Texas CTE

Information Technology (2010): Grade 10

Adopted 2010

Principles of Information Technology

(1) The student demonstrates the necessary skills for career development, 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) employ effective reading and writing skills;

(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.

(2) The student identifies various employment opportunities in the information technology field. 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; and

(C) describe understanding of the functions of resumés and portfolios.

(3) The student uses emerging technologies to exchange information. The student is expected to:

(A) identify and describe functions of various new and emerging technologies;

Skip to main content

(B) send and receive text information and file attachments using electronic methods such as email, electronic bulletin boards, and instant message services;

(C) demonstrate effective Internet search strategies, including keywords and Boolean logic using various available search engines;

(D) dissect and identify the various components of a Uniform Resource Locator;

(E) demonstrate ability to effectively test acquired information from the Internet for accuracy, relevance, and validity;

(F) explain issues concerning Internet security protocols such as computer viruses, online predators, hacking, and identity theft;

(G) define and identify unethical practices such as hacking, phone fraud, online piracy, and data vandalism; and

(H) demonstrate ethical use of Internet and online resources, including citation of source.

(4) The student demonstrates knowledge of the hardware components associated with information systems. The student is expected to:

(A) identify the different computer classifications such as minicomputer, mainframe, and microcomputer;

(B) identify major hardware components and their functions such as the central processor unit, input and output peripherals, and storage systems and devices;

(C) use available reference tools such as user manuals, both online and written, as appropriate;

(D) demonstrate understanding of the process of connecting peripheral devices; and

(E) demonstrate proficiency in the use of a variety of input devices such as mouse, keyboard, microphone, digital camera, printer, scanner, and optical disk reader.

(5) The student demonstrates knowledge of the different software associated with information systems. The student is expected to:

(A) differentiate between systems and application software;

(B) identify and understand major operating system fundamentals and components;

(C) identify the function and operation of compilers and interpreters;

(D) identify various computer languages and how the languages are used in software development;

(E) recognize data representation in software development such as string, numeric, character, integer, and date;

(F) demonstrate understanding of file extensions and the purpose of file types across software products;

(G) recognize computer numbering systems and internal data representation;

(H) identify appropriate use of application software;

Skip to main content

(I) identify new and emerging classes of software;

(J) identify open source and proprietary licenses;

(K) demonstrate proper use of system management tools; and

(L) demonstrate proper file management techniques such as creating, naming, organizing, copying, moving, and deleting files.

(6) The student analyzes network systems. The student is expected to:

(A) identify hardware associated with telecommunications and data networking such as servers, routers, switches, hubs, and network connectors;

(B) identify and describe various types of networks such as peer-to-peer, local area networks, wide area networks, wireless token ring, and Ethernet;

(C) identify and describe functions of network operating systems; and

(D) explain troubleshooting techniques for various network connection issues.

(7) The student applies word-processing technology. The student is expected to:

(A) identify the terminology associated with word-processing software and its functions;

(B) improve the touch-system skill using the keyboard and keypad to input data;

(C) edit a variety of text documents using functions such as pagination, appropriate white space, tab settings, and font style, size, and color;

(D) create professional letters using advanced word-processing features;

(E) apply formatting techniques to a multipage research paper using approved publication standards such as American Psychological Association and Modern Language Association;

(F) produce desktop publishing documents incorporating both text and graphics such as business cards, newsletters with mastheads, and advertisement flyers; and

(G) demonstrate file protection and security.

(8) The student applies spreadsheet technology. The student is expected to:

(A) identify the terminology associated with spreadsheet software and its functions;

(B) format and organize numerical content to perform mathematical processes such as addition, subtraction, multiplication, and division; percentages and decimals; and order of operations principle;

(C) employ both student-created formulas and preprogrammed functions to produce documents such as budget, payroll, statistical tables, and personal checkbook register;

(D) create and analyze spreadsheets incorporating advanced features such as lookup tables, nested IF statements, subtotals, cell protection conditional formatting, charts, and graphs; and

(E) edit a variety of spreadsheets by performing data management procedures using simple and multiple search parameters to locate, sort, search, and filter data.

Skip to main content

(9) The student applies database technology. The student is expected to:

(A) identify the terminology associated with database software and its functions;

(B) create, populate, edit, maintain, and save database files;

(C) differentiate the nature and interrelationships of fields and records;

(D) perform data management procedures such as locating, sorting, searching, querying, organizing, and outputting data;

(E) use data management procedures using multiple search parameters; and

(F) produce organized reports with calculated figures.

