



Curriculum Map Overview

Career, Technical & Agricultural Education

Cluster: Information Technology

Course Name: Advanced CyberSecurity (11.48200)

Course Description: Advanced Cybersecurity is designed to provide students the advanced concepts and terminology of cybersecurity. The course explores the field of cybersecurity with updated content including new innovations in technology and methodologies. It builds on existing concepts introduced in Introduction to Cybersecurity and expands into malware threats, cryptography, organizational security, and wireless technologies.

Unit #	Unit Title	Timeframe (Suggested) (MS- 18 weeks; HS- 36 weeks)
1	Employability Skills	Ongoing
2	CyberSecurity Ethics and the Law	3 Weeks
3	Malware Threats	4 Weeks
4	Threats and Vulnerability Analysis	4 Weeks
5	Advanced Cryptography	4 Weeks
6	Advanced Communication/Wireless Security	4 Weeks
7	Organizational Security	3 Weeks
8	Contingency Planning	3 Weeks
9	Security Analysis, Testing, and Evaluation	4 Weeks
10	Risk Management	3 Weeks
11	Basic Network Security Methods	4 Weeks
12	Career Portfolios	Ongoing
13	CTSOs	Ongoing

Unit 1

Unit 2 – CyberSecurity Ethics and the Law

DISCOVER: *“Ethics is knowing the difference between what you have the right to do and what is the right thing to do.” - Unknown*

DISCUSS: Can you hack a network and still be ethical?

DEMONSTRATE: Refer to Activities/Tasks/Assessments

DEEPEN: Research individuals such as Edward Snowden and Reality Winner. Were they right or wrong in what they did?

Timeframe	Standards (Priority/Supporting)	Essential Questions	Learning Targets	Vocabulary	Activities/Tasks	Assessments	Suggested Resources
2 Weeks	Explore concepts of cybersecurity related to legal and ethical decisions. The following elements should be integrated throughout the content of this course.						

Unit 3 – Malware Threats

DISCOVER: “*Wannacry is the Stuxnet of Ransomware*” James Scott

DISCUSS: Name

Unit 4 – Threats and Vulnerability Analysis

DISCOVER: *“Passwords are like underwear: don’t let people see it, change it very often, and you shouldn’t share it with strangers.” – Chris Pirillo*

DISCUSS: Without giving personal information, describe a breach you or someone close to you had and how could it have been prevented.

DEMONSTRATE: Refer to Activities/Tasks/Assessments

DEEPEN: Install Wireshark on a computer at home. Attempt to determine the IP addresses of computers sending you data.

Timeframe	Standards (Priority/Supporting)	Essential Questions	Learning Targets	Vocabulary	Activities/Tasks	Assessments	Suggested Resources
4 Weeks	<p>Demonstrate how to analyze and react to various threats and vulnerabilities.</p> <p>4.1 Analyze and differentiate among types of network attacks (e.g., virus, worms, trojans, etc.).</p> <p>4.2 Distinguish between different social engineering attacks (e.g., baiting, phishing/spear phishing, pretexting/blagging, tailgating, quid pro quo, etc.).</p> <p>4.3 Distinguish between reconnaissance/footprinting, infiltration, network breach, network exploitation, a35 28.8 reW</p>						

Unit 5 – Advanced Cryptography

DISCOVER:

Unit 6 – Advanced Communication/Wireless Security

DISCOVER: *“If you use a cell phone - as I do - your wireless carrier likely has records about your physical movements going back months, if not years.”-Al Franken*

DISCUSS: Look around the room. Name the strengths and weaknesses of the wireless networks in the classroom.

DEMONSTRATE: Refer to Activities/Tasks/Assessments

DEEPEN: Install Wireshark on a wireless computer at home. Use it to determine the security level and encryption you are using.

Timeframe	Standards (Priority/Supporting)	Essential Questions	Learning Targets	Vocabulary	Activities/Tasks	Assessments	Suggested Resources
4 Weeks	<p>Apply advanced communications and wireless security techniques.</p> <p>6.1 Implement wireless networks in a secure manner.</p> <p>6.2 Analyze and differentiate among types of wireless attacks.</p> <p>6.3 Configure a wireless Access Point (WPA, WPA-2).</p> <p>6.4 Demonstrate use of InSSIDer and Netstumbler on wireless communications.</p> <p>6.5 Demonstrate knowledge of Virtual Private Network (VPN) security and configure Virtual Private Network (VPN).</p>	<ol style="list-style-type: none"> 1. Configure wireless security on a wireless access point. 2. Compare and contrast the different wireless attacks. 3. Detect and analysis wireless networks using InSSIDer and Netstumbler. 4. Analysis and configure a VPN on a sample network. 					

Unit 7 –

Unit 9 – Security Analysis, Testing, and Evaluation

Unit 10 –

Unit 11 – Basic Network Security Methods

DISCOVER: *“Every time I say something that’s extremely truthful out loud, it literally*

Unit 12 – Online Portfolios

DISCOVER: Organize personal online career portfolio for specific career interests.	DISCUSS:
DEMONSTRATE: Refer to Activities/Tasks/Assessments	DEEPEN: Consider watching competition videos related to both organizations. Feel free to ask questions at any time.

Timeframe	Standards (Priority/Supporting)	Essential Questions	Learning Targets	Vocabulary	Activities/Tasks	Assessments	Suggested Resources
Ongoing	<p>12.1 Review and update résumé to reflect new knowledge and skills master and additional work experience.</p> <p>12.2 Organize folders within the portfolio to reflect specific careers of interest, including résumé, targeted cover letter, and artifacts relevant to the specific career.</p> <p>12.3 Update all current items in the portfolio.</p> <p>12.4 Identify and upload additional industry-appropriate artifacts reflective of mastered skills throughout this course.</p> <p>12.5 Polish all entries in the online career portfolio to ensure accuracy and professionalism as expected from employers.</p> <p>12.6 Conduct a job search and share the appropriate folder with the potential employer.</p>	<p>1. How would you tailor a resume to a specific career placement?</p> <p>2. How do you write a targeted cover letter?</p> <p>3. What examples can you provide (types of media) that will support your claims of experience in certain areas?</p> <p>4. How can I improve my resume to make it more appealing to the employer?</p>	<p>1. I can explain the goals, mission and objectives of a job search.</p> <p>2. I can dress for success and communicate professionally.</p> <p>3. I can organize an online portfolio.</p>	<p>Employability, resume, portfolio, interview, professionalism, media types.</p>	<p>Maintain Online Portfolio with ongoing assignments.</p>	<p><u>Each activity/task is a assessment at the same time for and during the</u></p>	

Unit 13 – Career & Technical Student Organization (CTSO)

DISCOVER: [Introduction to CyberPatriot and SkillsUSA Framework](#)

DISCUSS: CyberPatriot is the National Youth Cyber Education Program created by the Air Force Association to inspire K-12 students toward careers in cybersecurity or other science, technology, engineering, and mathematics (STEM) disciplines critical to our nation's future.

DEMONSTRATE: Refer to Activities/Tasks/Assessments

DEEPEN: Consider watching competition videos related to both organizations. Feel free to ask questions at any time.

Timeframe	Standards (Priority/Supporting)	Essential Questions	Learning Targets	Vocabulary	Activities/Tasks	Assessments	Suggested Resources
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