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:	<pre>cte_std_cs_foundations.pdf (May 2023 Version)</pre>

CompuScholar Course Details:

Course Title:	Digital Savvy
Course ISBN:	978-0-9887070-8-5
Course Year:	2023

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

Computer Science Foundations (CSF) is a course intended to provide students with exposure to various information technology occupations and pathways such as Networking Systems, Coding, Web Design, and Cybersecurity. As a result, students will complete all core standards, as well as standards in two of four 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... (continued in the standards link above).

Course Standards

1. Safety	CITATION(S)
1.1 Safety Rules: Accurately read, interpret, and demonstrate adherence	Chapter 24, Lesson 3
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.	

1.2 Use of Safety Equipment: Identify and explain the intended use of	Chapter 24, Lesson 3 (computer
safety equipment available in the classroom. For example, demonstrate	workstations)
how to properly inspect, use, and maintain safe operating procedures with	
tools and equipment.	

2. Electronics and Basic Digital Theory	CITATION(S)
2.1 Electrical Circuits and Devices: Demonstrate understanding of electrical	n/a
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.	
2.2 Basic Electronic Circuit Behavior: Assemble the required connections of	n/a
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.	
2.3 Counting Systems: Distinguish between the binary and hexadecimal	Chapter 20, Lesson 2
counting systems. Using appropriate units, provide examples of each	Supplemental Chapter 2,
system and identify specific instances when IT professionals rely on them.	Lesson 1
2.4 Gates in Logic Circuits: Explain the functions of gates in logic circuits	n/a
(e.g., AND, OR, NOT). For example, construct a truth table for the seatbelt	
warning light in an automobile.	

3. Career Exploration	CITATION(S)
3.1 Occupations: Research various occupations in information technology	Chapter 24, Lesson 1
industries, such as programmers, web designers, webmasters, networking	Chapter 24 Activity
administrators, computer systems administrators, telecommunications	
line installers, and informational security analysts. 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.	
3.2 Professional Societies: Explore various professional societies related to	Supplemental Chapter 3,
information technology and identify the services and benefits provided by	Lesson 2
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).	

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

5. Overview of Operating Systems	CITATION(S)
5.1 Development of Operating Systems: Drawing on multiple sources (i.e.,	Chapter 1, Lesson 4
internet, textbooks, videos, and journals), research the history and	Chapter 3, Lesson 1
development of operating systems (e.g., Microsoft Windows, Linux, UNIX).	Chapter 3, Lesson 2
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.	

6. Terminology and Concepts	CITATION(S)
6.1 Web Terminology: Demonstrate an understanding of basic web	Chapter 2, Lesson 3
terminology and concepts. Practice explaining these terminologies and	Chapter 6 (all lessons)
concepts by creating methods to help students learn and remember the	Chapter 7, Lesson 1
information. For example, students should be able to explain the purpose	Chapters 16, 17, 18, 19 (all lessons)
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 style sheets (CSS), and social networking terms.	
6.2 Computer Hardware Components: Demonstrate a basic understanding	Chapter 1, Lesson 2
of computer hardware components. Identify these components using	Chapter 1, Lesson 3
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	
6.3 Computer Networks: Demonstrate a basic understanding of computer	Chapter 6
networking. For example, explain the types of networks and what a client-	
server environment is.	

