

Board Approval Date:**Course Title:** Introduction to Cybersecurity 1

Course Description: This course is designed for students who are interested in exploring careers in Cybersecurity. The focus of instruction will include the implementation and monitoring of security on network and computer systems. Students will investigate strategies to identify and protect against security threats such as hackers, eavesdropping, and network attacks. The basics of cryptography and logic reasoning will be explored. Hands-on labs in a cyber range provide practice in the configuration and mitigation of system vulnerabilities. Each unit integrates current events and related cyber ethics and law. An ethics agreement must be signed by all students and parents during the first 2 weeks of class.

Course Sequence & Pacing

Estimated Number of Blocks	Marking Period 1	Estimated Number of Blocks	Marking Period 2
2.5	Unit 0: Mac Lab Safety and Etiquette Mac Lab Rules Mac Shortcuts	11	Unit 4: Cryptography and Linux 4.1 Bits, Binary and Encoding 4.2 Basic Concepts of Cryptography 4.3 Advanced Linux Command Line Interface 4.4 Crypto Issues of Privacy vs Security
9.5	Unit 1: Foundations & Threats 1.0 Cybersecurity Careers, course objectives and Ethics Agreement 1.1 The CIA Triad and Authentication 1.2 Identifying Security Threats 1.3 Introduction to CLI (Command Line Interface)	6	Unit 5: Devices and Networking 5.1 Computing Devices 5.2 Networking Fundamentals 5.3 Protocols and Packets
4	Unit 2: The Human Factor	9	Unit 6: End of Semester Projects

	2.1 Social Engineering 2.2 OSINT & Phishing		Biometric Authentication Product Pitch Social Engineering PSA Video Benchmark Selections for OS Hardening Making an Impact with Technology
4.5	Unit 3: Data Safety and Best Practices 3.1 System Hardening 3.2 IOT Threat Modeling		

Stage 1 Desired Results

Unit 0: Mac Lab Safety and Etiquette

Unit Summary: In this unit, students will become comfortable with Mac shortcuts and will learn the proper conduct for our Mac Lab.

Unit Learning Targets

NJSLS Standards:

8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.

8.1.12.CS.3: Compare the functions of application software, system software, and hardware.

8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

How can we utilize our lab to be as productive as possible?

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

We are most productive and can create high quality technological artifacts when we follow the rules of the Mac Lab and utilize Mac shortcuts.

Students will know: (*Content, Noun*)

Mac shortcuts

Mac Lab rules

Vocabulary: Command, Option, Shift, Control, Caps Lock, Fn, Spotlight, Finder, Launchpad, Hot Corners

Students will be able to: (*Verb Bloom's Taxonomy*)

Safely and efficiently create technological artifacts in the Mac Lab.

Summative Assessments:			
<ul style="list-style-type: none"> • Mac Lab Poster Project 			
Formative Assessments:			
<ul style="list-style-type: none"> • Mac Lab Rules and Shortcuts Quiz Game 			
Common Benchmark Assessments:			
<ul style="list-style-type: none"> • Mac Lab Poster Project 			
Alternative Assessments:			
<ul style="list-style-type: none"> • Mac Lab MC Quiz 			
Standard			
Skill			
Learning Activities & Differentiation (Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)			
Timeframe (blocks)			
8.1.12.CS.1 8.1.12.CS.3 8.1.12.CS.4	Efficiently create technological artifacts in the Mac Lab.	<ul style="list-style-type: none"> • Mac Lab Poster Project • Mac Lab Rules and Shortcuts Quiz Game • Mac Lab MC Quiz 	2.5

**Core Instructional & Supplemental Materials
(including various levels of texts)**

<i>Texts</i>	<i>Notes</i>
Apple Support Site	

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students**

Specific Strategies and Practices that Support **Students with Disabilities**:

Specific examples applied to the unit

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - Poster Project

Specific Strategies and Practices that Support **Students with 504**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - Poster Project

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts

- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - Poster Project

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - Poster Project

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 1: Foundations & Threats

Unit Summary: In this unit, students will learn the parts of the CIA triad, how to test and increase password strength, how passwords are encrypted, and the effects of malware. Students will also be introduced to CLI and Virtualization using NetLab.

