INFORMATION TECHNOLOGY FOUNDATIONS

COURSE DESCRIPTION

*Information Technology Foundations* is designed to prepare students with work-related skills for advancement in the telecommunication and information technology career paths. Content provides students the opportunity to acquire basic foundational knowledge and skills in both theory and practical applications in direct current, alternating current, and power supply circuits. Course content includes fundamentals of networking concepts for personal computers (PC), determining system requirements, setting up equipment, and performing installation tests for the end user. Content provides the opportunity to evaluate and install peripheral devices and become familiar with operating systems. Course content provides students the opportunity to acquire basic fundamental skills in both theory and practical applications of language, structure, and typography. Standards 11 through 13 stress layout and design guidelines as applied in the design of markup language documents. Course content will be delivered through virtual training and hands-on methods. Competencies mastered during this course help prepare students toward acquiring A+ and/or Net+ certification and/or Web design employment.

*It is strongly recommended that administration and guidance follow the scope and sequence and course recommendations as listed.*

**Core Standards:**

1.0, 2.0, 3.0, 4.0

**FOCUS AREAS STANDARDS**

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*Core Standards Required as part of one and two credits*

**Recommended:**

Skills in keyboarding

**Recommended Credits:**

**1** credit for Core and two focus areas.  **2** credits for all 16 Standards

**Recommended Grade Level:** 9th and 10th
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARDS

1.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

2.0 Students will evaluate career opportunities and career paths within the information technology industry.

3.0 Students will analyze the growth and development of the information technology industry to gain insight regarding past, current, and future trends of computer architecture, network architecture, and Web design.

4.0 Students will interpret and demonstrate the principles of industrial safety standards associated with the information technology industry.

5.0 Students will demonstrate an understanding of basic electronic theory, and measure input and output voltages.

6.0 Students will evaluate the general responsibilities of an operating system.

7.0 Students will evaluate peripheral devices that can be attached to the central processing unit.

8.0 Students will demonstrate an understanding of basic network structure, and will recognize and describe the characteristics of networking media and connectors.

9.0 Students will compare the basic attributes, purpose, and function of network elements and associate protocols with their appropriate functions.

10.0 Students will apply basic digital theory used in computer systems.

11.0 Students will analyze the open system interconnect (OSI) reference model.

12.0 Students will analyze major network operating systems, such as Microsoft Windows NT, Novell NetWare, and Unix.

13.0 Students will be able to make verify and troubleshoot electrical connections of computer hardware.

14.0 Students will demonstrate advanced knowledge of the Internet.

15.0 Students will develop proficiency with the features and utilities available with commercial off-the-shelf (COTS) Web building software.
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 1.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:

1.1 Cultivate positive leadership.
1.2 Participate in SkillsUSA as an integral part of classroom instruction.
1.3 Assess situations and apply problem-solving and decision-making skills within the school, community, and workplace.
1.4 Participate as a team member.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

1.1 Demonstrates character and leadership using creative- and critical-thinking skills.
1.2A Relates the creed, purposes, motto, and emblem of SkillsUSA to personal and professional development.
1.2B Plans and conducts meetings and other business according to accepted rules of parliamentary procedure.
1.3A Makes decisions and assumes responsibilities.
1.3B Analyzes a situation and uses the Professional Development Program of SkillsUSA to resolve it.
1.4A Organizes and participates in committees.
1.4B Cooperates with peers to select and organize a community service project.

SAMPLE PERFORMANCE TASKS

- Create a leadership inventory and use it to conduct a personal assessment.
- Participate in various SkillsUSA programs and competitive events such as community service.
- Use a formal planning or decision-making process to select, to implement, and to evaluate an activity within the school, community, and workplace.
- Develop an annual program of work.
- Prepare a meeting agenda for a SkillsUSA monthly meeting.

INTEGRATION LINKAGES

Professional Development Program, SkillsUSA, Communication and Writing Skills, Teambuilding Skills, Research, Language Arts, Sociology, Psychology, Math, Math for Technology, Applied Communications, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, Secretary’s Commission on Achieving Necessary Skills (SCANS)
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 2.0

Students will evaluate career opportunities and career paths within the information technology industry.

