Career & Technical Education | Information Technology
Web Design
Subject Code: 145010
Outcome & Competency Descriptions

Course Description:
Students will learn the dynamics of the Web environment while pursuing an in-depth study of both Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). Web based protocols such as FTP, TCP/IP, and HTTP will be addressed. Students will create a website with tag text elements, special characters, lines, graphics, hypertext links, and graphical tables.

Strand 1.   **Business Operations/21st Century Skills**
Learners apply principles of economics, business management, marketing, and employability in an entrepreneur, manager, and employee role to the leadership, planning, developing, and analyzing of business enterprises related to the career field.

Outcome: 1.1.   **Employability Skills**
Develop career awareness and employability skills (e.g., face-to-face, online) needed for gaining and maintaining employment in diverse business settings.

Competencies

1.1.2.   Identify the scope of career opportunities and the requirements for education, training, certification, licensure, and experience.

1.1.4.   Describe the role and function of professional organizations, industry associations, and organized labor and use networking techniques to develop and maintain professional relationships.

1.1.5.   Develop strategies for self-promotion in the hiring process (e.g., filling out job applications, resumé writing, interviewing skills, portfolio development).

1.1.7.   Apply problem-solving and critical-thinking skills to work-related issues when making decisions and formulating solutions.

1.1.9.   Give and receive constructive feedback to improve work habits.

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Outcome: 1.2.   Leadership and Communications

Process, maintain, evaluate, and disseminate information in a business. Develop leadership and team building to promote collaboration.

Competencies

1.2.1.   Extract relevant, valid information from materials and cite sources of information.

1.2.2   Deliver formal and informal presentations.

1.2.5.   Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose.

1.2.7.   Use problem-solving and consensus-building techniques to draw conclusions and determine next steps.

1.2.11.   Write professional correspondence, documents, job applications, and resumés.

1.2.12.   Use technical writing skills to complete forms and create reports.

1.2.13.   Identify stakeholders and solicit their opinions.

Outcome: 1.3.   Business Ethics and Law

Analyze how professional, ethical, and legal behavior contributes to continuous improvement in organizational performance and regulatory compliance.

Competencies

1.3.2.   Follow protocols and practices necessary to maintain a clean, safe, and healthy work environment.

1.3.5.   Access and implement safety compliance measures (e.g., quality assurance information, safety data sheets [SDSs], product safety data sheets [PSDSs], United States Environmental Protection Agency [EPA], United States Occupational Safety and Health Administration [OSHA]) that contribute to the continuous improvement of the organization.

1.3.7.   Identify the labor laws that affect employment and the consequences of noncompliance for both employee and employer (e.g., harassment, labor, employment, employment interview, testing, minor labor laws, Americans with Disabilities Act, Fair Labor Standards Acts, Equal Employment Opportunity Commission [EEOC]).

1.3.8.   Verify compliance with computer and intellectual property laws and regulations.

Outcome: 1.4.   Knowledge Management and Information Technology

Demonstrate current and emerging strategies and technologies used to collect, analyze, record, and share information in business operations.

Competencies

1.4.4.   Use system hardware to support software applications.

1.4.6. Use an electronic database to access and create business and technical information.
1.4.7. Use personal information management and productivity applications to optimize assigned tasks (e.g., lists, calendars, address books).
1.4.8. Use electronic media to communicate and follow network etiquette guidelines.

Outcome: 1.5.   Global Environment
Evaluate how beliefs, values, attitudes and behaviors influence organizational strategies and goals.

Competencies
1.5.5. Recognize the ways in which bias and discrimination may influence productivity and profitability.
1.5.6. Analyze work tasks for understanding and interpretation from a different cultural perspective.

Outcome: 1.6.   Business Literacy
Develop foundational skills and knowledge in entrepreneurship, financial literacy and business operations.

Competencies
1.6.1. Identify business opportunities.
1.6.5. Describe organizational structure, chain of command, the roles and responsibilities of the organizational departments and interdepartmental interactions.
1.6.8. Identify the features and benefits that make an organization's product or service competitive.
1.6.11. Describe how all business activities of an organization work within the parameters of a budget.
1.6.12. Describe classifications of employee benefits, rights, deductions and compensations.