Unit Learning Targets

NJSLS Standards:

- 8.1.12. CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
- 8.1.12. CS.2: Model interactions between application software, system software, and hardware.
- 8.1.12.NI.2: Evaluate security measures to address various common security threats.
- 8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.
- 8.1.12.NI.4 Explain how decisions on methods to protect data are influenced by whether the data is at rest, in transit, or in use.
- 8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.
- 8.1.8.NI.4: Explain how new security measures have been created in response to key malware events.
- 8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.
- 8.1.12.IC.3: Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources.
- 9.4.12.IML.7: Develop an argument to support a claim regarding a current workplace or societal/ethical issue such as climate change.
- 9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law or ethics
- 9.3.IT.4: Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors
- 9.4.12. TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.)

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.	
Computer Science & Design Thinking (CS & DT): See above.	
Climate Change: See above.	
Unit Essential Questions: (<i>Open-ended, Higher-order, Thought Provoking</i>)	Unit Enduring Understandings: (<i>Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom</i>)
How are passwords protected?	Passwords are not stored in plain text, they are encrypted.
What are the impacts of malware?	Malware affects both you and your PC.
How can we safely explore cybersecurity skills and hacking?	Virtualization allows us to practice ethical hacking.
Students will know: (<i>Content, Noun</i>)	Students will be able to: (<i>Verb Bloom's Taxonomy</i>)
Careers that are available in Cybersecurity	Identify the key goals and frameworks of Cybersecurity
Protection = Prevention + (Detection + Response)	Identify the CIA Triad as the characteristics of information
The CIA Triad includes confidentiality, integrity, and availability.	Identify the state of information as stored, transmission and processing
Authentication, Access Control, and Accounting are tools used to achieve CIA.	Identify primary methods of authentication
Vocabulary: Cybersecurity, CIA Triad, Confidentiality, Integrity, Availability, Authentication, Access Control, Accounting, Password, Single Sign-On (SSO), Breach, Database, Dictionary Attack, Brute force attack, Hybrid Attack, Password Spraying, Credentials, Credential Stuffing, Identify Proofing, Passphrases, Hashing, Rainbow Tables, Hash collision, Birthday Attack, Smart Cards, Certificate, Algorithm, Biometrics	Apply best practices for creating a safe password
	Identify primary methods of authentication
	Define password attacks using database information
	Recognize authentication vocabulary terms
	Understand methods of secure password storage
	Define hash as a method of one-way conversion
	Define alternatives to passwords for authentication
	Demonstrate an understanding of various methods of authentication
	Make a convincing argument as to what methods of authentication would best accomplish their assigned goal

	<p>Identify the types of malicious software that exist and how they can be layered to increase the security threat.</p> <p>Examine how malware has a negative impact on a computer system and also on a person.</p> <p>Identify the types of malicious software that exist and how they can be layered to increase the security threat.</p> <p>Examine how malware has a negative impact on a computer system and also on a person.</p> <p>Summarize the best practices for protecting against malicious software</p> <p>Identify the characteristics of virtualization software</p> <p>Apply steps to open and configure Virtual Machines</p> <p>Confirm access to online VMs</p> <p>Identify the four types of Operating systems and their primary uses</p> <p>Recognize the reasons for using a system in Command Line Interface</p> <p>Identify the basic CLI commands for file access and manipulation for Linux</p> <p>Apply the basic CLI commands for file access and manipulation in Linux</p>
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Stage 2 Assessment Evidence

Summative Assessments:

- Unit 1 MC Assessment
- Project: Which Authentication?
- Project: Historic Malware

Formative Assessments:

- Lab: Testing Password Strength
- Lab: Have You Been Pwned
- Lab: Hashing & Salts with CyberChef
- Lab: Terminus

Common Benchmark Assessments:

- Unit 1 MC Assessment
- Project: Which Authentication?
- Project: Historic Malware

Alternative Assessments:

- Net Lab Windows CLI Commands (extension)
- Net Lab Password Cracking

Stage 3 Learning Plan

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> <i>(Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)</i>	<i>Timeframe</i> <i>(blocks)</i>
8.1.12.NI.2 8.1.12.NI.4 8.1.12.IC.1 8.1.12.IC.3 9.4.12.IML.7	Identify primary methods of authentication and define password attacks using database information.	<ul style="list-style-type: none"> ● CIA Triad Scenarios Worksheet ● CIA Triad Card Game ● Lab: Testing Password Strength ● Creating a Strong Password Slides/Poster ● Lab: Have You Been Pwned ● Lab: Hashing & Salts with CyberChef 	3.5