LEARNING EXPECTATIONS

The student will:
2.1 Develop a profile of career opportunities.
2.2 Develop a personal education/career roadmap.
2.3 Project future career opportunities within the information technology industry.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
2.1 Researches the information technology industry for various career paths and job titles.
2.2A Plans personal education paths, based on aptitude, available courses, postsecondary education, and current career paths.
2.2B Profiles personal characteristics, which are beneficial to the success of a professional in the information technology industry.
2.3 Researches and develops a projection of information technology industry trends related to career opportunities.

SAMPLE PERFORMANCE TASKS

• Develop a list of career opportunities, including education requirements, responsibilities, and salary ranges.
• Develop a personal career plan.
• Research and present information on focus and trends in information technology industry.
• Incorporate professional terminology into conversations.
• Participate in SkillsUSA programs and events.

INTEGRATION/LINKAGES

INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 3.0

Students will analyze the growth and development of the information technology industry to gain insight regarding past, current, and future trends of computer architecture, network architecture, and Web design.

LEARNING EXPECTATIONS

The student will:

3.1 Trace the evolution of computers, networking, the Internet, and the Web.
3.2 Identify people in history who helped to shape the information technology industry.
3.3 Analyze current cultural and economic indicators to anticipate future trends in the information technology industry.
3.4 Explore economic aspects, the free enterprise system, and the role of government as they relate to the information technology industry.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

3.1A Develops a research project depicting the history of the information technology industry pertaining to computer architecture, network architecture, and Web design.
3.1B Categorizes changes in the information technology industry and describes the effects of the changes.
3.1C Researches the evolution of Hypertext Markup Languages (HTML) and other Markup languages.
3.1D Explains the role of the World Wide Web Consortium (WC3) and their interaction with Web browser manufacturers.
3.1E Comprehends the need for a governing body for Web standards and emerging standards.
3.2 Profiles individual achievements within different divisions of the industry and determines personal and global economic impact.
3.3 Predicts key changes within the industry, which are based on societal, cultural, and economic trends.
3.4A Collects and presents information related to government agencies and legislation concerning the information technology industry.
3.4B Describes the effects of market factors on the information technology industry.

SAMPLE PERFORMANCE TASKS

- Research industry history, trends, and pioneers in computer, Internet, and Web development from the Internet, media research, interviews, and other research sources.
- Plot a “Computers Today and Tomorrow” graph from given data.
- Distinguish between HTML, XHTML, DHTML, XML.
- Describe the intent of the WC3 and its development of markup languages.
- Explains the WC3 member partners and its three-host makeup.
- Debate economic impact of free enterprise system on information technology industry.
• Conduct interviews and gather data from individuals concerning the growth and development of the information technology industry.
• Brainstorm and reach consensus on the effects of government agencies and legislation on the computer industry.

INTEGRATION/LINKAGES

INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 4.0

Students will interpret and demonstrate the principles of industrial safety standards associated with the information technology industry.

LEARNING EXPECTATIONS

The student will:

4.1 Implement the industrial safety standards established by the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA).

4.2 Identify and categorize safety hazards and prevention in the information technology industry.

4.3 Exhibit acceptable dress and personal grooming determined by the information technology industry.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

4.1A Establishes and maintains a safe working environment.

4.1B Passes with 100% accuracy, a written safety examination.

4.2A Distinguishes and employs measures to prevent and eliminate contaminants and ensure ecological, chemical, and physical safety.

4.2B Maintains tools and equipment in a safe and clean condition.

4.3 Compares and contrasts appropriate and inappropriate dress and personal grooming characteristics for specific jobs within the information technology industry.

SAMPLE PERFORMANCE TASK

- Conduct a self-inspection of the laboratory and identify modifications necessary for compliance with rules, regulations, and standards of governing agencies.
- Appraise the work area for safety hazards and list common causes of typical accidents and injuries in the information technology industry.
- Outline a safety management program.
- Calculate the cost of safety corrections, including financial and environmental impact.
- Develop emergency policies for the information technology laboratory.
- Role-play scenarios involving appropriate and inappropriate dress and personal grooming for the information technology industry.
- Participate in the Occupational Safety and Health competitions in Tennessee SkillsUSA.

INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), CompTIA, Professional Development Program, SkillsUSA, Science, Electronics, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical-Thinking Skills, Computer Skills, Internet Navigation
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 5.0

Students will demonstrate an understanding of basic electronic theory, and measure input and output voltages.

