CompuScholar, Inc.

Alignment to Tennessee **Computer Science Foundations** Standards

Tennessee Course Details:

Course Name:	Computer Science (IT) Foundations
Primary Career Cluster:	Information Technology (IT)
Course Code:	C10H11
Credit:	1
Grade Level:	9
Standards Link:	cte_std_cs_foundations.pdf

CompuScholar Course Details:

Course Title:	Digital Savvy
Course ISBN:	978-0-9887070-8-5
Course Year:	2020

Note 1: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 2: Citation(s) for a "Lesson" refer to the "Lesson Text" elements and associated "Activities" within the course, unless otherwise noted. The "Instructional Video" components are supplements designed to introduce or re-enforce the main lesson concepts, and the Lesson Text contains full details.

Course Description

Information Technology Foundations (ITF) is a course intended to provide students with exposure to various information technology occupations and pathways such as Networking Systems, Programming and Software Development, and Web Design. As a result, students will complete all core standards, as well as standards in two of three focus areas. Upon completion of this course, proficient students will be able to describe various information technology (IT) occupations and professional organizations. Moreover, they will be able to demonstrate logical thought processes and discuss the social, legal, and ethical issues encountered in the IT profession. Depending on the focus area, proficient students will also demonstrate an understanding of electronics and basic digital theory; project management and teamwork; client relations; causes and prevention of Internet security breaches; and writing styles appropriate for web publication. Upon completion of the ITF course, students will be prepared to make an informed decision about which Information Technology program of study to pursue. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects and Tennessee State Standards in Mathematics.

Course Standards

Safety	CITATION(S)
1) Accurately read, interpret, and demonstrate adherence to safety rules, including (1) rules published by the National Science Teachers Association (NSTA), (2) rules pertaining to electrical safety, (3) Internet safety, (4) Occupational Safety and Health Administration (OSHA) guidelines, and (5) state and national code requirements. Be able to distinguish between rules and explain why certain rules apply.	Chapter 24, Lesson 3
2) Identify and explain the intended use of safety equipment available in the classroom. For example, demonstrate how to properly inspect, use, and maintain safe operating procedures with tools and equipment.	Chapter 24, Lesson 3 (computer workstations)

Electronics and Basic Digital Theory	CITATION(S)
3) Demonstrate understanding of electrical circuits and devices, and relate to the physical laws (such as Ohm's Law and power laws) that govern behaviors of electrical circuits and devices. Accurately apply these physical laws to solve problems. For example, calculate the resistance of a DC circuit with a given DC voltage and current.	n/a
4) Assemble the required connections of electronic test equipment to properly test the operation of basic electronic circuit behavior and performance, using equipment such as a digital multimeter. For example, demonstrate the proper use of a digital multimeter by measuring resistance of a circuit in a typical computer system; compare this finding by calculating the resistance given the voltage and current.	n/a
5) Distinguish between the binary and hexadecimal counting systems. Using appropriate units, provide examples of each system and identify specific instances when IT professionals rely on them.	Chapter 20, Lesson 2 Supplemental Chapter 2, Lesson 1
6) Explain the functions of gates in logic circuits (e.g., AND, OR, NOT). For example, construct a truth table for the seatbelt warning light in an automobile.	n/a
7) Research various occupations in information technology industries, such as programmers, web designers, webmasters, networking administrators, computer systems administrators, and telecommunications line installers. Compose an informative table or chart that includes the following: work activities typically performed, tools and technology used, nature of work environment, and the knowledge and skills needed for success.	Chapter 24, Lesson 1 Chapter 24 Activity
8) Explore various professional societies related to information technology and identify the services and benefits provided by each member. Create a table that lists their purposes, benefits to membership, and any certifications affiliated with the organization. For example, investigate the Institute for Electrical and Electronics Engineers (IEEE), Computing Technology Industry Association (CompTIA), and the Association for Computing Machinery (ACM).	n/a

9) Drawing on multiple sources (i.e., internet, textbooks, videos, and journals), research the history of the Internet. Create a timeline or infographic, illustrating the Internet's historical evolution from its inception to the present time. Discuss the needs that led to the creation of the Internet; discuss both the benefits and disadvantages of the Internet to society, as well as potential implications for the future. Provide examples drawn from the research to support claims.	Historical computing topics and/or the Internet are discussed in several areas: Chapter 1, Lesson 4 Chapter 6 (all lessons) Chapter 16 (all lessons) Chapter 19, Lesson 1