Outcome: 1.7.   Entrepreneurship / Entrepreneurs
Analyze the environment in which a business operates, and the economic factors and opportunities associated with self-employment.

Competencies
1.7.13. Protect intellectual property and knowledge (e.g., copyright, patent, trademark, trade secrets, processes).

Outcome: 1.9.   Financial Management
Use financial tools, strategies and systems to develop, monitor and control the use of financial resources to ensure personal and business financial well-being.

Competencies

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1.9.1.   Create, analyze and interpret financial documents (e.g., budgets, income statements).

1.9.8.   Identify income sources and expenditures.

Outcome: 1.10.   Sales and Marketing
Manage pricing, place, promotion, packaging, positioning and public relations to improve quality customer service.

Competencies

1.10.2   Determine the customer's needs and identify solutions.

1.10.3   Communicate features, benefits, and warranties of a product or service to the customer.

1.10.4   Identify the company policies and procedures for initiating product and service improvements.

1.10.5   Monitor customer expectations and determine product/services satisfaction by using measurement tools.

Strand 2.   IT Fundamentals

Learners apply fundamental principles of IT, including the history of IT and its impact on society, common industry terms, systems theory, information storage and retrieval, database management, and computer hardware, software, and peripheral device configuration and installation. This base of knowledge and skills may be applied across the career field.

Outcome: 2.7   Applications and Architecture

Explain the fundamentals of delivering information and applications using web architecture.

Competencies

2.7.2.   Describe ways to present data (e.g., responsive web design, mobile applications, desktop applications, web applications).

2.7.4.   Identify how the use of different browsers and devices effects the function of a webpage (e.g., Americans with Disabilities Act [ADA], text-to-speech, screen reader, mobile vs. desktop).

2.7.5.   Explain the relationship between data transmission volumes, bandwidth, and latency.

2.7.6.   Describe the characteristics and use of browser plug-ins.

2.7.8.   Describe the difference between static and dynamic sites and the reasons for using each.

Outcome: 2.9.   Project Concept Proposal

Develop a project concept proposal.

Competencies

2.9.1.   Identify the scope and purpose of branding.

2.9.2.   Determine the scope and purpose of the project.

2.9.3.   Determine the target audience, client needs, expected outcomes, objectives, and budget.

2.9.4.   Develop a conceptual model and design brief for the project.

2.9.5.   Develop a timeline, a communication plan, a task breakdown, costs (e.g., equipment, labor), deliverables, and responsibilities for completion.

2.9.6.   Develop and present a comprehensive proposal to stakeholders.

Outcome: 2.11.   Troubleshooting
Select and apply troubleshooting methodologies for problem solving.

Competencies
2.11.1. Identify the problem.
2.11.2. Select troubleshooting methodology (e.g., top down, bottom up, follow the path, spot the differences).
2.11.3. Investigate symptoms based on the selected methodology.
2.11.4. Gather and analyze data about the problem.
2.11.5. Design a solution.
2.11.6. Test a solution.
2.11.7. Implement a solution.
2.11.8. Document the problem and the verified solution.

Outcome: 2.12.   Performance Tests and Acceptance
Develop performance tests and acceptance plans.

Competencies
2.12.1. Create a written procedure agreed by the stakeholders and project team for determining the acceptability of the project deliverables.
2.12.2. Develop a test system that accurately mimics external interfaces.
2.12.3. Develop test cases that are realistic, compare with expected performance, and include targeted platforms and device types.
2.12.4. Develop, perform, and document usability and testing integration.
2.12.5. Make corrections indicated by test results.
2.12.6. Seek stakeholder acceptance upon successful completion of the test plan.

Outcome: 2.13.   Rollout and Handoff
Plan rollout and facilitate handoff to customers.

Competencies
2.13.1. Include overall project goals and timelines in the rollout plan.
2.13.2. Communicate rollout plans to key stakeholders in a timely manner.
2.13.3. Conduct final review and approvals according to company standards.
2.13.4. Identify support staff, training needs, and contingency plans in the rollout plan.
2.13.5. Test delivered application to assure that it is fully functional for the customer or user and meets all requirements.
2.13.6. Deliver support and training materials.