LEARNING EXPECTATIONS

The student will:
5.1 Define the relationship given by Ohm’s Law.
5.2 Define the relationship given by the formula for electric power.
5.3 Define the relationship between voltages and windings of a transformer.
5.4 Describe the significant differences between alternating current (AC) and direct current (DC).
5.5 Define the relationship between the individual resistances in a circuit and total resistance.
5.6 Students will use basic electrical measuring and construction equipment.
5.6A Measure AC and DC voltages using a digital multimeter (DMM).
5.6B Measure AC and DC current using a digital multimeter (DMM).
5.6C Measure the resistance of a circuit consisting of resistors using a digital multimeter (DMM).
5.6D Construct simple circuits on a breadboard or with a soldering iron.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student can:
5.1 Given two of the three quantities found in Ohm’s Law, calculate the third.
5.2 Given the voltage and current of a circuit, calculate the power being consumed.
5.3 Using the relationship between the windings and the voltages of a transformer, calculate unknown quantities.
5.4 Distinguish between an oscilloscope trace of an AC versus DC signal.
5.5A Calculate the total resistance in a circuit of resistors connected in series.
5.5B Calculate the total resistance in a circuit of resistors connected in parallel.
5.6A Measure the input and output voltages from a computer power supply.
5.6B Measure the current supplied by a computer power supply.
5.6C Measure the resistance of a circuit consisting of resistors wired in series or parallel.
5.6D Solder two components together.

SAMPLE PERFORMANCE TASKS

• Calculate the resistance of a DC circuit, with a given or measured DC voltage and current.
• Calculate the power being provided by a power supply.
• Identify the occurrences of AC and DC in the typical desktop computer.
• Label the output cables from a computer power supply with the voltages being supplied.
• Calculate the power being provided by a computer power supply.
• Solder together an LED and resistor that can be tested with a 9-VDC battery.
INTEGRATION LINKAGES

STANDARD 6.0

Students will evaluate the general responsibilities of an operating system.

LEARNING EXPECTATIONS

The student will:
6.1 Compare basic types of operating systems.
6.2 Configure the system through the CMOS setup procedure.
6.3 Analyze the function and purpose of Microsoft Windows operating system.
6.4 Install and configure Microsoft Windows to the basic operational level.
6.5 Diagnose and correct Microsoft Windows basic problems.
6.6 Maintain Microsoft Windows by updating service packs and patches.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
6.1 Recognizes and describes basic types of operating systems.
6.2 Demonstrates proper CMOS setup procedures and tests.
6.3 Charts the function and purpose of Microsoft Windows operating system.
6.4 Demonstrates the installation and configuration of Microsoft Windows operating system and tests.
6.5 Demonstrates proper steps for diagnosing Microsoft Windows operating system basic problems.
6.6 Run Microsoft Windows Updates to check for and install updates and security patches.

SAMPLE PERFORMANCE TASKS

- Identify basic operating systems and describe use.
- Replace components and reconfigure CMOS and test.
- Troubleshoot Microsoft Windows problems.
- Configure Microsoft Windows start up options to troubleshoot performance problems.
- Run Microsoft Windows Update.
- Configure Microsoft Windows to automatically update when updates are available.

INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), CompTIA, Professional Development Program, SkillsUSA, Science, Electronics, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical-Thinking Skills, Computer Skills, Internet Navigation.
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 7.0

Students will identify and troubleshoot common peripheral devices that can be attached to the unit.

LEARNING EXPECTATIONS

The student will:
7.1 Manipulate keyboard, mouse, CD burners, scanners, and other peripheral devices.
7.2 Evaluate connections or exchange display devices.
7.3 Identify common components and devices that can be attached to the unit.
7.4 Connect a variety of devices to the central processing unit.
7.5 Perform troubleshooting techniques on malfunctioning devices.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
7.1 Performs activities using the keyboard, mouse, CD burners, scanners, and other peripheral devices.
7.2A Makes necessary adjustments to connections or exchange display devices.
7.2B Troubleshoots connections or exchange display devices.
7.3 Correctly identifies common peripheral devices and their connection to the unit.
7.4 Troubleshoots peripheral device connections.
7.5 Perform troubleshooting operations and take corrective action on malfunctioning system devices.

