Georgia CTAE

Secure Information Systems (11.01100) (2018) - Grades 6, 7, 8

Adopted 2018

Demonstrate employability skills required by business and industry to explore, research, and present careers in information technology. MS-CS-FSIS-1

1. **Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.** MS-CS-FSIS-1.1
2. **Make collaborative observations and demonstrate potential technology and interpersonal interactions in the digital world.** MS-CS-FSIS-1.2
3. **Model work-readiness traits required for success in the workplace including integrity, honesty, ethics, accountability, punctuality, time management, and respect for diversity.** MS-CS-FSIS-1.3
4. **Exhibit critical thinking and problem-solving skills to locate, analyze, and apply information in career planning and employment situations.** MS-CS-FSIS-1.4
5. **Present a professional image through appearance, behavior and language.** MS-CS-FSIS-1.5
6. **Investigate educational requirements, job responsibilities, employment trends, and opportunities within information technology career pathways using credible sources.** MS-CS-FSIS-1.6

Investigate and identify the basic components of computers and networks. MS-CS-FSIS-2

1. **Identify the basic components of the computer by disassembling and reassembling a demonstration model personal computer (can be done 'virtually' online if demo model is not available).** MS-CS-FSIS-2.1
2. **Demonstrate an understanding of key functional components (input devices, output devices, processor, operating system, software applications, memory, storage, Wi-Fi and/or Ethernet ports, and IP addresses).** MS-CS-FSIS-2.2
3. **Demonstrate an understanding of the terms and units used to describe major hardware components (RAM, ROM, GHz, MHz, GB, MB, CD, DVD, RW).** MS-CS-FSIS-2.3
4. **Explain the interrelation of the operating system software, application software, and utility software, citing specific examples of each.** MS-CS-FSIS-2.4

	5. Develop a basic vocabulary of networks including the Internet, wired, wireless, cellular, Wi- Fi, messages, packets, connections, bandwidth, broadband, firewall, hacking, cybersecurity, encryption, local area network (LAN), wide area network (WAN), and OSI model. MS-CS-FSIS-2.5
	6. Demonstrate an understanding of the fundamental concepts for how computers process programming commands (hex, binary language, sequence of commands, conditional structures, and looping structures). MS-CS-FSIS-2.6
Develop through application logical observations relative to computational thinking procedures to analyze and solve problems current to everyday life. MS-CS-FSIS-3	1. Identify characteristics of computational thinking (decomposition, pattern recognition, algorithmic thinking, and abstraction). MS-CS-FSIS-3.1
	2. Explain issues and analyze routine hardware and software problems current to everyday life. MS-CS-FSIS-3.2
	3. Apply troubleshooting concepts to issues regarding compatibility, data, and identity. MS-CS-FSIS-3.3
	4. Describe ways to solve operational problems caused by hardware errors. MS-CS-FSIS-3.4
	5. Explain how technology can create ethical and legal issues in the business world and a technology-based society and how it can be used to solve & manage those issues. MS-CS-FSIS-3.5
Investigate ways to differentiate networks and how they are used in business and industry. MS-CS-FSIS-4	1. Create diagrams to illustrate types of network topologies to include star, ring, bus, mesh, and hybrid. MS-CS-FSIS-4.1
	2. Differentiate networks based on coverage area including local area network (LAN), wide area network (WAN), and personal area network (PAN). MS-CS-FSIS-4.2
	3. Differentiate between different network mediums including Wi-Fi, wired, satellite, and microwave. MS-CS-FSIS-4.3
Evaluate and provide a rationale for the levels of the Open Systems Interconnection (OSI) model. MS-CS-FSIS-5	1. Summarize from multiple credible sources the physical and digital aspects of computing networks. MS-CS-FSIS-5.1
	2. Trace the layers required to transmit data from one node to another (the OSI model). MS-CS-FSIS-5.2
	3. Construct and explain the basic functions of the OSI model. MS-CS-FSIS-5.3
Examine the basics of cybersecurity needs for business, government, and organizations. MS-CS-FSIS-6	1. List and define the elements of the confidentiality, integrity, and availability (CIA) triad. MS-CS-FSIS-6.1
	2. Explain components of access control: Identification, Authentication, Authorization, Accountability, and Non-repudiation. MS-CS-FSIS-6.2

3. **Identify the characteristics of strong vs. weak passwords in data and identity security.** MS-CS-FSIS-6.3
4. **List and describe the basic steps in security risk management.** MS-CS-FSIS-6.4
5. **Develop a logical argument for the importance of physical security.** MS-CS-FSIS-6.5

Cite evidence regarding the principles of cybersecurity and basic mechanisms used for protecting data and resources. MS-CS-FSIS-7

1. **Define the cybersecurity first principles of least privilege, minimization, abstraction, domain separation, process isolation, information hiding, layering, simplicity, modularity, and resource encapsulation.** MS-CS-FSIS-7.1
2. **Apply concepts related to the principles behind encryption, including the purpose of cryptography, hashing, and steganography.** MS-CS-FSIS-7.2
3. **Draw conclusions illustrating a basic understanding of internet protocol (IP) packets, ports and network transmission.** MS-CS-FSIS-7.3
4. **Summarize from multiple credible sources a basic understanding of anti-malware, firewalls, intrusion detection system/intrusion prevention system (IDS/IPS), and virtual private network (VPN).** MS-CS-FSIS-7.4

Analyze and describe the characteristics of cybersecurity ethics, digital citizenship, and laws governing privacy. MS-CS-FSIS-8

1. **Explain the differences between an ethical (white hat) hacker and an unethical (black hat) hacker.** MS-CS-FSIS-8.1
2. **Cite evidence regarding the practice of ethical digital decision-making, including plagiarism, copyright law, and software licensing types (freeware, public domain, shareware, etc.).** MS-CS-FSIS-8.2
3. **Summarize and provide examples regarding security and privacy laws and their impact on society, citing recent cases.** MS-CS-FSIS-8.3
4. **Collect and compare cyberbullying evidence, including legal and social consequences, and develop guidelines to prevent cyberbullying.** MS-CS-FSIS-8.4
5. **Develop an argument regarding network security, citing policy-driven and technology- driven examples.** MS-CS-FSIS-8.5