Tennessee Computer Science

Middle School

Foundational Concepts MS.FC	1 **Analyze the advantages and limitations of existing computing devices to improve user experience.** MS.FC.1
	2 **Demonstrate skills in identifying and solving hardware and software problems that can occur during regular usage.** MS.FC.2
	3 **Apply computational thinking to a variety of problems across multiple disciplines.** MS.FC.3
	4 **Understand how collaboration is essential to computer science and apply collaborative skills to develop computational solutions.** MS.FC.4
Algorithmic Thinking MS.AT	1 **Use clearly named variables of various data types to create generalized algorithms.** MS.AT.1
	2 **Create algorithms which include methods of controlling the flow of computation using "if…then… else" type conditional statements to perform different operations depending on the values of inputs.** MS.AT.2
	3 **Identify algorithms that make use of sequencing, selection, or iteration.** MS.AT.3
	4 **Describe how algorithmic processes and automation increase efficiency.** MS.AT.4
Data Analysis MS.DA	1 **Represent data using multiple encoding schemes, such as decimal, binary, Unicode, Morse code, Shorthand, student-created codes.** MS.DA.1
	2 **Refine computational models based on the data they have generated.** MS.DA.2
	3 **Collect, analyze, transform, and refine computational data to make it more useful and reliable.** MS.DA.3
Networking and the Internet MS.NI	1 **Identify and employ appropriate troubleshooting techniques used to solve computing or connectivity issues.** MS.NI.1
	2 **Differentiate between secure and non-secure websites and applications including how they affect and use personal data.** MS.NI.2
	3 **Describe the causes and effects of intellectual property as it relates to print and digital media, considering copyright, fair use, licensing, sharing, and attribution.** MS.NI.3

	4 **Compare and contrast common methods of securing data and cybersecurity.** MS.NI.4
	5 **Analyze different modes of social engineering and their effectiveness.** MS.NI.5
Programming Concepts MS.PC	1 **Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.** MS.PC.1
	2 **Create procedures with parameters that hide the complexity of a task and can be reused to solve similar tasks.** MS.PC.2
	3 **Seek and incorporate feedback from team members and users to refine a solution that meets user needs.** MS.PC.3
	4 **Provide proper attribution when incorporating existing code, media, and libraries into original programs.** MS.PC.4
	5 **Use the iterative design process to systematically test and refine programs to improve performance and eliminate errors.** MS.PC.5
	6 **Document programs using comments and/or README files to make them easier to follow, test, and debug.** MS.PC.6
	7 **Design a function using a programming language.** MS.PC.7
Impacts of Computing MS.IC	1 **Identify and evaluate the impacts computer science innovations have had on our society.** MS.IC.1
	2 **Identify how computational systems are being used to collect and analyze information both public and private and understand the benefits and disadvantages of these systems for the user and developer.** MS.IC.2
	3 **Cite evidence of the positive and negative effects of data permanence on personal and professional digital identity.** MS.IC.3
	4 **Discuss digital globalization and Internet censorship.** MS.IC.4
	5 **Investigate a variety of education pathways and career options that utilize computational thinking and/or computer science skills across the state of Tennessee and the world.** MS.IC.5