*September 2022*

Skill Struck's alignment to

# Mississippi College- and Career-Readiness Standards for Computer Science

## Legend

✅ = Standard aligned

🔷 = Not currently aligned

| Standard | Status |
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| **CS.1A.1**<br>Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. | ✅ |
| **CS.1A.2**<br>Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). | ✅ |
| **CS.1A.3**<br>Describe basic hardware and software problems using accurate terminology. | ✅ |
| **NI.1A.1**<br>Explain what passwords are and why we use them. | ✅ |
| **NI.1A.2**<br>Students should understand that computers connect them to people, places, and things around the world. | ✅ |

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| **DA.1A.1**<br>Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data. | ✅ |
| **DA.1A.2**<br>Collect and present the same data in various visual formats. | ✅ |
| **DA.1A.3**<br>Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions. | ✅ |
| **AP.1A.1**<br>Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks. | ✅ |
| **AP.1A.2**<br>Model the way programs store and manipulate data by using numbers or other symbols to represent information. | ✅ |
| **AP.1A.3**<br>Develop programs with sequences and simple loops to express ideas or address a problem. | ✅ |
| **AP.1A.4**<br>Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. | ✅ |
| **AP.1A.5**<br>Develop plans that describe a program's sequence of events, goals, and expected outcomes. | ✅ |
| **AP.1A.6**<br>Give attribution when using the ideas and creations of others while developing programs. | ✅ |
| **AP.1A.7** | ✅ |

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| Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. | |
| **AP.1A.8**<br>Using correct terminology, describe steps taken and choices made during the iterative process of program development. | ✅ |
| **IC.1A.1**<br>Compare how people live and work before and after the implementation or adoption of new computing technology. | ✅ |
| **IC.1A.2**<br>Work respectfully and responsibly with others online. | ✅ |
| **IC.1A.3**<br>Keep login information private and log off of devices appropriately. | ✅ |
| **CS.1B.1**<br>Describe how internal and external parts of computing devices function to form a system. | ✅ |
| **CS.1B.2**<br>Model how computer hardware and software work together as a system to accomplish tasks. | ✅ |
| **CS.1B.3**<br>Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. | ✅ |
| **NI.1B.1**<br>Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. | ✅ |
| **NI.1B.2**<br>Discuss real-world cybersecurity problems and how personal information | ✅ |

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| can be protected. | |
| **DA.1B.1**<br>Organize and present collected data visually to highlight relationships and support a claim. | ✅ |
| **DA.1B.2**<br>Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea. | ✅ |
| **DA.1B.3**<br>Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data. | ✅ |
| **AP.1B.1**<br>Compare and refine multiple algorithms for the same task and determine which is the most appropriate. | ✅ |
| **AP.1B.2**<br>Create programs that use variables to store and modify data. | ✅ |
| **AP.1B.3**<br>Create programs that include sequences, events, loops, and conditionals. | ✅ |
| **AP.1B.4**<br>Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. | ✅ |
| **AP.1B.5**<br>Modify, remix, or incorporate portions of an existing program into one's own work to develop something new or add more advanced features. | ✅ |
| **AP.1B.6**<br>Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. | ✅ |
| **AP.1B.7** | ✅ |

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| Observe intellectual property rights and give appropriate attribution when creating or remixing programs. | |
| **AP.1B.8**<br>Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. | ✅ |
| **AP.1B.9**<br>Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. | ✅ |
| **AP.1B.10**<br>Describe choices made during program development using code comments, presentations, and demonstrations. | ✅ |
| **IC.1B.1**<br>Discuss computing technologies that have changed the world and express how those technologies influence and are influenced by cultural practices. | ✅ |
| **IC.1B.2**<br>Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users. | ✅ |
| **IC.1B.3**<br>Seek diverse perspectives for the purpose of improving computational artifacts. | ✅ |
| **IC.1B.4**<br>Use public domain or creative commons media and refrain from copying or using material created by others without permission. | ✅ |
| **CS.2.1**<br>Recommend improvements to the design of computing devices based on an analysis of how users interact with the devices. | ✅ |

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| **CS.2.2**<br>Design projects that combine hardware and software components to collect and exchange data. | ✅ |
| **CS.2.3**<br>Systematically identify and fix problems with computing devices and their components. | ✅ |
| **NI.2.1**<br>Model the role of protocols in transmitting data across networks and the Internet. | ✅ |
| **NI.2.2**<br>Explain how physical and digital security measures protect electronic information. | ✅ |
| **NI.2.3**<br>Apply multiple methods of encryption to model the secure transmission of information. | ✅ |
| **DA.2.1**<br>Represent data using multiple encoding schemes. | ✅ |
| **DA.2.2**<br>Collect data using computational tools and transform the data to make it more useful and reliable. | ✅ |
| **DA.2.3**<br>Refine computational models based on the data they have generated. | ✅ |
| **AP.2.1**<br>Use flowcharts and/or pseudocode to address complex problems as algorithms. | ✅ |
| **AP.2.2**<br>Create clearly named variables that represent different data types and | ✅ |

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| perform operations on their values. | |
| **AP.2.3**<br>Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. | ✅ |
| **AP.2.4**<br>Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. | ✅ |
| **AP.2.5**<br>Create procedures with parameters to organize code and make it easier to reuse. | ✅ |
| **AP.2.6**<br>Seek and incorporate feedback from team members and users to refine a solution that meets user needs. | ✅ |
| **AP.2.7**<br>Incorporate existing code, media, and libraries into original programs and give attribution. | ✅ |
| **AP.2.8**<br>Systematically test and refine programs using a range of test cases. | ✅ |
| **AP.2.9**<br>Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. | ✅ |
| **AP.2.10**<br>Document programs in order to make them easier to follow, test, and debug. | ✅ |
| **IC.2.1**<br>Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options. | ✅ |

