

Standards/Measurement Criteria

(**Draft)

Information Technology Web Page Development - Option D

CIP No. 15.1200

This program is designed as a state-recognized sequence of courses. *Standards 1-13 are to be taught as an introduction within the Information Technology program.

****Please note: The following CTE program Standards/Measurement Criteria are tentative until assessments are established.**

***1.0 CONDUCT A CAREER SURVEY FOR INFORMATION TECHNOLOGY**

- 1.1 Use technology to research information technology career path information
- 1.2 Identify interests, skills and abilities contributing to success in careers in the information technology fields
- 1.3 Relate interests, skills and abilities to successful employment
- 1.4 Identify educational requirements for an occupation in the information technology field
- 1.5 Explain how personal choices affect career plans
- 1.6 Identify job roles in the information technology industry including responsibilities, tasks and skills required

***2.0 EXPLORE JOB SEARCH STRATEGIES**

- 2.1 Explain steps in a job search strategy
- 2.2 Research employment opportunities

***3.0 DEVELOP APPROPRIATE WORK HABITS FOR SUCCESSFUL EMPLOYMENT IN INFORMATION TECHNOLOGY**

- 3.1 Discuss the importance of regular attendance and punctual arrival
- 3.2 Exhibit appropriate dress and hygiene
- 3.3 Complete tasks accurately
- 3.4 Complete tasks with minimal supervision

***4.0 DEVELOP EMPLOYABILITY SKILLS FOR THE INFORMATION TECHNOLOGY INDUSTRY**

- 4.1 Identify math and language skills required in an information technology workplace
- 4.2 Practice critical thinking skills required in information technology occupations
- 4.3 Practice decision making for an information technology environment using facts, logic and reasoning
- 4.4 Identify the steps to follow in troubleshooting a problem within information technology
- 4.5 Identify behaviors exhibited by individuals when they work in a team environment

***5.0 EXPLORE COMMUNICATION SKILLS IN AN INFORMATION TECHNOLOGY ENVIRONMENT**

- 5.1 Discuss the importance of listening skills
- 5.2 Describe the effects of good and poor communication in an information technology setting
- 5.3 Give suggestions and/or ideas in an appropriate manner
- 5.4 Give and receive constructive feedback
- 5.5 Demonstrate appropriate e-mail etiquette for the information technology workplace

***6.0 PARTICIPATE IN LEADERSHIP ACTIVITIES SUCH AS THOSE SUPPORTED BY FUTURE BUSINESS LEADERS OF AMERICA (FBLA) OR SkillsUSA**

- 6.1 Determine the roles and responsibilities that leaders and members bring to an organization
- 6.2 Evaluate characteristics of effective teams
- 6.3 Evaluate characteristics of an effective team player
- 6.4 Practice techniques to involve each member of the team
- 6.5 Demonstrate teamwork
- 6.6 Practice effective meeting management
- 6.7 Demonstrate business etiquette
- 6.8 Practice the decision-making process

***7.0 UNDERSTAND PROBLEM SOLVING AND CRITICAL THINKING SKILLS APPLICABLE TO INFORMATION TECHNOLOGY**

- 7.1 Describe methods of establishing priorities
- 7.2 Prepare a plan of work and schedule for information technology tasks
- 7.3 Apply problem-solving processes
- 7.4 Identify common project management concepts, e.g. project management triangle, goals, Gantt charts, limitations

***8.0 MAINTAIN A SAFE INFORMATION TECHNOLOGY WORK ENVIRONMENT**

- 8.1 Demonstrate personal responsibility for developing and maintaining a safe and healthy information technology work environment
- 8.2 Safely use the tools, materials and equipment commonly utilized in the field of information technology
- 8.3 Identify ergonomics and repetitive strain injuries commonly experienced in information technology occupations
- 8.4 Determine safe working practices to avoid or eliminate electrical hazards

***9.0 UTILIZE TECHNOLOGY REQUIRED IN AN INFORMATION TECHNOLOGY WORKPLACE**

- 9.1 Differentiate between analog and digital communication tools
- 9.2 Demonstrate basic usage of computers such as input, storage, and output
- 9.3 Demonstrate knowledge and understanding of basic Input/Output devices such as keyboards, video monitors, scanners, printers and other peripherals devices
- 9.4 Use industry-standard software applications for word processing, database, spreadsheet and presentation documents
- 9.5 Apply folder and directory management techniques
- 9.6 Study the interrelationship between host computer, local area network (LAN), wide area network (WAN) and Internet Service Provider (ISP)
- 9.7 Demonstrate a basic understanding of information technology as it relates to computer maintenance, networking technology, software development and web page development
- 9.8 Understand convergence concepts
- 9.9 Identify the function of VoIP