SAMPLE PERFORMANCE TASKS

- Install software for peripheral devices.
- Set up mouse pointers, tracking speeds, and click functions.
- Demonstrate key functions such as alternate (Alt) and control (Ctrl).
- Correctly identify devices that can be attached to the system.
- Set up graphic card properties.
- Set up peripheral device properties.
- Diagnose, repair and/or replace malfunctioning devices.

INTEGRATION/LINKAGES

SkillsUSA Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), CompTIA, Professional Development Program, SkillsUSA Science, Electronics, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical-Thinking Skills, Computer Skills, Internet Navigation
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 8.0

Students will demonstrate an understanding of basic network structure, and will recognize and describe the characteristics of networking media and connectors.

LEARNING EXPECTATIONS

The student will:

8.1 Evaluate the characteristics of star, bus, mesh, and ring topologies, their advantages and disadvantages.
8.2 Research the characteristics of segments and backbones.
8.3 Compare the advantages and disadvantages of coax, Cat 3, Cat 5, fiber optic, UTP, and STP, wireless and the conditions under which they are appropriate.
8.4 Evaluate the proper procedure for twisted pair cable construction.
8.5 Evaluate the wireless standards and procedures for configuring a wireless device to a network.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

8.1 Compares the advantages and disadvantages of star, bus, mesh, and ring topologies.
8.2 Demonstrates the characteristics of segments and backbones.
8.3 Defines the length and speed of 10 Base5, 10Base2, 10BaseTx, 100BaseTx., and 100BaseFx.
8.4 Constructs a Cat 5e patch cable.
8.5 Define differences between wireless 802.11 A, B and G.

SAMPLE PERFORMANCE TASKS

• Diagram a star, bus, mesh, and ring topologies.
• Choice one topology and properly connect.
• Describe coax, Cat 3, Cat 5e, fiber optic, Unshielded Twisted Pair (UTP), and Shielded Twisted Pair (STP) and when each is used.
• Build and test a Cat 5e patch cable.
• Connect a wireless device to a network.

INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), Professional Development Program - SkillsUSA, CompTIA, Cisco Networking Technologies, Computer Skills, Science, Electronics, Networking Skills, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical Thinking Skills, Internet Navigation Skills.
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 9.0

Students will compare the basic attributes, purpose, and function of network elements and associate protocols with their appropriate functions.

LEARNING EXPECTATIONS

The student will:

9.1 Research the differences, advantages, and disadvantages of standard protocols.
9.2 Set up and properly configure standard protocols.
9.3 Compare and contrast full and half-duplexing.
9.4 Differentiate a wide area network (WAN) and local area network (LAN).
9.5 Compare and contrast a server, workstation, host, and client.
9.6 Analyze server-based networking and peer-to-peer networking.
9.7 Research the terms cable, network interface card (NIC), and router.
9.8 Compare and contrast broadband and baseband.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

9.1A Evaluates the findings of research on standard protocols.
9.1B Compares a network monitor and a network or protocol analyses.
9.2 Installs and configures standard protocols.
9.3 Describes full and half-duplexing in Ethernet operation.
9.4A Develops a presentation explaining wide area network (WAN) and local area network (LAN).
9.4B Describes the benefits of virtual LANs.
9.5 Describes the differences between Server/Host and Workstation/Client.
9.6 Associates server-based and peer–to-peer networking.
9.7 Describes the following terms: cable, network, interface card (NIC), and router.
9.8 Illustrates broadband and baseband.

SAMPLE PERFORMANCE TASKS

• Determine when each protocol is to be used.
• Network two computers using appropriate protocol and test.
• Set up a network card with full and half-duplex.
• Construct and test a peer-to-peer network.
• Create a user and login to the network.
• Discuss the differences in broadband and baseband.
INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), Professional Development Program - SkillsUSA, CompTIA, Cisco Networking Technologies, Computer Skills, Science, Electronics, Networking Skills, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical Thinking Skills, Internet Navigation Skills.
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 10.0

Students will apply basic digital theory used in computer systems.

LEARNING EXPECTATIONS

The student will:

10.1 Define the basics of a binary counting system.
10.2 Define the basics of a hexadecimal counting system.
10.3 Define the function of digital AND, OR, and NOT functions.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student can:

10.1 Count from 0 to 15 in binary.
10.2A Count from 0 to 15 in hexadecimal.
10.2B Convert a binary number to a hexadecimal number.
10.3 Create truth tables defining the functions AND, OR, and NOT.