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| **IC.2.2**<br>Discuss issues of bias and accessibility in the design of existing technologies. | ✅ |
| **IC.2.3**<br>Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. | ✅ |
| **IC.2.4**<br>Describe tradeoffs between allowing information to be public and keeping information private and secure. | ✅ |
| **CS.3A.1**<br>Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. | ✅ |
| **CS.3A.2**<br>Compare levels of abstraction and interactions between application software, system software, and hardware layers. | ✅ |
| **CS.3A.3**<br>Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. | ✅ |
| **NI.3A.1**<br>Evaluate the scalability and reliability of networks by describing the relationship between routers, switches, servers, topology, and addressing. | ✅ |
| **NI.3A.2**<br>Give examples to illustrate how sensitive data can be affected by malware and other attacks. | ✅ |
| **NI.3A.3**<br>Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. | ✅ |

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| **NI.3A.4**<br>Compare various security measures considering tradeoffs between the usability and security of a computing system. | ✅ |
| **NI.3A.5**<br>Explain tradeoffs when selecting and implementing cybersecurity recommendations. | ✅ |
| **DA.3A.1**<br>Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. | ✅ |
| **DA.3A.2**<br>Evaluate the tradeoffs in how data elements are organized and where data is stored. | ✅ |
| **DA.3A.3**<br>Collect, transform and organize data to help others better understand a problem. | ✅ |
| **DA.3A.4**<br>Create and evaluate computational models that represent real-world systems. | ✅ |
| **AP.3A.1**<br>Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. | ✅ |
| **AP.3A.2**<br>Use lists and functions to simplify solutions, generalizing computational problems instead of repeatedly using simple variables. | ✅ |
| **AP.3A.3**<br>Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. | ✅ |

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| **AP.3A.4**<br>Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions. | ✅ |
| **AP.3A.5**<br>Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. | ✅ |
| **AP.3A.6**<br>Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. | ✅ |
| **AP.3A.7**<br>Systematically design and develop programs for broad audiences by incorporating feedback from users. | ✅ |
| **AP.3A.8**<br>Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries. | ✅ |
| **AP.3A.9**<br>Evaluate and refine computational artifacts to make them more usable and accessible. | ✅ |
| **AP.3A.10**<br>Design and develop computational artifacts working in team roles using collaborative tools. | ✅ |
| **AP.3A.11**<br>Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs. | ✅ |
| **IC.3A.1**<br>Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. | ✅ |

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| **IC.3A.2**<br>Test and refine computational artifacts to reduce bias and equity deficits. | ✅ |
| **IC.3A.3**<br>Demonstrate ways a given algorithm applies to problems across disciplines. | ✅ |
| **IC.3A.4**<br>Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields. | ✅ |
| **IC.3A.5**<br>Explain the beneficial and harmful effects that intellectual property laws can have on innovation. | ✅ |
| **IC.3A.6**<br>Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. | ✅ |
| **IC.3A.7**<br>Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. | ✅ |
| **CS.3B.1**<br>Categorize the roles of operating system software. | ✅ |
| **CS.3B.2**<br>Illustrate ways computing systems implement logic, input, and output through hardware components. | ✅ |
| **NI.3B.1**<br>Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology). | ✅ |
| **NI.3B.2**<br>Compare ways software developers protect devices and information from | ✅ |

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| unauthorized access. | |
| **DA.3B.1**<br>Use data analysis tools and techniques to identify patterns in data representing complex systems. | ✅ |
| **DA.3B.2**<br>Select data collection tools and techniques to generate data sets that support a claim or communicate information. | ✅ |
| **DA.3B.3**<br>Evaluate the ability of models and simulations to test and support the refinement of hypotheses. | ✅ |
| **AP.3B.1**<br>Describe how artificial intelligence drives many software and physical systems. | ✅ |
| **AP.3B.2**<br>Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem. | ✅ |
| **AP.3B.3**<br>Use and adapt classic algorithms to solve computational problems. | ✅ |
| **AP.3B.4**<br>Evaluate algorithms in terms of their efficiency, correctness, and clarity. | ✅ |
| **AP.3B.5**<br>Compare and contrast fundamental data structures and their uses. | ✅ |
| **AP.3B.6**<br>Illustrate the flow of execution of a recursive algorithm. | ✅ |
| **AP.3B.7**<br>Construct solutions to problems using student-created components, such as procedures, modules and/or objects. | ✅ |

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| **AP.3B.8**<br>Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution. | ✅ |
| **AP.3B.9**<br>Demonstrate code reuse by creating programming solutions using libraries and APIs. | ✅ |
| **AP.3B.10**<br>Plan and develop programs for broad audiences using a software life cycle process. | ✅ |
| **AP.3B.11**<br>Explain security issues that might lead to compromised computer programs. | ✅ |
| **AP.3B.12**<br>Develop programs for multiple computing platforms. | ✅ |
| **AP.3B.13**<br>Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project. | ✅ |
| **AP.3B.14**<br>Develop and use a series of test cases to verify that a program performs according to its design specifications. | ✅ |
| **AP.3B.15**<br>Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality). | ✅ |
| **AP.3B.16**<br>Evaluate key qualities of a program through a process such as a code review. | ✅ |

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| **AP.3B.17**<br>Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems. | ✅ |
| **IC.3B.1**<br>Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society. | ✅ |
| **IC.3B.2**<br>Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society. | ✅ |
| **IC.3B.3**<br>Predict how computational innovations that have revolutionized aspects of our culture might evolve. | ✅ |
| **IC.3B.4**<br>Debate laws and regulations that impact the development and use of software. | ✅ |