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

8. Emerging Technologies	
8.1 Evolution of Cloud Computing: Synthesize research of historical and	n/a
significant milestones that influenced the evolution of cloud computing.	
Create an annotated timeline or visual graphic illustrating significant time	
periods and major impacts of technology trends that influenced the	
development of cloud computing. Use academic research and news media	
citing specific textual evidence from research.	
8.2 Cloud Technologies Role: Identify, describe, and effectively summarize	Chapter 4, Lesson 4
cloud technology roles including: cloud computing customer, cloud service	
provider, and cloud service partner. Create a written report or visual	
depiction outlining the characteristics of each.	
8.3 Models of Cloud Technology: Research the features and requirements	n/a
of the four main deployment models for cloud technology: public, private,	
community, and hybrid. Create a graphic illustration showing the roles of	
each and describe their differences.	
8.4 Cloud Technologies: Consult a variety of sources to describe how	n/a
virtualization, storage, networking, and databases in cloud technologies	
are used. Sources may include textbooks, manuals, websites, video	
tutorials, and more. Create a visual display with accompanying text	
comparing these methods.	
8.5 Internet of Things (IoT): Explore the onset of the Internet of Things	n/a
(IoT) and explain how it is enabled by sensors, actuators, communication	
devices and computers that exchange and process data and can interface	
with users in a most instinctual way. Using a specific example, summarize	
in a graphic illustration or narrative how the IoT combines information,	
automation, computation, software, sensing, and networking to make	
traditional processes more efficient.	
8.6 Statistical Efficiency and Quality: Consult internet forums, textbooks,	n/a
industry journals, and other instructional materials to research the	
importance of developing and implementing databases, data collection	
systems, data analytics, and other strategies that optimize statistical	
efficiency and quality. Write a brief paper that discusses the importance of	
these services in business today. Provide specific examples to support the	
claims.	

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

10. Teamwork and Project Management	CITATION(S)
10.1 Roles of Team Members: Explore how teams are formed to complete	Chapter 13, Lesson 1
and manage web design and development projects. Using the information	Chapter 12, Lesson 2 (all projects,
gained from research, identify and explain various roles and	not just web design)
responsibilities for members of a web design and development team.	Chapter 14 (Mid-Term Project)
Include why teams are more efficient than individuals in the web design	Chapter 25 (Final Project)
and development process. Present the findings to classmates.	(Mid-Term and Final projects
	completed as a team)
10.2 Importance of Management Skills: Synthesize common principles and	Chapter 13, Lesson 1
templates for successful project management. Explain, using examples,	Chapter 12, Lesson 2 (all projects,
why strong management skills are important in the web design and	not just web design)
development process.	Chapter 14 (Mid-Term Project)
	Chapter 25 (Final Project)
	(Mid-Term and Final projects
	completed using project
	management artifacts.)

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

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

13. Social, Legal, and Ethical Issues	CITATION(S)
13.1 Social, Legal, and Ethical Issues: Drawing on multiple sources (i.e.,	Chapter 8, Lesson 1
internet, textbooks, videos, and journals), research the various social,	Chapter 8, Lesson 4
legal, and ethical issues encountered by IT professionals. Using these	Chapter 8, Lesson 5
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.	

14. Cybersecurity	CITATION(S)
14.1 Data Security: Using various sources (i.e., internet, textbooks, videos,	Chapter 8, Lesson 2
and journals), research and identify reasons as to why data security should	
be a priority to technology professionals through demonstrating an	
understanding of information security fundamentals on Confidentiality,	
Availability, and Integrity.	
14.2 Security Breaches: Demonstrate an understanding of the various	Chapter 8, Lesson 1
security breaches that can occur with the Internet. Prepare a text	Chapter 8, Lesson 2
explaining enterprise-level security, the purpose of encryption, and the	Chapter 8, Lesson 3
protocols that can be implemented to secure web sites. Evaluate personal	
privacy issues versus employers' rights to regulate computing resources.	

14.3 Security Practices: Identify various security practices for computer	Chapter 8, Lesson 1
and network systems, such as how to control access to secured resources	Chapter 8, Lesson 2
and computer resources. Give specific examples of methods that an	Chapter 8, Lesson 3
administrator can use, like encryption techniques, basic input/output	
system (BIOS) features, and strategies for dealing with malware.	

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

16. Programming	CITATION(S)
16.1 Programming Language: Explore and identify various languages, such	Chapter 22, Lesson 1
as Python, HTML, PHP, C++, Visual Basic, Java, JavaScript, and C #. Explain	Chapter 22, Lesson 2
how programmers use these languages to solve a variety of IT problems,	
furnishing examples of how they are applied.	
16.2 Software Development Life Cycle: Using various resources, research,	Chapter 13, Lesson 2 (all projects,
identify, and explain the steps involved in the software development life	not just programming)
cycle, including but not limited to: planning, designing, coding, testing,	Chapter 25 (Final Project)
deployment, and maintenance. Explain why it is an iterative process and	(Final project includes phased
always involves refinement.	delivery website and/or program).
16.3 Batch Files: Demonstrate an understanding of how batch files	n/a
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.	