(10) The student applies presentation management technology. The student is expected to:

(A) identify the terminology associated with presentation software and its functions;

(B) create, save, edit, and produce presentations with appropriate handouts and speaker notes; and

(C) create a non-linear presentation incorporating links, hyperlinks, audio, and graphics.

(11) The student applies design and web publishing techniques. The student is expected to:

(A) identify the terminology associated with web page editing software and its functions;

(B) identify the terminology associated with interactive media;

(C) identify and describe design principles such as contrast, repetition, alignment, and proximity;

(D) identify and describe types and styles of typeface used for publications such as serif and sans serif; and

(E) create a web page containing links, graphics, and text.

(12) The student understands and demonstrates legal and ethical procedures as they apply to the use of information technology. The student is expected to:

(A) demonstrate ethical use of online resources;

(B) adhere to copyright rules and regulations;

(C) differentiate between copyright and trademarks;

(D) explain the concept of intellectual property;

(E) examine the consequences of plagiarism; and

(F) describe the function of a non-disclosure agreement.

Co Skip to main content **The student demonstrates the necessary skills for career development, 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) employ effective reading and writing skills;

(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.

(2) The student identifies various employment opportunities in the information technology field. 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; and

(C) examine the role of certifications, resumés, and portfolios in the information technology profession.

(3) The student applies academic skills to the requirements of computer technologies. The student is expected to:

(A) demonstrate effective verbal and written communication skills with individuals from varied cultures such as fellow workers, management, and customers;

(B) complete work orders for repair and installation;

(C) estimate supplies, materials, and labor costs for installation, maintenance, and repair work orders; and

(D) interpret appropriate documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins.

(4) The student acquires an understanding of computer technologies. The student is expected to:

(A) explain the fundamentals of microprocessor theory;

(B) define the use of Boolean logic in computer technologies;

Skip to main content

(C) explain the theories of magnetism, electricity, and electronics as related to computer technologies;

(D) explain proper troubleshooting techniques as related to computer hardware;

(E) differentiate among digital, analog, and input and output electronics theory;

(F) explain the relationships relative to data-communications theory;

(G) describe the architecture of various computer systems;

(H) describe the function of computer components such as central processing units, storage devices, and peripheral devices; and

(I) explain computer system environmental requirements and related control devices.

(5) The student knows the proper function and application of the tools, equipment, and materials used in computer technologies. The student is expected to:

(A) demonstrate safe use of equipment in computer technologies such as hand and power tools;

(B) employ available reference documentation such as tools, materials, and Internet sources to access information as needed;

(C) demonstrate proper handling and disposal of environmentally hazardous materials used in computer technologies; and

(D) identify new and emerging technologies that may affect the field of computer technology such as quantum computing, phototonics, and nanotechnology.

(6) The student applies the concepts and skills of the trade in simulated work situations. The student is expected to:

(A) use electronic test equipment to measure current, voltage, power, and resistance;

(B) describe digital circuits design;

(C) identify the operational features and proper terminology related to computer systems;

(D) identify the various components of a computer system such as the central processor, basic input and output system, read-only memory, and random access memory; and

(E) troubleshoot computer peripheral devices.

(7) The student uses hardware design, operation, and maintenance knowledge and skills to provide computer support. The student is expected to:

(A) identify the purpose and function of computer components in the operation of the computer system such as central processing unit, mother board, sockets, chipsets, basic input and output system and their drivers, memory, hard drive technologies, video cards, input and output devices and ports, and modem and network interface cards (NIC);

Skip to main content

(B) identify the operation of mobile devices such as personal data assistants and cell phones;

(C) identify how mobile devices such as personal data assistants and cell phones connect and share data;

(D) assemble and install a basic computer system; and

(E) install and configure computer components and peripherals.

(8) The student uses troubleshooting skills with hardware knowledge to solve client problems. The student is expected to:

(A) understand the rationale behind error messages and symptoms of hardware failures;

(B) know interrupt sequences and beep codes;

(C) identify priorities and interrupts at the system level;

(D) test system using diagnostic tools and software;

(E) identify problems in the operating systems;

(F) differentiate between hardware and software failure;

(G) update flash memory;

(H) demonstrate hard drive maintenance procedures such as defrag scan and clear caches;

(I) gather information from user;

(J) repair malfunctioning hardware systems;

(K) reinstall software as needed;

(L) demonstrate backup and recovery; and

(M) restore a system to various states such as safe modes and previous.