		<ul style="list-style-type: none"> ● NIST Password Guidelines Worksheet ● Project: Which Authentication? 	
8.1.12.NI.2 8.1.12.NI.3 8.1.8.NI.3 8.1.8.NI.4 8.1.12.IC.1 8.1.12.IC.3 9.4.12.DC.3	Identify and understand malicious code.	<ul style="list-style-type: none"> ● Project: Historic Malware ● Activity: Rapper or Malware Game? 	3
8.1.12.CS.1 8.1.12.CS.2 9.4.12.TL.1	Learn Basic Command Line Interface commands in Linux	<ul style="list-style-type: none"> ● NetLab Online Virtual Machine Access ● Lab: Terminus ● NetLab Windows CLI commands (extension activity) ● NetLab Password Cracking (optional activity) 	3

Core Instructional & Supplemental Materials (including various levels of texts)

<i>Texts</i>	<i>Notes</i>
PowerPoint Presentations: <ul style="list-style-type: none"> ● Intro to Security Concepts ● Authentication ● Authentication & Password Attacks ● Password Hashing ● Methods of Authentication ● Malicious Code Parts 1 & 2 ● Virtualization ● Command Line Interface - Linux 	Presentations provided by Garden State Cyber.
Reference Articles: <ul style="list-style-type: none"> ● An Unprecedented Look at Stuxnet, the World's First Digital Weapon, <i>WIRED</i> ● Avoiding Social Engineering and Phishing Attacks, <i>CISA</i> 	Articles will support student research for projects.

- The Worm That Nearly Ate the Internet, *NYTimes*
- Ex-Worker at C.I.A. Says He Leaked Data on Surveillance, *NYTimes*
- Forget Tough Passwords: New Guidelines Make It Simple, *NPR*
- The Heartbleed Bug
- Held for ransom! What to do if ransomware takes over a PC, *Network World*
- Inside the infamous Mirai IoT Botnet: A Retrospective Analysis, *Cloud Flare*
- Iran: Computer Malware Sabotaged Uranium Centrifuges, *WIRED*
- NIST's new password rules – what you need to know, *Naked Security*
- Record-breaking DDoS reportedly delivered by <145k hacked cameras, *ARS Technica*
- The Untold Story of NotPetya, the Most Devastating Cyberattack in History, *WIRED*
- The Confessions of the Hacker Who Saved the Internet, *WIRED*

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students**

Specific Strategies and Practices that Support **Students with Disabilities**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Students with 504**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities

- Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 2: The Human Factor

Unit Summary: In this unit, students will learn about the steps hackers take to gain personal information and how to protect themselves.

Unit Learning Targets

NJSLS Standards:

8.1.12.NI.2: Evaluate security measures to address various common security threats.

8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.

8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.

9.4.12.DC.6: Select information to post online that positively impacts personal image and future college and career opportunities.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

How can we protect ourselves from hackers?

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

Hackers can gain our information in a variety of ways and we need to stay vigilant to protect ourselves from these attacks.

Students will know: (*Content, Noun*)

The 7 steps of hacking

How to identify phishing

OSINT sources

Students will be able to: (*Verb Bloom's Taxonomy*)

Define the steps used in typical digital attacks

Define social engineering as the human risk in organization security

Identify techniques for social engineering and how to mitigate against these techniques

Define phishing as a primary tool social engineering

Identify the special types and characteristics of phishing

<p>Vocabulary: Social Engineering, Hacking, Baiting, Shoulder surfing, Piggybacking, Dumpster diving, Vishing, Pretexting, Scareware, Phishing, Spear-phishing, Whaling, Smishing, OSINT, Reverse Social Engineering, Hoaxes, Mitigate, Policy, Procedure</p>	<p>Investigate open source online tools (OSINT) used to perform reconnaissance Define ways in which humans present a risk to a digital systems Examine use of policies, procedures and security awareness as mitigation tools</p>
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Stage 2 Assessment Evidence

Summative Assessments:

- Unit 2 MC Assessment
- Project: Phishing Myself

Formative Assessments:

- Lab: Social Engineering Toolkit

Common Benchmark Assessments:

- Unit 2 MC Assessment
- Project: Phishing Myself

Alternative Assessments:

- Hacking Research Project

Stage 3 Learning Plan

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> (Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)	<i>Timeframe</i> (blocks)
8.1.12.NI.3 8.1.12.IC.1	Identify techniques for social engineering and create a plan to mitigate these techniques.	<ul style="list-style-type: none"> ● Activity: 7 Steps of Hacking ● Lab: Social Engineering Toolkit 	1
8.1.12. NI.2 8.1.12.NI.3 8.1.12.IC.1 9.4.12.DC.6	Analyze and create a plan to mitigate the human risk of phishing.	<ul style="list-style-type: none"> ● Activity: Online Phishing Tests ● Activity: OSINT Report ● Project: Phishing Myself ● Activity: Clean Desk Policy 	3

