Information Technology Career Cluster
Foundations of Secure Information Systems (MS-CS-FSIS)
Course Number: 11.01100

Course Description: This course will provide an exploratory foundation in information systems, networking, and cybersecurity. It is designed to be taught in a 9-week rotation in 45-minute daily classes. Standards should be taught in the order presented with the exception of Standard 1 being an embedded standard with ongoing learning regarding employability and career opportunities. Through integrated instructional activities, students will have opportunities to apply employability skills and to research possible career options in the information technology area. They will also complete many hands-on activities to build a strong foundation in computer hardware and connectivity. Capstone projects should be incorporated at the completion of all standards as time allows. Students who successfully complete this course will be prepared for the following pathways upon entering high school: Information Support & Services, Networking, and Cybersecurity. This course may be taught in 6th, 7th, or 8th grade.

Requirements for teaching this and other computer science courses: This course should be taught in a lab setting with a 1:1 ratio of student to personal computer. Additional devices, such as tablets, robots, Raspberry pi computers, and drones will enhance the program and can be shared in groups of 2-3 students. All devices should be current technology with strong connectivity capabilities. To further enhance student learning, the lab should contain at least one personal computer that students can disassemble and reassemble to learn the working parts within the computer.

Course Standard 1

MS-CS-FSIS-1
Demonstrate employability skills required by business and industry.
The following elements should be integrated throughout the content of this course.

1.1   Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.

Person-to-Person Etiquette	Telephone and Email Etiquette	Communicating at Work	Listening
Interacting with Your Boss	Telephone Conversations	Improving Communication Skills	Reasons, Benefits, and Barriers
Interacting with Subordinates	Barriers to Phone conversations	Effective Oral Communication	Listening Strategies
Interacting with Co-workers	Making and Returning Calls	Effective Written Communication	Ways We Filter What We Hear
		Effective Nonverbal Skills	Developing a Listening Attitude
		Effective Word Use	Show You Are Listening
		Giving and Receiving Feedback	Asking Questions
			Obtaining Feedback
			Getting Others to Listen

Nonverbal Communication	Written Communication	Speaking	Applications and Effective Résumés

Communicating Nonverbally	Writing Documents	Using Language Carefully	Completing a Job Application
Reading Body Language and mixed Messages		One-on-One Conversations	Writing a Cover Letter
Matching Verbal and Nonverbal communication		Small Group Communication	Things to Include in a Résumé
Improving Nonverbal Indicators		Large Group Communication	Terms to Use in a Résumé
Nonverbal Feedback		Making Speeches	Organizing Your Résumé
Showing Confidence Nonverbally		Answering Questions	Writing an Electronic Résumé
Showing Assertiveness		Visual and Media Aids	
		Errors in Presentation	

1.2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.

Teamwork and Problem Solving	Meeting Etiquette
Thinking Creatively	Preparation and Participation in Meetings
Taking Risks	Conducting Two-Person or Large Group Meetings
Building Team Communication	Inviting and Introducing Speakers
	Preparing Visual Aids

1.3 Exhibit critical thinking and problem-solving skills to locate, analyze and apply information in career planning and employment situations.
   a. Investigate educational requirements, job responsibilities, employment trends, and opportunities within the national career clusters using credible sources.

Problem Solving	Customer Service	The Application Process	Interviewing Skills	Finding the Right Job
Transferable Job Skills	Gaining Trust and Interacting with Customers	Providing Information, Accuracy and Double Checking	Preparing for an Interview	Locating Jobs and Networking
Becoming a Problem Solver	Learning and Giving Customers What They Want	Online Application Process	Questions to Ask in an Interview	Job Shopping Online
Identifying a Problem	Keeping Customers Coming Back	Following Up After Submitting an Application	Things to Include in a Career Portfolio	Job Search Websites
Becoming a Critical Thinker	Seeing the Customer's Point	Effective Résumés:	Traits Employers are Seeking	Staying Motivated to Search
	Selling Yourself and the Company	Matching Your Talents to a Job	Considerations Before Taking a Job	
		When a Résumé Should be Used		

1.4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.

Workplace Ethics	Personal Characteristics	Employer Expectations	Business Etiquette	Communicating at Work
Demonstrating Good Work Ethic	Demonstrating a Good Attitude	Behaviors Employers Expect	Language and Behavior	Handling Anger
Behaving Appropriately	Gaining and Showing Respect	Objectionable Behaviors	Keeping Information Confidential	Dealing with Difficult Coworkers

Maintaining Honesty	Demonstrating Responsibility	Establishing Credibility	Avoiding Gossip	Dealing with a Difficult Boss
Playing Fair	Showing Dependability	Demonstrating Your Skills	Appropriate Work Email	Dealing with Difficult Customers
Using Ethical Language	Being Courteous	Building Work Relationships	Cell Phone Etiquette	Dealing with Conflict
Showing Responsibility	Gaining Coworkers' Trust		Appropriate Work Texting	
Reducing Harassment	Persevering		Understanding Copyright	
Respecting Diversity	Handling Criticism		Social Networking	
Making Truthfulness a Habit	Showing Professionalism			

1.5   Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply teamwork skills.

