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**ARIZONA CTE CAREER PREPARATION STANDARDS & MEASUREMENT CRITERIA**

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<b>WEB PAGE DEVELOPMENT, 15.1200.50</b>	
<b>1.0</b>	<b>UTILIZE PROCESS MANAGEMENT CONCEPTS</b>
1.1	Identify the target audience(s)
1.2	Establish objectives and outcomes
1.3	Develop concept diagrams (e.g., mind map, flowchart, site map, timeline)
1.4	Develop requirements documents (e.g., usability requirements, technical requirements, environmental requirements, support requirements) and solution specifications
<b>2.0</b>	<b>MAINTAIN A SAFE GREEN INFORMATION TECHNOLOGY WORK ENVIRONMENT</b>
2.1	Identify OSHA guidelines for proper use and application of equipment and tools and for electrical safety measures
2.2	Determine safe working practices and preventive measures common in the IT environment (e.g., ergonomics and repetitive strain injuries, electrical hazards, good housekeeping to prevent buildup of dust)
2.3	Identify methods for minimizing environmental effects and maximizing cost savings in the computer environment (e.g., proper disposal of computer/networking components, buying refurbished products, reducing power consumption in the computer environment)
<b>3.0</b>	<b>EXAMINE LEGAL AND ETHICAL ISSUES RELATED TO INFORMATION TECHNOLOGY</b>
3.1	Identify issues regarding intellectual property rights including software licensing and software duplication (e.g., Digital Millennium Copyright Act [DMCA], plagiarism)
3.2	Compare and contrast the difference between open source and proprietary systems in relation to legal and ethical issues
3.3	Identify issues and trends affecting computers, other devices, the Internet, and information privacy
3.4	Differentiate between ethical and legal uses of information technology (e.g., data pricing, use of public and private networks, social networking, industry-related data, and data piracy)
<b>4.0</b>	<b>PERFORM BASIC COMPUTER MATHEMATICS IN INFORMATION TECHNOLOGY</b>
4.1	Apply basic mathematics to hardware, including terminology (e.g., bits, bytes, kilobytes, megabytes, gigabytes, terabytes)
4.2	Use binary to decimal, decimal to hexadecimal, hexadecimal to decimal, binary to hexadecimal, and binary to hexadecimal conversions to solve hardware and software problems

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<b>5.0</b>	<b>INVESTIGATE THE DEVELOPMENT/EVOLUTION OF THE INTERNET</b>
5.1	Identify the components and functions of the Internet (e.g., HTTP, HTTPS, FTP, IP addresses, IMAP)
5.2	Examine how the Internet evolved and its impact on the world
5.3	Explain cloud-based computing and content delivery networks
<b>6.0</b>	<b>APPLY BASIC SEARCH ENGINE OPTIMIZATION</b>
6.1	Apply indexing to a site for a search (e.g., Google Webmaster Tools, Bing Webmaster Tools)
6.2	Differentiate between Internet and intranet search engines
6.3	Compare and contrast spider-based search engines, directories, and RSS aggregators
6.4	Explain metasearch engines
6.5	Demonstrate how to conduct a Boolean search to obtain desired results
6.6	Describe strengths and limitations of search engines
6.7	Use SEO best practices for structuring and optimizing URLs
<b>7.0</b>	<b>DELINEATE THE KEY COMPONENTS OF A WEB-SERVED PLATFORM</b>
7.1	Identify the hardware and software components of a web server
7.2	Identify services run by web servers [e.g., scripting languages (client- and server-side scripting), databases, media]
7.3	Identify performance issues (e.g., bandwidth, Internet connection types, pages slowly loading, resolution and size graphics)
7.4	Differentiate among shared hosting, dedicated server, and virtual private server (VPS)
<b>8.0</b>	<b>APPLY CLIENT-SIDE INTERNET SOFTWARE</b>
8.1	Use web-based file transfer software
8.2	Identify key components and functions of Internet browsers, including specialty browsers
8.3	Identify the proper configuration for client email including client setup parameters (username and password), protocols and port numbers, and security issues
8.4	Use client collaboration sources/platforms (e.g., GitHub, Google Drive, Dropbox, jsfiddle)
8.5	Analyze remote computing tools and services and explain their proper application

