Georgia CTAE

Web Development (11.42500) (2021)

Adopted 2021

Demonstrate employability skills required by business and industry. IT-WDEV-1

1. **Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.** IT-WDEV-1.1
2. **Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.** IT-WDEV-1.2
3. **Exhibit critical thinking and problem-solving skills to locate, analyze and apply information in career planning and employment situations.** IT-WDEV-1.3
4. **Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.** IT-WDEV-1.4
5. **Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team-work skills.** IT-WDEV-1.5
6. **Present a professional image through appearance, behavior, and language.** IT-WDEV-1.6

Develop a web page using Hypertext Markup Language (HTML) and Cascading Style Sheet (CSS). IT-WDEV-2

1. **Explore the historical significance and progression of web design/development languages (e.g., HTML, CSS, HTML5, and JavaScript).** IT-WDEV-2.1
2. **Distinguish between CSS and HTML.** IT-WDEV-2.2
3. **Demonstrate knowledge of HTML5 elements.** IT-WDEV-2.3
4. **Build a website using tags rather than tables.** IT-WDEV-2.4
5. **Evaluate various HTML and CSS frameworks (e.g., HTML5 boilerplate, Bootstrap, Foundation or others).** IT-WDEV-2.5
6. **Analyze pros and cons of using a HTML and CSS frameworks.** IT-WDEV-2.6
7. **Demonstrate the difference between a class versus ID.** IT-WDEV-2.7
8. **Apply selector, property, and value using HTML5.** IT-WDEV-2.8

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	9. **Investigate the pros and cons of using inline styles.** IT-WDEV-2.9
	10. **Compare the pros and cons of pixels versus em.** IT-WDEV-2.10
	11. **Differentiate between margin and padding.** IT-WDEV-2.11
	12. **Apply appropriate positioning to items on a web page.** IT-WDEV-2.12
	13. **Evaluate compatibility issues for browsers/browser versions and demonstrate ways to overcome those issues.** IT-WDEV-2.13
Apply concepts of JavaScript to web page development. IT-WDEV-3	1. **Understand scripting in JavaScript and how it applies to web page development.** IT-WDEV-3.1
	2. **Demonstrate how JavaScript can enhance a project.** IT-WDEV-3.2
	3. **Compare the pros and cons of using various JavaScript libraries (e.g., jQuery, Prototype, MooTools).** IT-WDEV-3.3
	4. **Distinguish between variables and functions in writing JavaScript.** IT-WDEV-3.4
	5. **Explore different causes of JavaScript security, including Cross site scripting (XSS) and the problems with using eval( ).** IT-WDEV-3.5
	6. **Create code from design mockup.** IT-WDEV-3.6
Create a single functional webpage based on a design mockup and user requirements, perhaps a résumé (Client-Side Languages). IT-WDEV-4	1. **Generate HTML that incorporates major formatting tags as well as mixed media assets.** IT-WDEV-4.1
	2. **Utilize CSS to achieve different visual looks for a webpage without modifying the underlying html.** IT-WDEV-4.2
	3. **Build a styled HTML page implementing a form that incorporates JavaScript checking and interacts with the data provided.** IT-WDEV-4.3
	4. **Implement a third-party JavaScript tool and explain how it works and what it does.** IT-WDEV-4.4
	5. **Write code that is compatible across a given set of web browsers and versions (most notably Internet Explorer (IE), Chrome, Firefox, and Safari).** IT-WDEV-4.5
	6. **Demonstrate ability to apply security principles to HTML and JavaScript.** IT-WDEV-4.6
	7. **Evaluate the selection and use of software libraries in building client facing portions of the webpage (e.g., HTML5 Boilerplate, Bootstrap, Foundation, jQuery, Angular).** IT-WDEV-4.7

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Explain the components needed to develop a dynamic website (Web Development Stack). IT-WDEV-5	1. **Explain the role of the web server in the development stack.** IT-WDEV-5.1 2. **Explain the role of the database in the development stack.** IT-WDEV-5.2 3. **Explain the role of the server-side language in the development stack.** IT-WDEV-5.3 4. **Debate the appropriate web stack for a given problem set.** IT-WDEV-5.4 5. **Demonstrate security mitigation techniques that can be addressed at each level of the development stack.** IT-WDEV-5.5
Use a server-side language to build a multi-page website incorporating a web form, at least two templates with shared portions, and data-driven home page (Server Side Languages). IT-WDEV-6	1. **Explore the history of common server-side languages (e.g., Ruby On Rails, PHP or others).** IT-WDEV-6.1 2. **Explain the differences in server-side languages in terms of syntax and function.** IT-WDEV-6.2 3. **Debate the merits and use of software design patterns as it relates to a dynamic web site.** IT-WDEV-6.3 4. **Build a server script demonstrating language control structures and mathematical computations.** IT-WDEV-6.4 5. **Build a script demonstrating data storage using cookies, sessions, a database, and file storage.** IT-WDEV-6.5 6. **Write code to perform a file upload and validate the uploaded file against given business rules. Upload to online career portfolio.** IT-WDEV-6.6 7. **Incorporate a third-party library into a script and explain what it does and how it works.** IT-WDEV-6.7 8. **Explain how a third-party library was chosen if multiple libraries with the same purpose are available.** IT-WDEV-6.8 9. **Install and configure a Content Management Systems (CMS).** IT-WDEV-6.9 10. **Demonstrate ability to apply security principles to server-side code as it relates to data storage and display.** IT-WDEV-6.10 11. **Explain at least one website attack vector and how to mitigate the risk of that attack.** IT-WDEV-6.11
Utilize on-page Search Engine Optimization (SEO) throughout a we	1. **Apply responsive design and development.** IT-WDEV-7.1 2. **Understand search engine crawlers, such as Google, Bing, Yahoo!, and Baidu, in regard to crawling, indexing and ranking of webpages.** IT-WDEV-7.2

