

Unit	Unit Title	Recommended Instructional Days
3	Computer Science: Artificial Intelligence	Trimester 3
Disciplinary Concept: NI CS AP DA	Practice: Fostering an Inclusive Computing and Design Culture Collaborating Around Computing and Design Recognizing and Defining Computational Problems Developing and Using Abstractions Testing and Refining Computational Artifacts Communicating About Computing and Design	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLC-CSDT within Unit
Core Idea:	Performance Expectation/s:	
<p>The information sent and received across networks can be protected from unauthorized access and modification in a variety of ways.</p> <p>The evolution of malware leads to understanding the key security measures and best practices needed to proactively address the threat to digital data.</p> <p>Troubleshooting a problem is more</p>	<p>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.</p> <p>8.1.8.NI.4: Explain how new security measures have been created in response to key malware events</p> <p>8.1.8.CS.4: Systematically apply troubleshooting strategies to identify and resolve hardware and software</p>	Essential Question/s: 1. How do Internet of Things devices use the internet to communicate and make our lives easier? What is threat modeling, and how can it help me decide if an IoT device is worth the risks? 2. What are the primary roles of an operating system, and how do those roles change depending on what device I am using? How can outdated operating systems on computers and phones put our devices at risk, and how do updates help keep them secure and running smoothly?

<p>effective when knowledge of the specific device along with a systematic process is used to identify the source of a problem.</p> <p>Individuals design and test solutions to identify problems taking into consideration the diverse needs of the users and the community.</p> <p>The usability, dependability, security, and accessibility of devices within integrated systems are important considerations in their design as they evolve.</p> <p>Data is represented in many formats. Software tools translate the low-level representation of bits into a form understandable by individuals. Data is organized and accessible based on the application used to store it.</p>	<p>problems in computing systems.</p> <p>8.1.8.AP.8: Systematically test and refine programs using a range of test cases and users.</p> <p>8.1.8.AP.9: Document programs in order to make them easier to follow, test, and debug</p> <p>8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.</p> <p>8.1.8.DA.2: Explain the difference between how the computer stores data as bits and how the data is displayed.</p> <p>8.1.8.DA.3: Identify the appropriate tool to access data based on its file format.</p>	<p>3. What vulnerabilities exist in our software and how do we protect against them?</p> <p>4. How do changes in code determine how a web page or app responds to our input? What is scripting and how does it play a role in cyberattacks?</p> <p>5. What makes our applications vulnerable and how can we protect them? How does software both protect our devices and make our devices vulnerable?</p> <p>6. What is artificial intelligence (AI) and how is it changing? How do artificial intelligence applications process and generate responses compared to how humans understand language?</p> <p>7. How do we interact with Artificial Intelligence (AI) on a regular basis? How does AI learn, and how can we decide when to trust it?</p> <p>8. How does AI protect us from online threats, and how can we help it get better? How can patterns in behavior help identify security threats? What role does AI play in detecting these threats?</p>
<p>Social and Emotional Learning: <i>Competencies</i></p>	<p>Social and Emotional Learning: <i>Sub-Competencies</i></p>	<p><u>Activity Description:</u></p> <p>1. Students will explore the concept of the Internet of Things (IoT) and understand how smart devices connect to the internet to communicate and make life easier. Students will use threat modeling to begin deciding whether the benefits of an IoT device outweigh its risks.</p> <p>2. Students will distinguish between the basic roles of Operating Systems and analyze how those roles are prioritized for different platforms. Students will be introduced to the importance of operating system (OS) updates and how outdated systems can be exploited by cybercriminals.</p>
<p>Self Awareness</p> <p>Self-Management</p> <p>Social Awareness</p> <p>Responsible-Decision Making</p> <p>Relationship Skills</p>	<ul style="list-style-type: none"> ● Recognize one’s feelings and thoughts ● Recognize the importance of self-confidence in handling daily tasks and challenges. ● Recognize the skills needed to establish and achieve personal and educational goals. ● Recognize and identify the thoughts, feelings, and perspectives of others. 	

