South Carolina Employability Credential

Essentials of Technology

COMPUTING SYSTEMS CS

1. **Examine how hardware and software contribute to computing devices solving relevant problems.** CS.1
    1. Define key computing terms. CS.1.1
    2. Identify and define the key functional components (e.g., input devices, output devices, processor, operating system, software system, software applications, memory, storage). CS.1.2
    3. Explain Moore's Law. CS.1.3
    4. Compare and contrast operation systems (e.g., Mac, Windows, Chrome Android, iOS CS.1.4
    5. Analyze the progression of computing and impact on society (e.g., real-world setting such as traffic lights, medical devices, facial recognition). CS.1.5
    6. Investigate how a problem is systematically solved through the selection and integration of hardware and software components. CS.1.6

NETWORKS AND THE INTERNET NI

1. **Evaluate data transmission across networks, including the internet.** NI.1
    1. Describe how hardware, software, and protocols work together for transmitting data across networks. NI.1.1
    2. Describe how a picture, sound/song, and video are digitized and represented in a computer. NI.1.2
2. **Evaluate cybersecurity threats and appropriate security measures across networks.** NI.2
    1. Reflect on case studies or current events in which governments or organizations experienced data leaks or data loss as a result of cybersecurity attacks. NI.2.1
    2. Evaluate how sensitive data can be affected by malware and other attacks (e.g., denial-of- service attacks, ransomware, viruses, worms, spyware, phishing). NI.2.2

DATA AND ANALYSIS DA

1. **Evaluate various data collection methods, data storage tools, data analysis tools, data representation tools, and bit representation.** DA.1
2. **Construct a computational model using data sets of a real-world phenomenon.** DA.2
    1. Describe the various data collection methods, data analysis tools, and data representation tools. DA.2.1
    2. Describe the various data storage tools and data organization methods. DA.2.2

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3 Describe a data set that could be used to explore a real-world phenomenon or support a claim. DA.2.3

4 Create a data set that could be used to explore a real-world phenomenon or support a claim. DA.2.4

3 Create various ways to visually represent data. DA.3

1 Identify a data set that could be used to solve a real-world problem. DA.3.1

2 Construct a data visualization to solve a real- world problem using software tools (e.g., bar graph, line charts). DA.3.2

3 Analyze patterns in a data visualization then share information with a group of people. DA.3.3

IMPACT OF COMPUTING IC

1 Evaluate the impact of computing from a global perspective. IC.1

1 Compare and contrast the five disciplines of computing: computer science, software engineering, information technology, information systems, and computer engineering. IC.1.1

2 Compare and contrast careers in computing along with education requirements, training requirements, industry certifications, and salary range. IC.1.2

3 Research careers related to post-secondary goals that may have global impact. IC.1.3

2 Evaluate the legal and ethical tradeoffs that shape computing practices. IC.2

1 Discuss legal issues and consequences related to copyright laws, fair use laws, intellectual property, and ethics pertaining to downloading of images, photographs, documents, video, sounds, music, trademarks, for personal use. IC.2.1

2 Explain the importance of Acceptable Use Policies. IC.2.2

3 Select the most appropriate means of communication for given situations (e.g., personal versus professional communication, communication with employers). IC.2.3

4 Discuss how social media and computing devices have positively and negatively impacted communication. IC.2.4

5 Discuss issues related to personal security (e.g., personal, financial, professional). IC.2.5

6 Explain the implications of proper and improper use of social media (e.g., technical college admissions, employment, hacking, cyberbullying). IC.2.6

7 Explain the use of encryption and how it is used on a daily basis. IC.2.7

ALGORITHMS AND PROGRAMMING AP

1 Design algorithms that can be adapted to express an idea or solve a problem. AP.1

1 Create flowcharts and/or pseudocode to express a problem or idea as an algorithm. AP.1.1

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2 Build a combination of control structures that supports complex execution, readability, and program performance. AP.2

1 Trace the flow of execution of a program that uses a combination of control structures (e.g., conditionals, loops, event handlers, recursion). AP.2.1