Expected Work Traits	Teamwork	Time Management
Demonstrating Responsibility	Teamwork Skills	Managing Time
Dealing with Information Overload	Reasons Companies Use Teams	Putting First Things First
Transferable Job Skills	Decisions Teams Make	Juggling Many Priorities
Managing Change	Team Responsibilities	Overcoming Procrastination
Adopting a New Technology	Problems That Affect Teams	Organizing Workspace and Tasks
Use Technology Ethically & Efficiently	Expressing Yourself on a Team	Staying Organized
Interact Appropriately in a Digital World	Giving and Receiving Constructive Criticism	Finding More Time
		Managing Projects
		Prioritizing Personal and Work Life

1.6   Present a professional image through appearance, behavior, and language.

On-the-Job Etiquette	Person-to-Person Etiquette	Communication Etiquette	Presenting Yourself
Using Professional Manners	Meeting Business Acquaintances	Creating a Good Impression	Looking Professional
Introducing People	Meeting People for the First Time	Keeping Phone Calls Professional	Dressing for Success
Appropriate Dress	Showing Politeness	Proper Use of Work Email	Showing a Professional Attitude
Behavior at Conventions		Proper Use of Cell Phone	Using Good Posture
Working in a Cubicle		Proper Use in Texting	Presenting Yourself to Associates
			Accepting Criticism
			Demonstrating Leadership

Course Standard 2

MS-CS-FSIS-2

Investigate and identify the basic components of computers and networks.

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).

2.2 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).

2.3 Demonstrate an understanding of the terms and units used to describe major hardware components (e.g., RAM, ROM, GHz, MHz, GB, MB, CD, DVD, RW).

2.4 Explain the interrelation of the operating system software, application software, and utility software, citing specific examples of each.

2.5 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.

2.6 Demonstrate an understanding of the fundamental concepts for how computers process programming commands (hex, binary language, sequence of commands, conditional structures, and looping structures).

Course Standard 3

MS-CS-FSIS-3

Develop through application logical observations relative to computational thinking procedures to analyze and solve problems current to everyday life.

3.1 Identify characteristics of computational thinking (decomposition, pattern recognition, algorithmic thinking, and abstraction).

3.2 Explain issues and analyze routine hardware and software problems current to everyday life.

3.3 Apply troubleshooting concepts to issues regarding compatibility, data, and identity.

3.4 Describe ways to solve operational problems caused by hardware errors.

3.5 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.

Course Standard 4

MS-CS-FSIS-4

Investigate ways to differentiate networks and how they are used in business and industry.

4.1 Create diagrams to illustrate types of network topologies to include star, ring, bus, mesh, and hybrid.

4.2 Differentiate networks based on coverage area including local area network (LAN), wide area network (WAN), and personal area network (PAN).

4.3 Differentiate between different network mediums including Wi-Fi, wired, satellite, and microwave.

Course Standard 5

MS-CS-FSIS-5

Evaluate and provide a rationale for the levels of the Open Systems Interconnection (OSI) model.

5.1 Summarize from multiple credible sources the physical and digital aspects of computing networks.

5.2 Trace the layers required to transmit data from one node to another (the OSI model).
5.3 Construct and explain the basic functions of the OSI model.

Course Standard 6

MS-CS-FSIS-6

Examine the basics of cybersecurity needs for business, government, and organizations.

6.1 List and define the elements of the confidentiality, integrity, and availability (CIA) triad.
6.2 Explain components of access control: Identification, Authentication, Authorization, Accountability, and Non-repudiation.
6.3 Identify the characteristics of strong vs. weak passwords in data and identity security.
6.4 List and describe the basic steps in security risk management.
6.5 Develop a logical argument for the importance of physical security.

Course Standard 7

MS-CS-FSIS-7

Cite evidence regarding the principles of cybersecurity and basic mechanisms used for protecting data and resources.

7.1 Define the cybersecurity first principles of least privilege, minimization, abstraction, domain separation, process isolation, information hiding, layering, simplicity, modularity, and resource encapsulation.
7.2 Apply concepts related to the principles behind encryption, including the purpose of cryptography, hashing, and steganography.
7.3 Draw conclusions illustrating a basic understanding of internet protocol (IP) packets, ports and network transmission.
7.4 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).

Course Standard 8

MS-CS-FSIS-8

Analyze and describe the characteristics of cybersecurity ethics, digital citizenship, and laws governing privacy.

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

Course Standard 9

MS-BMF-FBM-9

Examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events.

9.1 Research the history of Future Business Leaders of America (FBLA).

9.2 Discuss the mission, purpose, motto, colors, official dress, and other distinguishing characteristics of FBLA.

9.3 Explain how participation in FBLA can promote lifelong responsibility for community service, professional growth, and development.

9.4 Create a personal leadership plan to participate in programs, conferences, community service, and competitive events on the local, state, and national level that align with the competencies, skills, and knowledge of this course.