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Strand 6.   **Web Development**
Learners apply principles of design and technology, including programming standards and protocols, to create, test, host, and maintain web pages and websites with text, graphics, multimedia, scripting, linking, and data integration in a structure that is easy to navigate and accessible for all users via a variety of hardware and software platforms.

Outcome: 6.1.   Web Pages
Create basic web pages.

Competencies

6.1.1.   Describe the basic principles of Hypertext Markup Language (HTML) and its functional relationship with web browsers.

6.1.2.   Plan a web page considering subject, devices, audience, layout, color, links, graphics, and Americans with Disabilities Act (ADA) requirements.

6.1.3.   Format the content of a web page using HTML formatting tags (e.g., hyperlink, e-mail, table formatting, graphic attributes).

6.1.4.   Use writing process techniques (i.e., drafting, revising, editing, proofreading) to check the web page for format and text accuracy.

6.1.5.   Create and format ordered and unordered lists on a web page using HTML list formatting tags.

6.1.6.   Create and format a table in a web page using HTML table formatting tags and attributes.

6.1.7.   Integrate styles (e.g., inline or external Cascading Style Sheets [CSS]).

Outcome: 6.2.   Links and Multimedia
Add links to a web page and insert multimedia files.

Competencies

6.2.1.   Create absolute links and relative links.

6.2.2.   Write a Hypertext Markup Language (HTML) anchor that links to another section of the same web page.

6.2.3.   Create hyperlinks that send e-mail messages and download files.

6.2.4.   Insert image and wrap text around the image using Cascading Style Sheets (CSS).

6.2.5.   Resize a graphic image in a web page using CSS.

6.2.6.   Insert media files (e.g., audio, video) into a web page using HTML tags.

6.2.7.   Build a hover or mouseover effect to change the style of a link.

Outcome: 6.3.   Scripting
Integrate scripting into a web page.

Competencies

6.3.1.   Select and apply scripting languages used in web development.

6.3.2.   Insert client-side script into a web page.

6.3.3.   Insert comments into client-side scripts.

Outcome: 6.4.   **Web Forms**

Integrate forms into a web page.

Competencies

6.4.1.   Design a data entry form from specifications that will accept a variety of user inputs (e.g., radio buttons, text entry fields, check boxes, drop-down menus).

6.4.2.   Write the Hypertext Markup Language (HTML) code to add a form to a web page.

6.4.3.   Write the HTML code to add text entry fields, radio buttons, check boxes, drop-down menus, and other user inputs to a form.

6.4.4.   Explain the concept of a form action.

6.4.5.   Write the HTML code to add a working button (e.g., submit, reset) to a form.

6.4.6.   Format a completed form using HTML and Cascading Style Sheets (CSS) (e.g., fieldset, tabindex).

6.4.7.   Code scripting to interact with data sources (e.g., database, web services).

Outcome: 6.5.   **Websites**

Create and update a website.

Competencies

6.5.1.   Implement web programming standards and protocols (e.g., World Wide Web Consortium [W3C], Hypertext Markup Language [HTML] 5).

6.5.2.   Plan a website's structure for navigation and usability.

6.5.3.   Utilize standard web programming languages (e.g., markup, scripting languages) in website development.

6.5.4.   Install and configure a content management system (CMS).

6.5.5.   Select an integrated development environment (IDE).

6.5.6.   Create and edit a web page template.

6.5.7.   Create and attach Cascading Style Sheets (CSS).

6.5.8.   Format website layout (e.g., targeted platforms, text formatting, background color, text, tables, lists, iframes).

6.5.9.   Incorporate audio and video, forms, and links on a website.

6.5.10.   Develop and execute usability tests on a completed website, checking for information accessibility, ease of use, and navigation.

6.5.11.   Code a website for cross-platform and cross-browser compatibility and validation.

6.5.12.   Publish the completed website to a web server.

6.5.13.   Integrate responsive design into web development.

6.5.14.   Incorporate Search Engine Optimization (SEO) into webpages.