

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