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	3. **Master and apply effective use of meta-tags in HTML head of each webpage of a site (title tag, description tag, and keywords tag) and the URL file name. Upload to online career portfolio.** IT-WDEV-7.3
	4. **Understand image optimization of .jpeg, .gif and .png (compressing, <img> html tag).** IT-WDEV-7.4
	5. **Plan and employ an internal link strategy of a site.** IT-WDEV-7.5
	6. **Research search engine algorithms, how frequently they are updated, and how they impact a site's ranking.** IT-WDEV-7.6
	7. **Comprehend and apply best practice techniques for keywords and keywords research.** IT-WDEV-7.7
	8. **Apply semantic markup to every page of a site (effectively using H1, H2, H3, paragraph, and list tags).** IT-WDEV-7.8
	9. **Demonstrate how semantic markup impacts a site's architecture, web coding, usability, and display flexibility.** IT-WDEV-7.9
	10. **Examine basic SEO tools such as Google Search Console (formerly Google Webmaster Tools) Bing Webmaster Tools, and Google Analytics.** IT-WDEV-7.10
Apply concepts involved in the software development life cycle (SDLC) as it pertains to web development. IT-WDEV-8	1. **Explain the different steps of SDLC (Plan, Analyze, Design, Develop, and Implement Maintain).** IT-WDEV-8.1
	2. **Research and describe the different types of collaboration platforms used in web development (e.g., GITHub, Apache Subversion (SVN) or others).** IT-WDEV-8.2
Ensure websites meet all special considerations and are in compliance with industry and government regulations. IT-WDEV-9	1. **Explain what encryption (https) is and under what circumstances it would be appropriate to implement on a website.** IT-WDEV-9.1
	2. **Research and explain a specialized web compliance practice based on a governmental or industry guideline - Payment Card Industry (PCI), Section 508, American Disability Act (ADA), etc.** IT-WDEV-9.2
	3. **Explain how security could differ between an application on the internet vs. an intranet.** IT-WDEV-9.3
	4. **Determine the fault involved in a data breach and research types of protections pertinent for a particular website.** IT-WDEV-9.4
	5. **Explore principles of e-commerce as they apply to web development, mobile devices, banking, and government regulations.** IT-WDEV-9.5

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Organize personal online career portfolio for specific career interests. IT-WDEV-10	1. **Review and update résumé to reflect new knowledge and skills master and additional work experience.** IT-WDEV-10.1 2. **Organize folders within the portfolio to reflect specific careers of interest, including résumé, targeted cover letter, and artifacts relevant to the specific career.** IT-WDEV-10.2 3. **Update all current items in the portfolio.** IT-WDEV-10.3 4. **Identify and upload additional industry-appropriate artifacts reflective of mastered skills throughout this course. Write and include a reflective entry for each artifact discussing steps taken, problems encountered and how they were overcome, and other pertinent information about the learning.** IT-WDEV-10.4 5. **Polish all entries in the online career portfolio to ensure accuracy and professionalism as expected from employers.** IT-WDEV-10.5 6. **Conduct a job search and share the appropriate folder with the potential employer.** IT-WDEV-10.6
Explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events. IT-WDEV-11	1. **Explain the goals, mission, and objectives of Future Business Leaders of America (FBLA) and/or Technology Student Association (TSA) and/or SkillsUSA.** IT-WDEV-11.1 2. **Explore the impact and opportunities a student organization (FBLA, TSA, SkillsUSA) can develop to bring business and education together in a positive working relationship through innovative leadership and career development programs.** IT-WDEV-11.2 3. **Explore the local, state, and national opportunities available to students through participation in related student organizations (FBLA, TSA, SkillsUSA) including but not limited to conferences, competitions, community service, philanthropy, and other student organization activities.** IT-WDEV-11.3 4. **Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.** IT-WDEV-11.4 5. **Explore the competitive events related to the content of this course and the required competencies, skills, and knowledge for each related event for individual, team, and chapter competitions.** IT-WDEV-11.5