Texts		Notes	
PowerPoint Presentations: <ul style="list-style-type: none"> ● Social Engineering ● Phishing ● OSINT ● Phishing Myself ● Mitigating Human Risk 		Presentations provided by Garden State Cyber.	
Reference Articles: <ul style="list-style-type: none"> ● Business Email Compromise, <i>FBI</i> ● Don't Take the Bait! Phishing and Other Social Engineering Attacks, <i>NJCCIC</i> ● Hacked French network exposed its own passwords during TV interview, <i>ARS Technica</i> 		Articles will support student research for projects.	

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,**

Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support **Students with Disabilities**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Students with 504**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

- NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities
 - Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 3: Data Safety and Best Practices

Unit Summary: In this unit, students will learn how to assess system vulnerabilities, the process of system hardening, and the process of threat modeling.

Unit Learning Targets

NJSLS Standards:

- 8.1.12.NI.2: Evaluate security measures to address various common security threats
- 8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.
- 8.1.12.NI.4: Explain how decisions on methods to protect data are influenced by whether the data is at rest, in transit, or in use.
- 8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices
- 8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.
- 8.1.12.NI.2: Evaluate security measures to address various common security threats
- 8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

How can we assess the security of digital products?

How can we mitigate system vulnerabilities?

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

Vulnerability scans allow us to assess security weaknesses.

The process of hardening is used to limit potential weaknesses that make systems vulnerable to attacks.

Students will know: (*Content, Noun*)

Students will be able to: (*Verb Bloom's Taxonomy*)

Define vulnerabilities

<p>The steps to harden a system</p> <p>The process of threat modeling</p> <p>Vocabulary: Policy, Devices, Attack Vectors, Mitigate, Procedure, Benchmarks, Vulnerability assessment, Patch / Update, Hotfix, Critical Update, Security Update, Scan, Firewall, User Access Control, Services, Least Privilege Principle, Backup, Redundancy, System image, Ransomware protection, Threat Modeling, Internet of Things (IOT), Smart device, Embed, Shodan IOT search engine</p>	<p>Identify commonly seen types of vulnerabilities</p> <p>Examine how the Common Vulnerability and Exposure database can be used as a research tool.</p> <p>Identify host-based defensive tools to harden and restrict access</p> <p>Apply a vulnerability assessment tool and use results to secure a system</p> <p>Apply host-based defensive tools to secure user access and backups</p> <p>Mitigate risk of third-party applications</p> <p>Understand Threat Modeling to determine what risk you are willing to take and what effort you are willing to put in to secure your IOT devices.</p> <p>Examine vulnerabilities of home Internet of Things (IOT) – examples: robot vacuum, video doorbell, smart refrigerator, voice-activated virtual assistant, etc</p>
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Stage 2 Assessment Evidence

Summative Assessments:

- Unit 3 MC Assessment

Formative Assessments:

- Lab: CIS-CAT Vulnerability Scan
- Lab: Backups + Users + Apps

<p>Common Benchmark Assessments:</p> <ul style="list-style-type: none"> Unit 3 MC Assessment
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<p>Alternative Assessments:</p> <ul style="list-style-type: none"> Threat Modeling and IOT Research Project

Stage 3 Learning Plan

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> <i>(Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)</i>	<i>Timeframe</i> <i>(blocks)</i>
8.1.12.NI.2 8.1.12.NI.3 8.1.12.NI.4	Define vulnerabilities and how to analyze the security of digital products and understand how systems can be hardened to mitigate vulnerabilities and reduce the attack surface.	<ul style="list-style-type: none"> Activity: Product Analysis with CVE Alternate Activity: CVE Named Vulnerabilities Worksheet Lab: CIS-CAT Vulnerability Scan Activity: Bingo Lab: Backups + Users + Apps Extension: System Hardening in a Cyber Competition 	3.5
8.1.8.CS.1 8.1.8.NI.3 8.1.12.NI.2 8.1.12.NI.3	To understand the process of Threat Modeling and apply to IOT devices.	<ul style="list-style-type: none"> Activity: My IOT Thread Model Worksheet Activity: IOT Spoons Game 	1

Core Instructional & Supplemental Materials
(including various levels of texts)

<i>Texts</i>	<i>Notes</i>
PowerPoint Presentations: <ul style="list-style-type: none"> System Vulnerabilities 	Presentations provided by Garden State Cyber.