Overview of Operating Systems	CITATION(S)
10) Drawing on multiple sources (i.e., internet, textbooks, videos, and journals), research the history and development of operating systems (e.g., Microsoft Windows, Linux, UNIX). Create a presentation, illustrating their historical evolution, from their inceptions to the present, citing information found in research. Compare and contrast the general capabilities of a variety of operating systems, and explain how their designs and functionalities have improved over time.	Chapter 1, Lesson 4 Chapter 3, Lesson 1 Chapter 3, Lesson 2

Terminology and Concepts	CITATION(S)
11) Demonstrate an understanding of basic web terminology and concepts. Practice explaining these terminologies and concepts by creating methods to help students learn and remember the information. For example, students should be able to explain the purpose of terminology such as server, domain name system (DNS), internet service provider (ISP), hardware and software connective devices, cloud computing, remote access protocols, map protocols, content management systems (CMS), cascading stylesheets (CSS), and social networking terms.	Chapter 2, Lesson 3 Chapter 6 (all lessons) Chapter 7, Lesson 1 Chapters 16, 17, 18, 19 (all lessons)
12) Demonstrate a basic understanding of computer hardware components. Identify these components using pictures or actual models and briefly explain the function of each. Components should include, but are not limited to: a. Hardware used for input and output b. Hardware inside the computer case c. Motherboard d. Processor and the chipset e. Storage devices (e.g., primary, secondary) f. Expansion cards g. Electrical system	Chapter 1, Lesson 2 Chapter 1, Lesson 3

Keyboard Shortcuts	CITATION(S)
13) Identify, explain, and demonstrate the use of common keyboard shortcuts. Create a quick reference guide that would be user-friendly for a novice web designer. For example, students may create a multiple column table showing keyboard shortcuts for navigation, text editing, and text formatting. The table would identify which shortcuts are applicable to using Windows versus Mac OS.	Keyboard shortcuts introduced as needed throughout the course. For example: Chapter 9, Lesson 2

Introduction to Logical Thought Process	CITATION(S)
14) There are different versions of the web design and development process. For example, most versions of the web design and development process involve project definition, site structure, visual design, site development, testing, refining, and launch. Using various resources, research, identify, and explain the steps involved in the process. As a class, develop an agreed-upon framework for applying the logical thought process to web design projects in the form of a flowchart or logic model, justifying the reasoning behind each step. Explain why it is an iterative process and always involves refinement.	Chapter 13, Lesson 2 (all projects, not just web design) Chapter 14 (Mid-Term Project) Chapter 25 (Final Project) (Mid-Term and Final projects include phased delivery using project management artifacts).
15) Research, identify, and describe the specific activities involved at each step of the troubleshooting process, including by not limited to: 1) gather information from the user or operator and back up data, 2) verify the problem exists, 3) isolate the cause of the problem and generate alternative solutions, 4) plan a solution and resolve the problem, 5) verify that the problem was resolved and prevent a future occurrence, and 6) document findings, resolution, and preventative maintenance plan. Explain why it is important to document the process throughout.	Chapter 1, Lesson 3 Chapter 1 Activity Chapter 5, Lesson 3 Chapter 5 Activity Chapter 6, Lesson 4
16) Demonstrate an understanding of flowcharts and know what various symbols mean. Identify a problem that a programmer would solve using the logical thinking process, and create a flowchart that would guide the code development. For example, create a flowchart that incorporates at least three decisions, or paths, to solve a problem.	Chapter 11, Lesson 5 Chapter 22, Lesson 3 Chapter 23 Activity

Teamwork & Project Management	CITATION(S)
17) Explore how teams are formed to complete and manage web design and development projects. Using the information gained from research, identify and explain various roles and responsibilities for members of a web design and development team. Include why teams are more efficient than individuals in the web design and development process. Present the findings to classmates.	Chapter 13, Lesson 1 Chapter 12, Lesson 2 (all projects, not just web design) Chapter 14 (Mid-Term Project) Chapter 25 (Final Project) (Mid-Term and Final projects completed as a team)

18) Synthesize common principles and templates for successful project management. Explain, using examples, why strong management skills are important in the web design and development process.	Chapter 13, Lesson 1 Chapter 12, Lesson 2 (all projects, not just web design) Chapter 14 (Mid-Term Project) Chapter 25 (Final Project) (Mid-Term and Final projects completed using project management artifacts.)