***10.0 RECOGNIZE SECURITY ISSUES RELATED TO INFORMATION TECHNOLOGY**

- 10.1 Explain procedures to maintain data integrity and security
- 10.2 Identify security issues related to computer hardware, software and data
- 10.3 Describe computer viruses and methods to protect a computer from viruses
- 10.4 Define concepts such as phishing, viruses, email attachments, social engineering, spoofing, identify theft and spamming
- 10.5 Explain concepts such as denial of service, hacking/cracking, intrusion and intellectual property

***11.0 EXPLORE INFORMATION TECHNOLOGY INDUSTRY RELATED ECONOMIC PRINCIPLES**

- 11.1 Describe methods an information technology organization can use to effectively manage its economic resources
- 11.2 Describe the roles of support staff, supervisors, managers and technology in achieving goals in an information technology business
- 11.3 Explain the effects of information technology in an economy
- 11.4 Compare various forms of business ownership including sole proprietorship, partnership, corporation and franchise
- 11.5 Describe how global competition affects United States information technology operations
- 11.6 Explore the impact of information technology on business and industry

***12.0 EXPLORE LEGAL AND ETHICAL ISSUES RELATED TO INFORMATION TECHNOLOGY**

- 12.1 Explore issues regarding intellectual property rights including copyright, software licensing and software duplication
- 12.2 Identify issues and trends affecting computers and information privacy
- 12.3 Differentiate between ethical and unethical uses of information technology
- 12.4 Examine the relationship between ethics and the law in relation to information technology
- 12.5 Identify workers' rights regarding workplace issues including safety, drug testing, harassment, discrimination, privacy, etc.

***13.0 EXPLORE THE THEORY AND PRACTICES OF INFORMATION TECHNOLOGY**

- 13.1 Identify the essential properties of information systems
- 13.2 Summarize application planning, development and risk management for an information system
- 13.3 Discuss future trends in information technology

14.0 DEVELOP AN INDIVIDUAL CAREER PLAN FOR THE INFORMATION TECHNOLOGY INDUSTRY

- 14.1 Investigate career options
- 14.2 Develop career goals based on interests, aptitudes and research
- 14.3 Review and revise plans/goals on an annual basis
- 14.4 Manage personal and career goals
- 14.5 Describe factors that contribute to job satisfaction and success

15.0 PREPARE FOR EMPLOYMENT IN INFORMATION TECHNOLOGY

- 15.1 Develop a résumé
- 15.2 Create an e-résumé
- 15.3 Research a company as a potential employer
- 15.4 Complete the job application process
- 15.5 Demonstrate interviewing skills including pre-interview preparation and post-interview follow-up

16.0 PARTICIPATE IN INFORMATION TECHNOLOGY WORK-BASED LEARNING EXPERIENCES

- 16.1 Use technology appropriate for a job in information technology
- 16.2 Demonstrate positive work behaviors
- 16.3 Demonstrate positive interpersonal behaviors
- 16.4 Demonstrate safe and healthy work behaviors
- 16.5 Adapt to changes in the workplace

17.0 DEMONSTRATE ORAL COMMUNICATIONS SKILLS APPLICABLE TO AN INFORMATION TECHNOLOGY ENVIRONMENT

- 17.1 Conduct formal and informal research to collect appropriate topical information
- 17.2 Use questioning techniques to obtain needed information from audience
- 17.3 Interpret oral and nonverbal communications of audience
- 17.4 Demonstrate active listening during communications
- 17.5 Demonstrate appropriate technologies for a formal presentation
- 17.6 Prepare and deliver presentations
- 17.7 Deliver presentation incorporating the appropriate verbal and nonverbal communication techniques
- 17.8 Communicate using equitable and culturally sensitive language for a diverse audience

18.0 DEMONSTRATE WRITTEN COMMUNICATIONS SKILLS APPLICABLE TO AN INFORMATION TECHNOLOGY ENVIRONMENT

- 18.1 Conduct formal and informal research to collect appropriate topical information
- 18.2 Organize information and develop an outline
- 18.3 Write business communication using appropriate format for the situation
- 18.4 Using appropriate technology, prepare draft documents using established rules for grammar, spelling and sentence construction
- 18.5 Create written and presentation documents in electronic format

19.0 EVALUATE THE ECONOMIC ROLE OF THE INFORMATION TECHNOLOGY INDUSTRY

- 19.1 Evaluate the role of information technology on local, state, national and international economies
- 19.2 Compare and contrast the advantages and disadvantages of working as an independent contractor, owning a small business or employment in a corporation
- 19.3 Analyze the relationship of customer service and customer satisfaction on the success of a business