<ul style="list-style-type: none"> ● System Hardening Parts 1 & 2 ● Threat Modeling & IOT 	
<p>Reference Articles:</p> <ul style="list-style-type: none"> ● The Enterprise of Things Security Report, <i>Forescout</i> ● ‘I’m in your baby’s room’: A hacker took over a baby monitor and broadcast threats, parents say, <i>Washington Post</i> ● Chinese Internet of Things cameras recalled after DDoS attack, <i>WIRED UK</i> ● Hackers Made an App That Kills to Prove a Point, <i>WIRED</i> ● Hackers Remotely Kill a Jeep on the Highway— With Me in It, <i>WIRED</i> ● IoT Device Security, <i>Trend Micro</i> 	<p>Articles will support student research for projects.</p>

<p>Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students</p>	
<p>Specific Strategies and Practices that Support Students with Disabilities:</p> <p><i>Specific examples applied to the unit</i></p> <ul style="list-style-type: none"> ● Use of visual and multisensory formats <ul style="list-style-type: none"> ○ PowerPoint presentation slides and lesson videos ● Use of assisted technology ● Use of prompts ● Modification of content and student products ● Testing accommodations ● Authentic assessments <ul style="list-style-type: none"> ○ NetLab Activities <p>Specific Strategies and Practices that Support Students with 504:</p> <p><i>Specific examples applied to the unit</i></p> <ul style="list-style-type: none"> ● Use of visual and multisensory formats <ul style="list-style-type: none"> ○ PowerPoint presentation slides and lesson videos ● Use of assisted technology 	

- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities
 - Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts

- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 4: Cryptography and Linux

Unit Summary: In this unit, students will learn how to convert binary and hexadecimal numbers, how information is encoded, the basics of cryptography and steganography, Linux scripting, and how to balance privacy and security.

Unit Learning Targets

NJSLS Standards:

- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.
- 8.1.8.DA.2: Explain the difference between how the computer stores data as bits and how the data is displayed
- 8.1.12.DA.3: Translate between decimal numbers and binary numbers
- 8.1.12.DA.4: Explain the relationship between binary numbers and the storage and use of data in a computing device.
- 8.1.12.NI.2: Evaluate security measures to address various common security threats.
- 8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.
- 8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
- 8.1.12.CS.2: Model interactions between application software, system software, and hardware.
- 9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task.
- 9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics
- 9.4.12.DC.5: Debate laws and regulations that impact the development and use of software

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

How does binary represent digital information?

How should privacy and security be balanced?

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

All digital information is made up of 0s and 1s at the most basic level.

	Balancing privacy and security is a complex issue.
<p>Students will know: (<i>Content, Noun</i>)</p> <p>Binary and Hexadecimal Conversions</p> <p>Cryptography basics</p> <p>Linux Commands</p> <p>Vocabulary: Transistors, Bit, Byte, Binary Number System, Machine language, Computer language, Compiler, ASCII, Decimal, Hexadecimal, Encoding, Hashing, Obfuscation, Exfiltration, Cryptography, Algorithm (aka Cipher), Plaintext, Ciphertext, Cryptanalysis, Substitution, Monoalphabetic ciphers, Transposition, Shift cipher, Key, Frequency analysis, Polyalphabetic cipher, OTP = One-Time Pad, Steganography, Binwalk tool, Paths – Absolute, Paths – Relative, Sudo, Shell, Script</p>	<p>Students will be able to: (<i>Verb Bloom's Taxonomy</i>)</p> <p>Understand that computer language is based on electrical signals called binary code.</p> <p>Apply binary math to explore how electrical bits are translated into human language.</p> <p>Recognize the digits that make up the hexadecimal number system (base 16)</p> <p>Define Encoding and the uses in computing</p> <p>Establish the difference between encoding and encryption</p> <p>Examine cryptography vocabulary terms and methods of encryption</p> <p>Identify cryptographic algorithms and define how they can be used to help improve security.</p> <p>Define steganography as an alternative method of encryption that does not rely on a key.</p> <p>Examine and apply steganography methods to hide or extract information.</p> <p>Review the basic CLI commands for file access and manipulation for Linux (covered in Unit 1.3)</p> <p>Apply advanced Linux CLI commands</p> <p>Define CLI commands useful for investigation</p> <p>Define concepts of shells and scripting</p> <p>Apply knowledge of CLI commands to write basic scripts</p> <p>Analyze the cybersecurity impact of scripts.</p> <p>Evaluate student mastery of concepts covered in Cryptography Unit</p> <p>Use news resources to analyze controversies, select and evaluate evidence, construct and refute</p>

arguments.