Client Relations	CITATION(S)
19) Research and identify the skills that are required to communicate effectively with a client. Develop a questionnaire that would be used to determine the needs of a client for a prospective web development project. Using the questionnaire, conduct mock client interviews with classmates and provide each other with constructive feedback to revise the questionnaire and process.	Chapter 14 (Mid-Term Project) Chapter 25 (Final Project) (Mid-Term and Final Projects include phased delivery with feedback from peers. Teachers may add client-driven requirements to projects).

Writing and Editing for Web Publication	CITATION(S)
20) As a team, list primary rules to guide writing content that is appropriate for a web site publication. Apply these rules to a variety of web-based writing assignments throughout the course. For example, develop and maintain a blog throughout the course to practice appropriate writing techniques and style for web publication.	n/a overall, though students will work in teams to create web-based projects in Chapter 25, including content creation
21) Given a specific client's vision, create a simple web site using a content management system (CMS) such as WordPress. Follow the multistep process to download the software application of choice, and demonstrate how to upload and store files. Practice proofreading and critiquing other classmates' sites, and provide constructive feedback on one another's writing and layout design.	n/a overall, though students will work in teams to create web-based projects in Chapter 25, including review and constructive feedback from peers

Social, Legal, and Ethical Issues	CITATION(S)
22) Drawing on multiple sources (i.e., internet, textbooks, videos, and journals), research the various social, legal, and ethical issues encountered by IT professionals. Using these findings, identify the roles and responsibilities one must consider while developing a prospective project or addressing an IT problem. For example, web developers and programmers must apply copyright laws and understand uses of open source software.	Chapter 8, Lesson 1 Chapter 8, Lesson 4 Chapter 8, Lesson 5

Security	CITATION(S)
23) Demonstrate an understanding of the various security breaches that can occur with the Internet. Prepare a text explaining enterprise-level security, the purpose of encryption, and the protocols that can be implemented to secure web sites. Evaluate personal privacy issues versus employers' rights to regulate computing resources.	Chapter 8, Lesson 1 Chapter 8, Lesson 2 Chapter 8, Lesson 3
24) Identify various security practices for computer and network systems, such as how to control access to secured resources and computer resources. Give specific examples of methods that an administrator can use, like encryption techniques, basic input/output system (BIOS) features, and strategies for dealing with malware.	Chapter 8, Lesson 1 Chapter 8, Lesson 2 Chapter 8, Lesson 3

Organization of Materials	CITATION(S)
25) Understand and demonstrate the effective use of file and folder management techniques to maintain directory structure for a web site. Describe the most efficient methods for digital file management, including the use of site root and subfolders for assets (e.g., images, templates, CSS).	Chapter 4, Lesson 1 Chapter 4, Lesson 2 Chapter 19, Lesson 1

Programming	CITATION(S)
26) Explore and identify various languages, such as Python, HTML, PHP, C++, Visual Basic, Java, JavaScript, and C#. Explain how programmers use these languages to solve a variety of IT problems, furnishing examples of how they are applied.	Chapter 22, Lesson 1 Chapter 22, Lesson 2
27) Using various resources, research, identify, and explain the steps involved in the software development life cycle, including but not limited to: planning, designing, coding, testing, deployment, and maintenance. Explain why it is an iterative process and always involves refinement.	Chapter 13, Lesson 2 (all projects, not just programming) Chapter 25 (Final Project) (Final project includes phased delivery website and/or program).
28) Demonstrate an understanding of how batch files function within a programming environment. Identify common commands to create code for batch files (e.g., title, echo, echo off, pause, CLS, ipconfig, and ping). For example, list various scenarios for using batch files to complete specific programming tasks. Create and execute batch file code to perform one of the tasks identified.	n/a