20.0 DEMONSTRATE BUSINESS AND FINANCIAL MANAGEMENT PRACTICES NEEDED FOR AN INDEPENDENT CONTRACTOR IN THE INFORMATION TECHNOLOGY INDUSTRY

- 20.1 Research and identify costs associated with supplying services in the information technology environment
- 20.2 Interpret financial information for decision making and planning
- 20.3 Monitor and adjust business operations based on financial performance

21.0 EVALUATE LEADERSHIP STYLES APPROPRIATE FOR THE INFORMATION TECHNOLOGY WORKPLACE

- 21.1 Determine personal characteristics of effective leaders
- 21.2 Compare and contrast leadership and management styles
- 21.3 Describe how cultural and ethnic differences affect leadership styles within a group
- 21.4 Describe how cultural and ethnic differences affect interpersonal interactions/communications within a group

22.0 DEMONSTRATE WORK ETHICS TO SUPPORT THE INFORMATION TECHNOLOGY INDUSTRY

- 22.1 Distinguish between one's values and goals
- 22.2 Evaluate how one's values and goals are displayed in one's work ethic
- 22.3 Explain how initiative and willingness to learn new information and skills impact interpersonal relationships in the workplace
- 22.4 Demonstrate dependable attendance, punctuality and adherence to work schedules and deadlines
- 22.5 Express feelings and ideas in an appropriate manner for the workplace
- 22.6 Demonstrate appropriate techniques and demeanor for accepting and giving feedback and evaluation in employer/employee interactions

23.0 EXAMINE BUSINESS ETHICS IN THE INFORMATION TECHNOLOGY INDUSTRY

- 23.1 Convey the rights and responsibilities of electronic communications usage to the end users
- 23.2 Comply with license agreements and copyright laws
- 23.3 Compare the rights of an organization with the rights of users of electronic communications

24.0 DEMONSTRATE THE COMPREHENSION OF BASIC COMPUTER MATHEMATICS REQUIRED FOR INFORMATION TECHNOLOGY

- 24.1 Explain the function of general mathematics as it relates to computer hardware
- 24.2 Perform binary to decimal, decimal to hexadecimal, hexadecimal to decimal, binary to hexadecimal and binary to hexadecimal conversions as needed to solve problems with hardware and software

25.0 DESCRIBE THE DEVELOPMENT/EVOLUTION OF THE COMPUTER

- 25.1 Describe a computer, its components and their functions
- 25.2 Explain the historical evolution of the computer and computer networks
- 25.3 Explain how the development of computers has impacted modern life

26.0 PARTICIPATE IN LEADERSHIP ACTIVITIES SUCH AS THOSE SUPPORTED BY FUTURE BUSINESS LEADERS OF AMERICA (FBLA) OR SkillsUSA

- 26.1 Determine the roles and responsibilities that leaders and members bring to an organization
- 26.2 Evaluate characteristics of effective teams
- 26.3 Evaluate characteristics of an effective team player
- 26.4 Practice techniques to involve each member of the team
- 26.5 Demonstrate teamwork
- 26.6 Practice effective meeting management
- 26.7 Demonstrate business etiquette
- 26.8 Practice decision-making process

27.D DETERMINE ISSUES THAT AFFECT INTERNET SITE FUNCTIONALITY

- 27.1d Evaluate performance issues including bandwidth, Internet connection types, pages taking too long to load and resolution and size of graphics
- 27.2d Identify and explain security issues including authentication, permissions and data
- 27.3d Describe and contrast various types of caching
- 27.4d Develop meaningful content to all areas of navigation

28.D UTILIZE DIFFERENT TYPES OF SEARCH INDEXES (STATIC INDEX/SITE MAP, KEYWORD INDEX, FULL TEXT INDEX)

- 28.1d Index a site for a search
- 28.2d Use Internet and Intranet search engines
- 28.3d Compare and contrast differences between search engines and directories
- 28.4d Explain Meta search engines
- 28.5d Explain Spider search engines
- 28.6d Form Boolean searches to obtain desired results

29.D OUTLINE THE INFRASTRUCTURE NEEDED TO SUPPORT AN INTERNET CLIENT

- 29.1d Demonstrate knowledge of client operating systems and web server platforms
- 29.2d Explain the importance of operating system TCP/IP stack configuration
- 29.3d Define the significance of network connections, web browsers, e-mail clients, hardware platforms, DHCP and client software configuration
- 29.4d Understand APIPA and its uses

30.D CONFIGURE WEB BROWSERS AND OTHER INTERNET/ INTRANET CLIENTS

- 30.1d Configure web browsers, FTP, Telnet, e-mail, All-in-one/universal , SSH, VPN and VNC clients
- 30.2d Identify and explain the most appropriate time to use web browsers, FTP, Telnet, e-mail , All-in-one/universal , SSH, VPN and VNC clients
- 30.3d Illustrate the correct use of the basic commands for web browsers, FTP, Telnet, e-mail, All-in-one/universal , SSH, VPN and VNC clients