Stage 2 Assessment Evidence

Summative Assessments:

- Unit 4 MC Assessment
- Debate Project

Formative Assessments:

- Lab: Breaking Ciphers
- Lab: Vigenere
- Lab: Scavenger Hunt
- Lab: Steganography
- Lab: Terminus Part 2
- Lab: Scripting in Linux

Common Benchmark Assessments:

- Unit 4 MC Assessment
- Debate Project

Alternative Assessments:

- Lab: Searching Files with Grep

Stage 3 Learning Plan

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> (Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)	<i>Timeframe</i> (blocks)
8.1.8.DA.2 8.1.12.DA.3 8.1.12.DA.4	Identify bits, bytes, binary numbers, hex numbers and encoding.	<ul style="list-style-type: none"> ● Activity: Binary Numbers Magic Trick ● Worksheet: Converting Binary to Decimal Numbers ● Optional Activity: Counting Binary on Your Fingers ● Activity: Decoding CTF Challenges 	3.5
8.1.8.DA.1 8.1.12.NI.2	Understand the basics of cryptography.	<ul style="list-style-type: none"> ● Lab: Breaking Ciphers ● Lab: Vigenere ● Lab: Scavenger Hunt ● Lab: Steganography 	3
8.1.12.CS.1 8.1.12.CS.2 9.4.12.TL.1	Use advanced Linux commands.	<ul style="list-style-type: none"> ● Lab: Terminus Part 2 ● Extra Lab: Searching Files with Grep ● Lab: Scripting in Linux 	2.5
8.1.12.NI.2 8.1.12.NI.3 9.4.12.DC.3 9.4.12.DC.5	Debate privacy vs. security.	<ul style="list-style-type: none"> ● Project: Debate 	2

Core Instructional & Supplemental Materials
(including various levels of texts)

<i>Texts</i>	<i>Notes</i>
PowerPoint Presentations: <ul style="list-style-type: none"> ● Bits, Bytes, and Binary ● Hexadecimal Numbers ● Encoding ● Encoding on Mars ● Cryptography Basic Concepts 	Presentations provided by Garden State Cyber.

<ul style="list-style-type: none"> ● Steganography ● Advanced Linux CLI ● Scripting 	
<p>Reference Articles:</p> <ul style="list-style-type: none"> ● Apple's Tim Cook Sees No Tension Between Privacy And National Security, <i>Forbes</i> ● Battle of the Clipper Chip, <i>NYTimes</i> ● Here's how the FBI managed to get into the San Bernardino shooter's iPhone, <i>The Verge</i> ● Crypto Rebels, <i>WIRED Magazine</i> ● When Phone Encryption Blocks Justice, <i>NYTimes</i> 	<p>Articles will support student research for projects.</p>

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students**

Specific Strategies and Practices that Support Students with Disabilities:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support Students with 504:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts

- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities
 - Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers

○ Student Notes Fill-in

- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 5: Devices and Networking

Unit Summary: In this unit, students will learn the components of computers, how networks are named, and how information is sent between devices while following a set of protocols.

Unit Learning Targets

NJSLS Standards:

8.1.12.CS.2: Model interactions between application software, system software, and hardware

8.1.12.CS.3: Compare the functions of application software, system software, and hardware.

8.1.12.NI.1: Evaluate the scalability and reliability of networks, by describing the relationships between routers, switches, servers, topology, and addressing.

8.1.12.NI.4 Explain how decisions on methods to protect data are influenced by whether the data is at rest, in transit, or in use.

8.1.8.NI.1: Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the internet, and reassembled at the destination.

8.1.8.NI.2: Model the role of protocols in transmitting data across networks and the internet and how they enable secure and errorless communication.

8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

How is information shared between computing devices?

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

Computers send packets of information by following a specific set of protocols.