SAMPLE PERFORMANCE TASKS

- Create a digital counter using coins.
- Define a web page’s background color using a hexadecimal RGB value.
- Construct a truth table for the seatbelt warning light in an automobile.

INTEGRATION LINKAGES

INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 11.0

Students will analyze the open system interconnect (OSI) reference model.

LEARNING EXPECTATIONS

The student will:

11.1 Evaluate the three categories of the open system interconnect (OSI) model.
11.2 Evaluate the protocols, services, and functions that pertain to each layer of the open system interconnect (OSI) reference model.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

11.1A Analyzes the network layer of the open system interconnect (OSI) reference model.
11.1B Analyzes the data link layer of the open system interconnect (OSI) reference model.
11.1C Analyzes the physical layer of the open system interconnect (OSI) reference model.
11.1D Analyzes the functions of each layer of the open system interconnect ISO/OSI reference model.
11.2A Appraises the values of bridges and switching devices.
11.2B Evaluates the strengths and weaknesses of various topologies relating to underlying cable.
11.2C Locates and implements industry standards, such as the EIA/TIA 568 specifications.
11.2D Relates protocols, services, and functions to the open system interconnect (OSI) model.

SAMPLE PERFORMANCE TASK

• List the key internetworking functions of the open system interconnect (OSI) Network layer.
• Draw and label the open system interconnect (OSI) model.
• List reasons the information technology industry uses a layered model.
• Develop a presentation on collision domains and broadcast domains that explains how they affect the performance of the network.
• Perform a cable audit to identify areas that need upgrades and rewiring.

INTEGRATION LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), Professional Development Program - SkillsUSA, CompTIA, Cisco Networking Technologies, Computer Skills, Science, Electronics, Networking Skills, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical Thinking Skills
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 12.0

Students will analyze major network operating systems, such as Microsoft Windows Server, Novell, Linux, and Unix.

LEARNING EXPECTATIONS

The student will:
12.1 Research client base that best serve specific network operating systems and their resources.
12.2 Analyze the directory services of the major network operating systems.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
12.1A Outlines characteristics of network operating systems and resources.
12.1B Outlines characteristics of particular clients to determine networking operating systems.
12.2A Logs on to the directory tree and makes changes.
12.2B Adds and deletes users on the directory service.

SAMPLE PERFORMANCE TASKS

• Install and test client software for a given operating system.
• Create new users and set up their rights.

INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), Professional Development Program - SkillsUSA, CompTIA, Cisco Networking Technologies, Computer Skills, Science, Electronics, Networking Skills, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical Thinking Skills, Internet Navigation Skills.
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 13.0

Students will be able to make verify and troubleshoot electrical connections of computer hardware.

LEARNING EXPECTATIONS

The student will:
13.1 Make and verify connections of a computer power supply.
13.2 Make and verify connections of multimedia components in a computer system.
13.3 Make and verify connections of data cables in a computer system (e.g. drives, network, USB, serial, printer).
13.4 Make and verify connections of video cables in a computer system.
13.5 Identify and remedy a failed computer power supply.
13.6 Identify and remedy troublesome multimedia components in a computer system.
13.7 Make and verify connections of data cables in a computer system (e.g. drives, network, USB, printer, serial).
13.8 Make and verify connections of video cables in a computer system.
13.9 Contrast and compare the connections and applications of AC versus DC power in computer systems.
13.10 Measure voltages and currents related to computer systems.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
13.1A Connects 110V to the power supply.
13.1B Connects DC power cables to the drives in a computer system.
13.1C Connects DC power cable to the motherboard in a computer system.
13.2A Connects audio cables between multimedia devices (e.g., CD-drive, DVD drive, sound card, speakers, microphones).
13.2B Connects video cables between multimedia devices (e.g., web cams, DV camcorder).
13.3A Connects data drive cables to motherboard and other I/O devices.
13.3B Connects communications cables to the computer system (e.g., network card, modem).
13.3C Connects peripheral devices to the computer system (e.g., printer, scanner, mouse, keyboard).
13.4A Connects video monitor cables to the computer system.
13.4B Connects 110V to the video monitor.
13.5A Recognizes symptoms of a failed or failing power supply.
13.5B Replaces a computer system’s power supply.
13.6A Recognizes and remedies audio connection problems (e.g., speakers, microphones, CD player).
13.7A Recognizes and remedies video connection problems (e.g., web cams, DV camcorder).
13.8 Recognizes and remedies data cable connection problems (e.g. drives, network, USB, printer, serial).
13.9 Recognizes and remedies video monitor connection problems.
13.9A Safely makes AC and DC connections inside a computer system.
13.9B Protects the computer electronics by following proper grounding precautions while working on the computer systems.
13.10A Uses a voltmeter to measure AC voltages connected to computer system components.
13.10B Uses a voltmeter to measure DC voltages connected to computer system components.