31.D ADMINISTER INTERNET/INTRANET SITES

- 31.1d Reset passwords
- 31.2d Configure permissions
- 31.3d Post content to a server, providing authentication information, specifying the server host name or IP address and the destination directory

32.D DIFFERENTIATE BETWEEN POPULAR CLIENT-SIDE AND SERVERSIDE PROGRAMMING LANGUAGES AND TERMS

- 32.1d Explain when to use languages such as Java, JavaScript, XML, ASP, XSL, DTD, JSP, Perl, PHP
- 32.2d Indicate when the languages are executed
- 32.3d Explain API, CGI script, SQL, client-side scripting and server-side scripting

33.D CREATE HTML PAGES USING AN HTML EDITOR

- 33.1d Originate the code for simple tables, headings and forms
- 33.2d Explain the importance of compatibility between browsers
- 33.3d Explain the importance of creating cross-browser coding in HTML and XHTML
- 33.4d Create Cascading Style Sheets, Extensible Style Sheet Language, DHTML and XHTML code
- 33.5d Demonstrate knowledge of page layout principles in the design of pages
- 33.6d Code MetaTags properly
- 33.7d Explain essential differences between HTML 4.01 and XHTML standards

34.D IDENTIFY WHEN TO USE VARIOUS MULTIMEDIA EXTENSIONS, PLUGINS AND IMAGE AND MULTIMEDIA FORMATS

- 34.1d Demonstrate the appropriate use of Quick Time, Flash, Shockwave, RealPlayer and Windows Media Player in adding multimedia to a website
- 34.2d Demonstrate when to use image and file formats such as GIF, JPEG 1.0/2.0, PNG, PDF, TIFF, BMP, MOV and AVI

35.D IDENTIFY AND EXPLAIN COMMON FORMATS USED TO DELIVER CONTENT AND POPULAR TOOLS TO CONNECT A WEB SERVER TO A DATABASE

- 35.1d Explain the purpose and correct use of file formats such as XML and WML
- 35.2d Explain the purpose and correct use of tools such as PHP, Perl, ASP, ADBC and JDBC
- 35.3d Explain how Web-based technologies and convergence technologies are often combined

36.D OUTLINE THE CORE COMPONENTS OF THE INTERNET INFRASTRUCTURE

- 36.1d Identify problems with Internet connectivity from source to destination for various types of servers such as e-mail, web, FTP, news, proxy, caching and DNS
- 36.2d Describe the use of Internet domain names and DNS
- 36.3d Describe the capabilities of popular remote access protocols
- 36.4d Describe how various protocols or services apply to the function of their corresponding server, i.e, SSL/TLS, e-commerce, streaming media protocols, etc.
- 36.5d Identify when to use various diagnostic tools such as ping, winipcfg/ipconfig/ifconfig, netstat tracert/traceroute for resolving Internet problems
- 36.6d Create a logic diagram and explain each of the Internet components from the client to the server
- 36.7d Show how to design Web pages so that they can be accessed by individuals with disabilities

37.D ASSESS AND DESCRIBE VARIOUS INTERNET SECURITY CONCEPTS

- 37.1d Explain concepts such as access control, authentication, encryption, secure socket layers, access security tools, auditing and secure electronic transactions
- 37.2d Discriminate between normal and suspicious network activities such as multiple login failures, spoofing, ICMP, TCP and UDP floods, denial of service attacks and mail flooding
- 37.3d Identify the benefits and drawbacks of intrusion detection methods, including signature-based and adaptive strategies, as well as network and host-based intrusion detection
- 37.4d Describe the proper instances to use anti-virus software for server, client and network protection
- 37.5d Describe how firewalls are used to protect private networks
- 37.6d Interpret various authentication and encryption technologies

38.D IDENTIFY AND DESCRIBE VARIOUS E-BUSINESS AND E-COMMERCE TERMS AND CONCEPTS

- 38.1d Compare and contrast security zones including Virtual Private Network, Intranet, Extranet, Internet and Virtual LAN
- 38.2d Compose an explanation of the current types of e-Business models currently being applied
- 38.3d Identify key factors, such as geographic location and public relations, relating to strategic marketing consideration as they relate to launching an e-business initiative
- 38.4d Identify key factors, such as intellectual property rights, privacy and jurisdiction, relating to legal and regulatory considerations when planning e-Business solutions

39.D DEMONSTRATE ABILITY TO CREATE WEB PROMOTION STRATEGY

- 39.1d Perform usability study on website design to accurately reach a target audience
- 39.2d Establish a web promotion strategy using basic graphics design