Students will know: (*Content, Noun*)

Students will be able to: (*Verb Bloom's Taxonomy*)

<p>Basic computer components</p> <p>Network naming conventions</p> <p>Vocabulary: Processor (aka Central Processing Unit or CPU), Memory, Motherboard, Hard Drive, Graphics card, Network Interface Card, Input, Storage, Output, RAM = Random Access Memory, Machine Code, Compiler, Computer Language, Hosts, Media, Network Devices, Peripherals, Services, Interfaces, MAC address, IP Address, Address Resolution Protocol (ARP), Local Area Network (LAN), Wide Area Network (WAN), Hub, Switch, Wireless Access Point, Networks, Protocol, Reliability, Network Packet Analyzer / Packet sniffer, Packet List, Packet Details, Packet Bytes, Pcap, Follow TCP Stream, ifconfig, ping, ssh, netcat</p>	<p>Identify students' prior knowledge of PC components</p> <p>Identify the 4 basic functions of computer Input, Storage, Processing and Output</p> <p>Understand how 3 key components process data – Motherboard, CPU, and Memory.</p> <p>Examine instances of attacks on the key PC components</p> <p>Define difference between LAN and WAN</p> <p>Identify characteristics of central connection devices</p> <p>Define how naming and identifiers are used in networking</p> <p>Explore the Wireshark tool used to capture and analyze network packets</p> <p>Understand analog method of message delivery as a single communication</p> <p>Devise a delivery method for messages that are broken up into packets</p> <p>Establish difference between circuit switching and packet switching</p> <p>Define protocols and TCP/IP suite</p> <p>Explain how protocols use ports / well-known port numbers</p> <p>Compare and contrast TCP and UDP transport protocols</p> <p>Examine how TCP uses the 3-way handshake</p> <p>Perform network traffic analysis using the Wireshark Tool</p>
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Stage 2 Assessment Evidence

Summative Assessments:

- Unit 5 MC Assessment

Formative Assessments:

- Lab: Installing PC Components
- Lab: ARP with Wireshark
- Lab: Wireshark Packet Analysis

Common Benchmark Assessments:

- Unit 5 MC Assessment

Alternative Assessments:

- Devices and Networks Research Project

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> <i>(Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)</i>	<i>Timeframe</i> <i>(blocks)</i>
8.1.12.CS.2 8.1.12.CS.3	Identify computer components	<ul style="list-style-type: none"> ● Lab: Installing PC Components 	1
8.1.12.NI.1 8.1.12.NI.4	Understand networking fundamentals	<ul style="list-style-type: none"> ● Activity: Network Puzzles ● Lab: ARP with Wireshark 	2.5
8.1.8.NI.1 8.1.8.NI.2 8.1.12.CS.1	Understand how digital messages use packet switching and protocols to reliably move across networks.	<ul style="list-style-type: none"> ● Activity: Mobster Net ● Lab: Wireshark Packet Analysis 	2.5

Core Instructional & Supplemental Materials
(including various levels of texts)

<i>Texts</i>	<i>Notes</i>
PowerPoint Presentations: <ul style="list-style-type: none"> ● Computer Components ● Network Connections ● Network Naming ● Communicating in a Network ● Packet Delivery & Protocols 	Presentations provided by Garden State Cyber.

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students**

Specific Strategies and Practices that Support **Students with Disabilities**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Students with 504**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities
 - Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills

- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Stage 1 Desired Results

Unit 6: End of Semester Projects

Unit Summary: In this unit, students will put all of their cybersecurity skills together to complete a final project.

Unit Learning Targets

NJSLS Standards:

8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.

8.1.12.CS.2: Model interactions between application software, system software, and hardware.

8.1.12.CS.3: Compare the functions of application software, system software, and hardware.

8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.

8.1.12.NI.2: Evaluate security measures to address various common security threats.

8.1.12.NI.3: Explain how the needs of users and the sensitivity of data determine the level of security implemented.

8.1.12.NI.4: Explain how decisions on methods to protect data are influenced by whether the data is at rest, in transit, or in use.

8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.

8.1.12.IC.2: Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.IC.3: Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources.

8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

- 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
- 8.2.12.ETW.3: Identify a complex, global environmental or climate change issue, develop a systemic plan of investigation and propose an innovative sustainable solution.
- 8.2.12.ED.1: Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
- 8.2.12.ED.3: Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.
- 8.2.12.ED.4: Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs and aesthetic and ethical considerations and share this information with an appropriate audience.
- 8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
- 8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).
- 9.4.12.DC.8: Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.
- 9.4.12.GCA.1: Collaborate with individuals analyze a variety of potential solutions to climate change effects and determine why solutions may work better than others (e.g., political, economic, cultural).
- 9.4.12.IML.5: Evaluate, synthesize and apply information on climate change from various sources appropriately.
- 9.4.12.IML.6: Use various types of media to produce and store information on climate change for different purposes and audiences with sensitivity to cultural, gender and age diversity.
- 9.4.12.IML.7: Develop an argument to support a claim regarding a current workplace or societal/ethical issue such as climate change.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills (CLKS): See above.