	<ul style="list-style-type: none">• Demonstrate an awareness of the differences among individuals, groups, and other cultural backgrounds• Develop, implement, and model effective problem-solving and critical thinking skills• Evaluate personal, ethical, safety and civic impact of decisions.• Utilize positive communication and social skills to interact effectively with others• Identify who, when, where, or how to seek help for oneself or others when needed	<p>3. Students will examine different vulnerabilities that can exist in software, simulate malicious actors trying to exploit vulnerabilities, and develop plans to protect devices and programs.</p> <p>4. Students will explore how small adjustments to code can alter web pages or apps, and how adding additional components, such as loops and conditionals, can change how it responds to the user. Students will learn what scripting is, how it is a part of our everyday lives, and why cybercriminals value its use.</p> <p>5. students from thinking about vulnerability and security of everyday objects to applying those ideas to software applications. students will detect flaws in a system and develop a plan to protect the system.</p> <p>6. Students will work in groups to match key terms with their definitions. Then they'll assemble a story with the clues before exploring how AI has changed so far. Students will explore how artificial intelligence applications, such as ChatGPT, process information by simulating rule-based responses without understanding the underlying meaning.</p> <p>7. Students will sort food items based on group preferences then apply the results to a new set of food items. Students will model how the layers in a neural network work together to analyze data to predict outputs and discover that a neural network is only as good as its training materials.</p> <p>8. Students will get a chance to analyze datasets like those given to artificial intelligence in order to understand what kinds of data AI is given when learning how to keep users safe online. Students will be introduced to the process of identifying insider threats through the analysis of employee activity logs and the use of artificial intelligence.</p> <p>Interdisciplinary Connections:</p>
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<p>Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i></p>		<p>Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i></p>	
<p>Formative Assessments:</p> <ul style="list-style-type: none"> • Exit Slips • Quizzes • Lesson Activity Worksheets • Presentations/videos 		<p>Benchmark:</p> <ul style="list-style-type: none"> • Performance Assessment • Unit Assessments • Projects <p>Summative Assessments:</p> <ul style="list-style-type: none"> • District/Department Assessments 	
<p>Differentiated Student Access to Content: Teaching and Learning Resources/Materials</p>			
<p>Core Resources</p>	<p>Alternate Core Resources IEP/504/At-Risk/ESL</p>	<p>ELL Core Resources</p>	<p>Gifted & Talented Core Resources</p>
<ul style="list-style-type: none"> • Cyber.org • Chat GPT • Google Gemini • Handouts 	<ul style="list-style-type: none"> • Reteaching worksheets • Spanish version of lesson activities 	<ul style="list-style-type: none"> • Dictionary for native language • Google Translate • Translation by classroom Paraprofessional 	<ul style="list-style-type: none"> • Enrichment/Extension activities
<p>Supplemental Resources</p>			
<p>Technology:</p> <ul style="list-style-type: none"> • Chromebooks, MacBook • Projector • Smartboard 			

- Cyber.org
- Other:**
- Google Classroom
 - Google Meet Conferencing Tool
 - GAFE (Docs, Sheets, Slides, Drawings, Sites)
 - YouTube

**Differentiated Student Access to Content:
Recommended *Strategies & Techniques***

Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed.	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online or paper bilingual dictionaries, and modified assessment and/or rubric.	Provide extension activities related to the topic being discussed. Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.

NJSLs CAREER READINESS,	Disciplinary Concept:	
	<i>Core Ideas:</i>	<ul style="list-style-type: none"> • An individual's strengths, lifestyle goals, choices, and interests affect employment and income

LIFE LITERACIES & KEY SKILLS		<ul style="list-style-type: none"> • An individual’s strengths, lifestyle goals, choices, and interests affect employment and income • Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income.
	<i>Performance Expectation/s:</i>	9.1.8.PB.5, 9.2.8.CAP.2, 9.2.8.CAP.4:, 9.2.8.CAP.18,
	Career Readiness, Life Literacies, & Key Skills Practices	
	<p>Consider the environmental, social, and economic impacts of decisions</p> <p>Demonstrate creativity and innovation Utilize critical thinking to make sense of problems and persevere in solving them</p> <p>Use technology to enhance productivity, increase collaboration and communicate effectively</p> <p>Work productively in a team while using cultural/global competence</p>	

New Jersey Legislative Statutes and Administrative Code (place an “X” before each law/statute if/when present within the curriculum map)									
	Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>	X	Standards in Action: <i>Climate Change</i>