(9) The student demonstrates and applies knowledge of operating system design, including operation and maintenance, to perform information support and service tasks. The student is expected to:

(A) explain the fundamentals of an operating system; and

(B) compare and contrast different operating systems.

(10) The student installs and configures software programs and updates information technology systems. The student is expected to:

(A) evaluate application software packages and test the functionality of a proposed software configuration;

(B) verify software is properly licensed prior to installation;

(C) install application and systems software using available resources as needed;

(D) resolve problems with installation if any occur, including recovery from system error;

(E) perform software customization as requested;

Skip to main content

(F) document all procedures; and

(G) install and maintain security software.

(11) The student installs, configures, and verifies active network connection. The student is expected to:

(A) demonstrate an understanding of network connection and interface requirements;

(B) install and configure a computer on a network; and

(C) verify and troubleshoot network connectivity.

(12) The student provides support to computer users to maintain service. The student is expected to:

(A) develop a written disaster recovery plan; and

(B) develop a written preventive maintenance plan.

Telecommunications and Networking

(1) The student demonstrates the necessary skills for career development, 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) employ effective reading and writing skills;

(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.

(2) The student identifies various employment opportunities in the information technology field. The student is expected to:

(A) select and research a specific job area with its accompanying duties and tasks;

(B) formulate a personal career plan along with the education, job skills, and experience necessary to achieve career goals; and

(C) develop a resumé.

Skip to main content

(3) The student relates core academic skills to the requirements of telecommunications and data network services. The student is expected to:

(A) demonstrate effective verbal and written communication skills with individuals from varied cultures such as fellow workers, management, and customers;

(B) complete work orders for repair and installation;

(C) estimate supplies, materials, and labor costs on installation, maintenance, and repair work orders; and

(D) interpret technical documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins.

(4) The student acquires an understanding of telecommunications and data network services. The student is expected to:

(A) explain the theories of electricity and electronics;

(B) explain proper troubleshooting techniques for alternating and direct current electronics;

(C) explain digital and analog electronics theory;

(D) explain microcomputer processor theory;

(E) define the use of Boolean logic in computer technologies;

(F) distinguish the differences between a data packet and voice communications;

(G) define the layers and functions of the Open System Interconnection model;

(H) explain Transport Control Protocol and Internet Protocol fundamentals, including subnetting;

(I) distinguish between public and private networks;

(J) describe the standards and operations of wireless technologies in telecommunications and data networks;

(K) differentiate between local area networks and wide area networks;

(L) identify national standards for voice and data communication; and

(M) identify the potential benefits and problems for the future of telecommunications and data networking.

(5) The student analyzes various types of configurations and upgrading. The student is expected to:

(A) identify the attributes, purposes, and functions of the various components of telecommunications and data networks;

(B) identify major network operating systems;

(C) distinguish between different types of cables used in the telecommunications and data networking;

(D) describe telecommunications and data networking media and connectors;

Skip to main content

(E) recognize the differences among computer network topologies;

(F) explain the distinction between connectionless and connection transport;

(G) explain how and when to use the Transport Control Protocol and Internet Protocol utilities;

(H) explain how and when to test, validate, and troubleshoot Internet Protocol connectivity; and

(I) identify good practices to ensure network security.

(6) The student recognizes and recommends the various types of network components to address industry needs. The student is expected to:

(A) analyze various types and components of networks;

(B) analyze the characteristics of networks used to select the optimum configuration for an industry solution; and

(C) recommend telecommunications and data network solutions based on scenario-driven problems such as budget restrictions and knowledge of relative costs of the technologies.

(7) The student develops a network design plan. The student is expected to:

(A) produce the network planning documentation required prior to network implementation such as administrative and test accounts, passwords, Internet Protocol addressing, and configurations;

(B) explain the impact of environmental factors on computer networks;

(C) identify common peripheral ports and common network components;

(D) develop an addressing scheme, including a subnetting chart;

(E) specify the tools that are commonly used to resolve network equipment problems;

(F) identify vendor testing documentation such as patches, fixes, and upgrades;

(G) demonstrate awareness of standard backup procedures and backup media storage practices;

(H) distinguish between common types of telecommunications and data network cabling;

(I) identify the factors that might affect performance in a network environment such as logic or frequency spectrum interference; and

(J) identify new and emerging technologies that may affect the field of telecommunications and data networking services.