SAMPLE PERFORMANCE TASKS

- Reconnect cables following a motherboard change.
- Reconnect all peripheral components to a computer system.
- Set up a computer system for desktop videoconferencing.
- Replace a computer system’s power supply.
- Measure and verify the output voltages in a computer power supply.
- Set up a computer system for desktop videoconferencing.
- Replace a computer system with a new/different video monitor.

INTEGRATION LINKAGES

INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 14.0

Students will demonstrate advanced knowledge of the Internet.

LEARNING EXPECTATIONS

The student will:

14.1 Illustrate the relationship of Web design terms to Web designs and software applications.
14.2 Demonstrate the use of search engines and search terms.
14.3 Navigate between Uniform Resource Locator (URL) links.
14.4 Comprehend and apply standard path/file name structure.
14.5 Demonstrate knowledge of Web 2.0 technologies.
14.6 Explain the concept of cloud computing.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

14.1A Evaluates methods used or actions taken and assigns the appropriate terms.
14.2A Queries and uses Internet search engines to obtain specified results.
14.2B Uses appropriate software to configure browser for specifications.
14.2C Configures basic and advanced browser settings to connect to the Internet.
14.3A Compares the relationships between different types of URL’s.
14.3B Recognizes and discusses the differences between File Transfer Protocol and Hypertext Transfer Protocol.
14.4A Differentiates between relative and absolute URL’s.
14.4B Determines the path/file name syntax to locate files on a computer.
14.4C Distinguishes between DOS and UNIX based path-names.
14.5A Identify Web 2.0 Applications.
14.5B Choose appropriate Web 2.0 application for a given project.
14.6A Explain services that are available through cloud computing.

SAMPLE PERFORMANCE TASKS

- Defines terms used unique to the World Wide Web and page design.
- Incorporate vocabulary words during classroom discussion and development of web pages.
- Given a pre-constructed Web Page, students will define tags and techniques used.
- Set up and use common web browser software to navigate the Internet.
- Obtain and anticipate results from search engine queries.
- Using Internet Explorer or Firefox browser software, configure browser to the specifications provided.
- Look up Web 2.0 graphic editing application such as http://www.picnik.com/.
- Research different cloud computing services and discuss how these services may save a business money to implement.
INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), CompTIA, Professional Development Program, SkillsUSA, Science, Electronics, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical-Thinking Skills, Computer Skills, Internet Navigation
INFORMATION TECHNOLOGY FOUNDATIONS

STANDARD 15.0

Students will develop proficiency with the features and utilities available with commercial off-the-shelf (COTS) Web building software.

LEARNING EXPECTATIONS

The student will:

15.1 Evaluate the features of commercial off-the-shelf (COTS) Web publishing packages.
15.2 Uses COTS Web publishing software to construct page features.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

15.1A Develops Web pages using two COTS products and compares the results.
15.1B Differentiates between COTS product limitations and abilities.
15.2 Comprehends the need for the development of markup languages building skills with COTS.

SAMPLE PERFORMANCE TASKS

- Construct several Web pages with each COTS product. Using a rubric, list the abilities and limitations of each assessed product. Using markup language scripting abilities from previous lessons, modify the constructed pages in those areas that the COTS would not perform.

INTEGRATION/LINKAGES

SkillsUSA, Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), Secretary’s Commission on Achieving Necessary Skills (SCANS), CompTIA, Professional Development Program, SkillsUSA, Science, Electronics, Math, Language Arts, Teambuilding Skills, Communication Skills, Critical-Thinking Skills, Computer Skills, Internet Navigation Skills, World Wide Web Consortium (WC3), HTML Writers Guild (HWG)