop a presentation, written paper, or blog post analyzing these elements, supported by screen shots of the website and other specific evidence drawn from the site. Be able to answer the question, "What makes this website compelling, attractive, and functional?"

3.2 Design Process: Synthesize the s**teps of the web design process learned in previous courses with research into emerging or alternative design models**. In groups, produce a sophisticated flowchart, diagram, or other logic model that will serve as a template to guide the development of all projects and activities undertaken in this course. Annotate the model with the inputs, constraints, activities, and target outcomes involved in a given project; demonstrate where inputs flow from one stage of a project to the next.

4. Project Management

4.1 Project Management Tools: Research **how web development teams use project management tools to divide roles and responsibilities among team members, track progress toward goals, and satisfy client specifications**. Explore a variety of such tools and develop systems for applying selected tools to projects and assignments in this course. For example, download a Gantt chart template for a spreadsheet software application and use it to assign tasks and monitor deliverables working toward a given deadline.

5. Coding Skills

5.1 Technical Fluency: Demonstrate **technical fluency in a variety of programming and markup languages**, including but not limited to HTML, XML, CSS, JavaScript, JQuery, PHP, and/or SQL. Describe the particular functions and environments in which each language operates, detailing the benefits, limitations, and unique features of each. Justify when one programming language would be ideal for a given project or design solution, developing the recommendation with specific evidence and reasoning.

5.2 Webpage Elements: **Correctly apply tags, embed links, manipulate space, customize attributes, and incorporate style elements related to typography, margins, and spanning and padding**. Demonstrate the ability to code web page elements such as tables and forms according to the specifications of the client.

5.3 Measurement Units in Website Development: **Distinguish between different units and measurement systems used in website development**. Be able to accurately define terms such as size, aspect ratio, percentage units, and pixels as they relate to specific style commands (i.e., in a cascading style sheet). Given a set of design constraints or client specifications, accurately apply and modify the appropriate units when writing and editing code for objects/text in a programming environment.

5.4 Revision Skills: Throughout the course, **apply, edit, and continually revise code using software approved by the instructor**, ranging from proprietary software such as Dreamweaver to simple applications like Microsoft Notepad. Practice teamwork and revision skills by: 1) critiquing the work of peers; and 2) furnishing recommendations for resolving errors in syntax and improving elements of design. Annotate recommendations in the programming environment to facilitate peer review.

5.5 Graphics and Multimedia Editing: Create and **edit graphics and other multimedia for web pages**, evaluating and **customizing their attributes according to client/instructor specifications**. For example, write code for a scalable vector graphic (SVG) with a predetermined height, width, shape, and color, using appropriate units in order to maximize visibility and continuity of design.

5.6 Plug-Ins: Summarize the **functions of plug-ins for content management systems as well as static websites**. Describe a range of plug-ins and justify when they are needed for a specific application. Demonstrate the ability to download and install plug-ins for selected assignments in support of a specified design goal.

6. Basic Troubleshooting and Validation

6.1 Troubleshooting Strategies: Apply **basic troubleshooting strategies to resolve errors in syntax, fix broken links, edit distorted images, and align website content for seamless navigation**. As part of a course assignment or project, practice troubleshooting techniques to meet the vision or specifications of a mock client. For example, pretend a client complains that the alpha version of his/her website has rendered the dimensions of an interactive form too small for customers to read. Accurately diagnose the problem, then make adjustments to the code to resolve the issue to the client's satisfaction.

6.2 Code Validation: Research **methods of performing code validation on a completed or in-progress web page**. Validate code for compatibility across browsers and devices. Explain the results of the validation test to the class in the form of a brief presentation as would a team of developers.

7. Content Development and Analysis

7.1 Branding Strategies: Conduct a **preliminary investigation of various branding strategies** (i.e., social media marketing, web advertising, etc.) **used by companies that sell their products and services online**. Evaluate selected companies' websites to determine how such strategies are deployed throughout the sites. Describe how one or more of these strategies could be incorporated into a future website for this or another course.

7.2 Web Analysis: **Define web analytics**, and discuss the increasingly **sophisticated role that analytics play in the marketing and management of content for websites**. Interpret simple analytics in the dashboard interface of a content management system such as WordPress. Use quantitative reasoning and appropriate terminology to describe trends, analyze performance, and explain to peers how a website's "reach" can be determined with analytics.

7.3 Writing Web Content: Build on the work of previous Web Design courses and **practice writing original web content for a particular audience.** Adhere to client specifications regarding tone, length, and style of language, writing in a manner appropriate for the target audience. Regularly edit writing and solicit peer feedback for continuity of message and language. Collaboratively work to refine writing to be suitable for web publication.

8. Web Hosting and Publishing

8.1 Website Set-Up: Model the **process for setting up a website. Investigate domain name availability, register with a hosting service, and download a File Transfer Protocol (FTP) program.** As part of a course assignment or project, demonstrate the ability to upload and organize files onto a server and arrange content to map out a simple multi-page website. Maintain accurate and navigable directories for retrieving and storing files. Incorporate original writing content onto the site, and publish content online for the instructor or class to see on a standard Internet browser.

9. Trends in Web Design and Development

9.1 Emerging Trends: Explore a range of **new and emerging trends in web design and development**. A trend could be a new software, strategy, programming language, or phenomenon that has seen rising or widespread usage on the Internet in recent years. Examples include the movement toward responsive design to expand website compatibility; the increasing use of HTML5; or the embedding of social media within websites for the purposes of sharing content or crowdsourcing a product idea. Research one or more of these trends in depth, and compile a presentation or a paper explaining both the technical aspects involved (i.e., how it works on a web page) and the practical applications it has for customers, webmasters, businesses, or other users.

Standards Alignment Notes

*References to other standards include:

- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.