(8) The student implements a data network plan. The student is expected to:

(A) demonstrate in an installation scenario awareness of compatibility and cabling issues;

(B) implement an addressing scheme, including a subnetting chart;

Skip to main content

(C) connect various types of data connectors and cabling used in computer networking and data communications;

(D) employ a systematic approach to identify the extent of a network problem, distinguish between operator or system error, and select the appropriate steps to correct the error;

(E) analyze networking scenarios and demonstrate awareness of the need to check for physical and logical indicators of trouble;

(F) determine the cause of a problem and select the appropriate corrective action for the network problem; and

(G) create a folder or hierarchical structure for the storing and organizing of data on networks.

(9) The student implements network security systems. The student is expected to:

(A) assess potential security threats to information systems;

(B) identify the range of security needs and the problems that can occur on a data network due to security lapses;

(C) define and identify unethical practices such as hacking, phone fraud, online piracy, and data vandalism;

(D) evaluate issues related to privacy, depersonalization, and government control of telecommunications;

(E) develop and implement a network security plan; and

(F) identify the role that network components such as routers, firewalls, intrusion detection systems, and virtual private networks play in security.

(10) The student knows the function and application of the tools, equipment, technologies, and materials used in telecommunications services. The student is expected to:

(A) demonstrate safe use of equipment commonly employed in telecommunications services such as hand and power tools; and

(B) demonstrate proper handling and disposal of environmentally hazardous materials used in telecommunications services.

Computer Programming

(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;

Skip to main content

(C) employ effective reading and writing skills;

(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) demonstrate and implement proper safety procedures in handling and disposing of equipment and materials;

(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.

(2) The student identifies various employment opportunities in the information technology field. 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; and

(C) examine the role of certifications, resumés, and portfolios in the information technology profession.

(3) The student differentiates the concepts of integrity and confidentiality as related to technology in the business environment. The student is expected to:

(A) define business ethics;

(B) distinguish between honest and dishonest business practices;

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

(D) analyze the effects of unethical practices on a business.

(4) The student identifies and analyzes the client project software needs and requirements. The student is expected to:

(A) gather data to identify client and project requirements;

(B) identify input and output requirements;

(C) identify system processing requirements; and

(D) develop software requirements and specifications.

(5) The student develops an information technology-based project plan to solve a specific problem. The student is expected to:

(A) define scope of work to meet client-based project needs;

(B) identify software development processes and issues; and

(C) explain the software system life cycle approach.

(6) The student designs a software application plan. The student is expected to:

(A) articulate the principles of system design such as procedural, object-oriented, and event-driven processes;

Skip to main content

(B) perform a logical design using appropriate software tools;

(C) use algorithmic and data structure concepts;

(D) identify constraints;

(E) identify modular design concepts; and

(F) document the design specification using a defined procedure.

(7) The student solves problems using different types and levels of programming languages. The student is expected to:

(A) differentiate among the concepts of data, procedural, object-oriented, and event-driven representation;

(B) identify current programming languages and the environment in which each is used;

(C) produce procedural and object-oriented programs using structured coding with appropriate style and clarity of expression;

(D) demonstrate skill in program testing;

(E) compare computed results with anticipated results to determine the reasonableness of the solutions; and

(F) troubleshoot technological problems.

(8) The student performs quality assurance tasks. The student is expected to:

(A) explain the software quality assurance process; and

(B) follow established quality assurance procedures for testing, identifying problems, and tracking resolutions.

(9) The student recognizes issues and complies with procedures for maintaining the security of computerized information. The student is expected to:

(A) identify risks to information systems facilities, data communications systems, and applications;

(B) comply with federal and state legislation pertaining to computer crime, fraud, and abuse;

(C) identify and select controls for information systems facilities, data communications, and applications appropriate to specific risks; and

(D) apply procedures used to recover from situations such as system failure and computer virus.

Digital and Interactive Media

(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;

Skip to main content

(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) employ effective reading and writing skills;

(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.

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

(D) create a portfolio.

