

§130.279. Web Technologies (One-Half to One Credit).

(a) General requirements. This course is recommended for students in Grades 10-12. Prerequisite: Principles of Information Technology.

(b) Introduction. Through the study of web technologies and design, students learn to make informed decisions and apply the decisions to the field of information technology. Students implement personal and interpersonal skills to prepare for a rapidly evolving workplace environment. The knowledge and skills acquired and practiced will enable students to successfully perform and interact in a technology-driven society. Students enhance reading, writing, computing, communication, and critical thinking and apply them to the information technology environment.

(c) Knowledge and skills.

(1) The student demonstrates the necessary skills for career development, maintenance of employability, and successful completion of course outcomes. The student is expected to:

(A) identify and demonstrate positive work behaviors that enhance employability and job advancement such as regular attendance, promptness, attention to proper attire, maintenance of a clean and safe work environment, appropriate voice, and pride in work;

(B) identify and demonstrate positive personal qualities such as flexibility, open-mindedness, initiative, listening attentively to speakers, and willingness to learn new knowledge and skills;

(C) examine the role of certifications, resumés, and portfolios in the web technology profession;

(D) employ effective verbal and nonverbal communication skills;

(E) solve problems and think critically;

(F) demonstrate leadership skills and function effectively as a team member;

(G) identify and implement proper safety procedures;

(H) demonstrate an understanding of legal and ethical responsibilities in relation to the field of information technology; and

(I) demonstrate planning and time-management skills such as project management and storyboarding. 22

(2) The student identifies employment opportunities in the information technology field with a focus in the area of interactive media. The student is expected to:

(A) identify job opportunities and accompanying job duties and tasks;

(B) research careers of personal interest along with the education, job skills, and experience required to achieve personal career goals;

(C) demonstrate an understanding of the functions of resumés and portfolios; and

(D) create a portfolio.

(3) The student demonstrates knowledge and appropriate use of hardware, software, and connectivity technologies. The student is expected to:

(A) explain the fundamentals of operating systems;

(B) explain the key functions and applications of software programs;

(C) identify telecommunications and networking components;

(D) evaluate the various input, processing, output, and storage devices;

(E) identify current and future Internet protocols such as hypertext transfer protocol, file transfer protocol, telnet, and email; and

(F) identify new web technology trends.

(4) The student complies with practices and behaviors that meet legal and ethical responsibilities. The student is expected to:

(A) examine copyright and licensing issues in the software industry;

(B) model ethical and legal acquisition of digital information, including the correct citing of sources through the use of established methods; and

(C) demonstrate proper netiquette and acceptable use policies when using networks.

- (5) The student acquires electronic information in a variety of formats, using research skills and electronic communication to create new knowledge, with appropriate supervision. The student is expected to:
- (A) demonstrate appropriate use of navigation of network resources for information acquisition and sharing;
 - (B) acquire information in electronic formats such as text, audio, video, and graphics, citing the source;
 - (C) identify, create, modify, and use available file formats such as text, image, video analog and digital, and audio files; and
 - (D) synthesize information from data acquired from electronic and telecommunications resources.
- (6) The student evaluates electronic information. The student is expected to:
- (A) identify appropriate methods to analyze the design and functionality of web pages; and
 - (B) demonstrate skill in testing the accuracy and validity of information acquired.
- (7) The student evaluates and employs computer-based productivity tools to create and modify web and digital media designs. The student is expected to:
- (A) implement functional design criteria such as proximity, repetition, contrast, alignment, color theory, consistency, image file size, and typography;
 - (B) select, create, modify, and integrate effective multimedia content such as vector-based and raster graphics, motion graphics, video, and audio; 23
 - (C) create web pages in accordance with current web standards using web development skills such as version control, documentation, web application security, validation, accessibility, and compatibility across multiple browsers and devices; and
 - (D) demonstrate proper use of folder structure hierarchy.
- (8) The student demonstrates knowledge of Internet programming strategies. The student is expected to:
- (A) recognize the importance of Internet programming standards;
 - (B) differentiate among various web coding standards such as HyperText Markup Language, Extensible HyperText Markup Language, and cascading style sheets;
 - (C) use standard applications such as text-based editing programs, word processors; and web authoring software; and
 - (D) compare and contrast the impact of different browsers on web development.
- (9) The student employs knowledge of web programming to develop and maintain web applications. The student is expected to:
- (A) explain the purpose of current web content delivery enablers;
 - (B) explain client server applications;
 - (C) articulate the advantages and disadvantages to client-side processing;
 - (D) identify security issues related to client-side processing;
 - (E) use standard scripting languages to facilitate interactivity;
 - (F) identify characteristics of various scripting languages; and
 - (G) demonstrate the ability to construct secure transaction interfaces from the web server to the customer.

(10) The student employs knowledge of web administration to develop and maintain web applications. The student is expected to:

- (A) compare the advantages and disadvantages of running a personal server versus using a server provider;
- (B) explain how to use advanced communication protocols;
- (C) demonstrate an understanding of and compliance with Transport Control Protocol/Internet Protocol;
- (D) identify hardware and software requirements for web servers;
- (E) evaluate server providers;
- (F) participate in the process of establishing a domain name;
- (G) simulate the administration of web servers, including uploading and managing files;
- (H) collect and analyze usage statistics;
- (I) maintain documentation of the server environment such as specifications, passwords, and software versions;
- (J) understand server backup and restoration of software features; and
- (K) propose security measures to protect web servers from electronic threats such as unauthorized access and negative intentions.

(11) The student evaluates a problem and creates a written plan of action for meeting client requirements. The student is expected to:

- (A) communicate with clients to analyze requirements to meet needs;
- (B) document all necessary design properties;
- (C) identify tools and resources to complete the job;
- (D) identify and address risks;
- (E) develop and use a timeline task list such as critical milestones, potential challenges, and interdependencies; and
- (F) use various methods to evaluate the progress of the plan and modify as necessary.

(12) The student creates and implements a written plan of action in the development of a web product. The student is expected to:

- (A) create and simulate the publication of a multipage web product using client required content and web design concepts;
- (B) develop a test plan for a multipage web product for testing usability, effectiveness, reliability, and customer acceptance;
- (C) explain the quality assurance process; and
- (D) develop and implement a quality assurance plan.