Virginia CTE

Cybersecurity Fundamentals (6302)

Exploring Cybersecurity Fundamentals CF.1	1 **Describe cybersecurity.** CF.1.1
	2 **Describe the critical factors of information assurance.** CF.1.2
	3 **Define vulnerability and risk.** CF.1.3
	4 **Explain why organizations need to manage risk.** CF.1.4
	5 **Identify the concepts of cybersecurity risk management.** CF.1.5
	6 **Describe cybersecurity threats to an organization.** CF.1.6
	7 **Describe national and industry standards and regulations that relate to cybersecurity.** CF.1.7
	8 **Describe the cyberattack surface of various organizations.** CF.1.8
	9 **Analyze risks affecting critical infrastructure.** CF.1.9
Examining Computer Networks as a Foundational Element of Cybersecurity CF.2	1 **Describe computer components.** CF.2.1
	2 **Describe a network.** CF.2.2
	3 **Describe a wired network.** CF.2.3
	4 **Describe a wireless network.** CF.2.4
	5 **(Optional) Compare wired and wireless networks.** CF.2.5
	6 **Compare networking conceptual models.** CF.2.6
	7 **Discuss services and potential vulnerabilities.** CF.2.7
	8 **Differentiate between network types.** CF.2.8
	9 **Describe the concept of the Internet as a network of connected systems.** CF.2.9
	Identify networking protocols. CF.2.10

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Understanding Cyber Threats and Vulnerabilities CF.3	1	**Differentiate between a cyber threat and a vulnerability.** CF.3.1
	2	**Describe types of cyber threats.** CF.3.2
	3	**Analyze types of current cyber threats.** CF.3.3
	4	**Describe the concept of malware and the techniques to guard against it.** CF.3.4
	5	**Identify the perpetrators of different types of malicious hacking.** CF.3.5
	6	**Describe the characteristics of vulnerabilities.** CF.3.6
	7	**Identify the prevention of and protections against cyber threats.** CF.3.7
	8	**(Optional) Identify the cyber risks associated with bring your own device (BYOD) opportunities on computer networks.** CF.3.8
Exploring Ethics as it Relates to Cybersecurity CF.4	1	**Differentiate between ethics and laws.** CF.4.1
	2	**Distinguish among types of ethical concerns.** CF.4.2
	3	**Define cyberbullying.** CF.4.3
	4	**Identify actions that constitute cyberbullying.** CF.4.4
	5	**(Optional) Identify possible warning signs of someone being cyberbullied.** CF.4.5
	6	**(Optional) Demonstrate net etiquette (i.e., netiquette) as it relates to cybersecurity.** CF.4.6
	7	**Identify laws applicable to cybersecurity.** CF.4.7
Exploring Data Privacy CF.5	1	**Explain the concept of "personally identifiable information."** CF.5.1
	2	**Explain why personal data is valuable to both an individual and to organizations (e.g., governments, businesses) that collect it, analyze it, and make decisions based on it.** CF.5.2
	3	**Explain the techniques used to collect personal data through social media, web tracking, and mobile devices.** CF.5.3
	4	**Identify ways to control and protect personal data.** CF.5.4
	5	**Analyze the social and legal significance of the ongoing collection of personal digital information.** CF.5.5
Examining Data Security as Cy	1	**Distinguish between data, information, and knowledge.** CF.6.1
		dentify the most common ways data is collected. CF.6.2

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	3 **Identify the most common ways data can be stored.** CF.6.3
	4 **Explain the difference between data at rest, data in transit, and data being processed.** CF.6.4
	5 **Identify the most common ways data is used.** CF.6.5
	6 **Discuss how data can be compromised, corrupted, or lost.** CF.6.6
	7 **Explain how businesses and individuals can protect themselves against threats to their data.** CF.6.7
Securing Operating Systems CF.7	1 **Define the function of a computer operating system.** CF.7.1
	2 **(Optional) Identify the components of an operating system.** CF.7.2
	3 **List types of operating systems.** CF.7.3
	4 **Identify examples of widely used desktop and server operating systems.** CF.7.4
	5 **Evaluate the potential vulnerabilities, threats, and common exploits to an operating system.** CF.7.5
	6 **Identify best practices for protecting operating systems.** CF.7.6
	7 **Evaluate critical operating system security parameters.** CF.7.7
	8 **(Optional) Describe security and auditing logs.** CF.7.8
	9 **(Optional) Describe the role of a system backup.** CF.7.9
	10 **Define virtualization technology.** CF.7.10
	11 **(Optional) Identify advantages and disadvantages of using virtual machines.** CF.7.11
Programming as a Component of Cybersecurity CF.8	1 **Identify representation of data at lowest levels.** CF.8.1
	2 **Define programming in the context of cybersecurity.** CF.8.2
	3 **Differentiate between computer programming languages.** CF.8.3
	4 **(Optional) Describe Python.** CF.8.4
	5 **(Optional) Demonstrate Linux.** CF.8.5
	6 **(Optional) Evaluate common programming flaws that lead to ulnerabilities.** CF.8.6
	dentify best practices in secure coding and design. CF.8.7

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Exploring Cybersecurity Implications for Current and Emerging Technologies CF.9	1	**Identify ubiquitous computing.** CF.9.1
	2	**Description security and privacy implications of ubiquitous computing.** CF.9.2
Exploring Cybersecurity Careers CF.10	1	**Research career opportunities for cybersecurity professionals.** CF.10.1
	2	**Examine the Career Clusters affected by current and emerging technology.** CF.10.2
	3	**Identify the educational pathways for emerging cybersecurity professionals.** CF.10.3
	4	**Identify career paths and job titles within the cybersecurity and/or cyber forensics industry and Career Clusters.** CF.10.4
	5	**Research the cyber threats and security measures related to career pathways.** CF.10.5
Preparing for Industry Certification CF.11	1	**Identify testing skills and strategies for a certification examination.** CF.11.1
	2	**Describe the process and requirements for obtaining industry certifications related to the Cybersecurity Fundamentals course.** CF.11.2
	3	**Demonstrate the ability to complete selected practice examinations.** CF.11.3
	4	**Successfully complete an industry certification examination representative of skills learned in this course.** CF.11.4