(3) The student uses emerging technologies to exchange and gather information and resources. The student is expected to:

(A) collaborate using various electronic technologies such as email, blogs, chat rooms, discussion threads, and wikis;

(B) use Internet resources for research purposes; and

(C) research technologies that have surfaced within the last three years in the area of interactive media.

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

(A) examine copyright and fair use guidelines in the digital media 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 analyzes and applies design and layout principles. The student is expected to:

Skip to main content

(A) compare and contrast printed and digital communications products that demonstrate appropriate and inappropriate use of design and layout principles;

(B) identify and use perspective such as backgrounds, light, shades, shadows, and scale to capture a focal point and create depth;

(C) identify and use principles of proportion, balance, variety, emphasis, harmony, symmetry, unity, and repetition in type, color, size, line thickness, shape, and space;

(D) identify and use three-dimensional effects such as foreground, middle distance, and background images;

(E) identify and use typography;

(F) identify and use color theory; and

(G) recreate and improve existing multimedia products by applying the appropriate design and layout principles.

(6) The student designs and creates digital graphics. The student is expected to:

(A) compare and contrast the characteristics of raster-based bitmap graphics and vector-based graphics;

(B) demonstrate appropriate file storage and file size management skills;

(C) recognize the various file extensions used in digital and interactive media such as compression, conversion, and use and modification;

(D) identify and choose appropriate software applications for specific digital media types such as photo, graphics, video, audio, and animation editing software; and

(E) differentiate between the color mode selections in determining product output.

(7) The student demonstrates appropriate use of digital photography equipment and techniques. The student is expected to:

(A) demonstrate proper use of safety procedures while using digital photography equipment;

(B) capture still shot images using digital photography equipment incorporating various photo composition techniques such as lighting, perspective, candid versus posed, rule of thirds, and level of horizon;

(C) transfer still shot images from equipment to the computer; and

(D) demonstrate photographic enhancement techniques such as feathering, layering, masking, and color enhancement using appropriate digital manipulation software.

(8) The student demonstrates appropriate use of digital graphics. The student is expected to:

(A) create and modify digital graphics using appropriate vector-based and raster-based software following standard design principles; and

(B) export and set graphics to be used in both print and digital formats.

Skip to main content

The student demonstrates appropriate use of video equipment and techniques. The student is expected to:

(A) demonstrate proper use of safety procedures while using digital video equipment;

(B) demonstrate proper use of terminology in relation to video technology;

(C) demonstrate proper use of digital video photography equipment to capture video images;

(D) transfer video images from equipment to the computer;

(E) demonstrate videographic enhancement and editing techniques such as panning, transitions, zooming, content editing, and synchronizing audio and video using appropriate digital manipulation software; and

(F) export video files in digital formats to be used in various delivery systems such as podcasting, downloadable media, and streaming.

(10) The student demonstrates appropriate use of audio equipment and techniques. The student is expected to:

(A) demonstrate proper use of safety procedures while using digital audio equipment;

(B) demonstrate proper use of terminology and concepts in relation to audio technology;

(C) demonstrate proper use of digital audio equipment to capture audio files;

(D) transfer audio files from equipment to the computer;

(E) demonstrate proper use of audio editing software such as adding effects, fading, volume control, and manipulation of waveforms using appropriate digital manipulation software; and

(F) export audio files to be used in digital formats in various delivery systems such as podcasting, downloadable files, and streaming.

(11) The student demonstrates appropriate use of animation. The student is expected to:

(A) use the principles of motion graphics such as frames and key frames, integration of audio into an animation, and user interactive controls;

(B) create and modify a linear and a nonlinear animation using appropriate software following standard design principles; and

(C) export and set animation to be used in various digital formats and on various video animation players.

(12) The student demonstrates appropriate project management in the creation of digital media projects. The student is expected to:

(A) develop a plan for a media project such as a storyboard, stage development, and identification of equipment and resources; and

(B) evaluate a project plan along its timeline and make suggested revisions until completion of the project.

Skip to main content

	(13) The student deploys digital media into print, web-based, and video products. The student is expected to: (A) incorporate video, audio, text, graphics, and motion graphics into an existing web page; (B) incorporate various digital media into a printed document such as a newsletter, poster, or report; (C) develop an interactive medium such as a compact disk or digital video disk to display video, audio, and animation products; and (D) collect and organize student created products to build an individual portfolio.
Web Technologies	**(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.
	(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.
Skip to main content	**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;

Skip to main content

(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;

Skip to main content

(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.