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<b>9.0</b>	<b>ADMINISTER INTERNET AND INTRANET SITES</b>
9.1	Configure permissions to be assigned to Internet and intranet deployment, including restrictive firewall settings
9.2	Explain the steps necessary to post content to a server, including authentication information, the server host or IP address, and the destination directory
<b>10.0</b>	<b>DEVELOP HTML WEBPAGES USING HTML EDITORS</b>
10.1	Apply W3C standards and style conventions
10.2	Differentiate among different versions of HTML in order to meet specific needs and correct display
10.3	Demonstrate appropriate HTML coding including elements, attributes, values, and syntax.
<b>11.0</b>	<b>DEVELOP HTML WEBPAGES USING CASCADING STYLE SHEETS</b>
11.1	Identify CSS properties, classes, and IDs
11.2	Employ CSS to create a grid-based layout using div tags and CSS rather than tables
11.3	Identify how the use of properties changes the functionality and appearance of various elements
11.4	Demonstrate how to validate CSS code
11.5	Explain the concept of responsive web design
11.6	Demonstrate the use of media queries for responsive web design
11.7	Differentiate the purpose and function of embedded, inline, and external scripts
<b>12.0</b>	<b>APPLY CLIENT-SIDE SCRIPTING LANGUAGES</b>
12.1	Explain the purposes of client-side programming language
12.2	Identify client-side scripting applications (e.g., JavaScript and XML)
12.3	Explain how to control DOM using client-side scripting
12.4	Demonstrate how to use JavaScript libraries and frameworks (e.g., jQuery, AngularJS, Node.js)
12.5	Create event triggers using JavaScript (e.g., onclick and onmouseover)
12.6	Explain package managers for JavaScript (e.g., npm, bower, volo)
12.7	Demonstrate the proper way to write an embedded, inline, and external script

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<b>13.0</b>	<b>UTILIZE SERVER-SIDE PROGRAMMING</b>
13.1	Explain the purpose of server-side programming language such as PHP, RUBY, and ASP.net to create dynamic web pages
13.2	Compare and contrast static and dynamic web pages
13.3	Develop a dynamic web page
13.4	Demonstrate the proper use of SQL to extract data from a database
13.5	Configure LAMP servers
<b>14.0</b>	<b>UTILIZE MULTIMEDIA EXTENSIONS, PLUGINS, AND IMAGES AND MULTIMEDIA FORMATS</b>
14.1	Demonstrate proper HTML5 video formats (e.g., webm, .ogv, .mp4, h.264) to play video files on a web page
14.2	Demonstrate how to organize and store image file formats (e.g., .gif, .jpeg, .png) for the web
<b>15.0</b>	<b>OUTLINE THE CORE COMPONENTS OF THE INTERNET INFRASTRUCTURE</b>
15.1	Identify problems with Internet connectivity from source to destination for various servers (e.g., e-mail, web, FTP, caching, DNS)
15.2	Identify and use Internet domain names and DNS
15.3	Describe the use of protocols and services associated with various servers (e.g., SSL, e-commerce, streaming media protocols)
15.4	Construct web pages that are compliant with ADA and sections 504 and 508 standards
<b>16.0</b>	<b>APPLY PAGE LAYOUT PRINCIPLES IN THE DESIGN OF PAGES</b>
16.1	Apply the principles of navigation design
16.2	Apply the principles of design functionality
16.3	Apply the principle of usability in design (user experience)
<b>17.0</b>	<b>EXAMINE SECURITY ISSUES RELATED TO INFORMATION TECHNOLOGY</b>
17.1	Explain procedures and concepts used to maintain data integrity and security (e.g., access control, authentication, encryption, secure socket layers, access security tools, auditing, and secure electronic transactions via log in after access control)
17.2	Describe security issues related to the network, computer hardware, software, and data
17.3	Identify computer threats and methods to protect a computer (e.g., viruses, phishing, e-mail, social engineering, spoofing, identify theft, spamming)

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17.4	Explain concepts such as denial of service, hacking/cracking, intrusion, detection, and prevention (e.g., two-step authentication, biometrics, CAPTCHAs)
17.5	Describe browser configurations for security and privacy
<b>18.0</b>	<b>INVESTIGATE E-COMMERCE IN THE GLOBAL ECONOMY</b>
18.1	Compare and contrast various online business models (e.g., drop shipping, CRM, affiliate marketing, biomedical patient data)
18.2	Identify key factors, such as geographic location and public relations, as they relate to launching e-commerce initiatives and strategic marketing
18.3	Identify key factors, such as intellectual property rights, privacy and jurisdiction, relating to legal and regulatory considerations when planning online store solutions
18.4	Identify different payment processors available in the market
<b>19.0</b>	<b>CREATE WEB PROMOTION STRATEGIES</b>
19.1	Explain the need for understanding a target audience in order to create appropriate marketing strategies for a successful website
19.2	Identify web promotional strategies (e.g., SEO, PPC, content marketing, social media marketing, banners, display ads, inbound marketing)
19.3	Determine the impact of web marketing strategies on website traffic through the use of analytics