Computer Science & Design Thinking (CS & DT): See above.

Climate Change: See above.

Unit Essential Questions: (*Open-ended, Higher-order, Thought Provoking*)

Unit Enduring Understandings: (*Statements that connect to EQ's summarizing important ideas and core processes that are central to a discipline and have lasting value beyond the classroom*)

How can cybersecurity tools be used to help social causes?	Cybersecurity is a valuable tool in furthering social and environmental causes.
<p>Students will know: (<i>Content, Noun</i>)</p> <p>Cybersecurity Assets</p> <p>Vocabulary: Biometric Authentication, PSA, Social Engineering, Baiting, Shoulder Surfing, Dumpster Diving, Piggybacking, Pretexting, Scareware/Ransomware, Phishing, Benchmark Selections</p>	<p>Students will be able to: (<i>Verb Bloom's Taxonomy</i>)</p> <p>Explore how technology/cybersecurity can be used to make an impact for social good.</p>

Stage 2 Assessment Evidence
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Student Choice Final Project: <ul style="list-style-type: none"> ○ Biometric Authentication Sales Pitch ○ Social Engineering PSA Video ○ Using Benchmark Selections for OS Configuration ○ Making an Impact with Technology
<p>Formative Assessments:</p> <ul style="list-style-type: none"> ● Project check-ins
<p>Common Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Student Choice Final Project: <ul style="list-style-type: none"> ○ Biometric Authentication Sales Pitch ○ Social Engineering PSA Video

- Using Benchmark Selections for OS Configuration
- Making an Impact with Technology

Alternative Assessments:

- Alternate research project in a cybersecurity topic of the student's choice

Stage 3 Learning Plan

<i>Standard</i>	<i>Skill</i>	<i>Learning Activities & Differentiation</i> <i>(Asian American & Pacific Islanders, LGBTQ and People with Disabilities, Diversity, Equity & Inclusion [DEI], G&T, ELL)</i>	<i>Timeframe</i> <i>(blocks)</i>
8.1.12.CS.1 8.1.12.CS.2 8.1.12.CS.3 8.1.12.CS.4 8.1.12.NI.2 8.1.12.NI.3 8.1.12.NI.4 8.1.12.IC.1 8.1.12.IC.2 8.1.12.IC.3 8.1.12.DA.1 8.1.12.DA.5 8.1.12.DA.6 9.4.12.CI.1 9.4.12.CI.2 9.4.12.CI.3	Explain how technology and cybersecurity can make an impact for social good.	<ul style="list-style-type: none"> ● Final project check-ins ● Student Choice Final Project 	9

9.4.12.CT.1 9.4.12.CT.2 8.2.12.ETW.3 8.2.12.ED.1 8.2.12.ED.3 8.2.12.ED.4 8.2.12.ED.5 8.2.12.ED.6 9.4.12.DC.8 9.4.12.GCA.1 9.4.12.IML.5 9.4.12.IML.6 9.4.12.IML.7			
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**Core Instructional & Supplemental Materials
(including various levels of texts)**

<i>Texts</i>	<i>Notes</i>
PowerPoint Presentations: <ul style="list-style-type: none"> ● Social Engineering PSA ● Making an Impact with Technology 	Presentations provided by Garden State Cyber.

**Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students**

<p>Specific Strategies and Practices that Support Students with Disabilities: <i>Specific examples applied to the unit</i></p> <ul style="list-style-type: none"> ● Use of visual and multisensory formats <ul style="list-style-type: none"> ○ PowerPoint presentation slides and lesson videos ● Use of assisted technology

- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Students with 504**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Struggling Learners**:

Specific examples applied to the unit

- Use of visual and multisensory formats
 - PowerPoint presentation slides and lesson videos
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments
 - NetLab Activities

Specific Strategies and Practices that Support **Gifted & Talented Students**:

Specific examples applied to the unit

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction

- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios
 - NetLab Activities
 - Extension Lab Activity

Specific Strategies and Practices that Support **English Language Learners**:

Specific examples applied to the unit

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
 - Student Notes Fill-in
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups