Cyber Security		
CURRICULUM/CONTENT AREA	COURSE LENGTH	
Computer Science	One Term	
GRADE LEVEL	DATE LAST REVIEWED	
9 - 12	2022	
PREREQUISITE(s) if applicable	BOARD APPROVAL DATE	
None	11/15/2022	
PRIMARY RESOURCE if applicable		

## DESIRED RESULTS

## COURSE DESCRIPTION AND PURPOSE

Cyber crimes against individuals, companies, and governments cost the United States over 6 billion dollars per year and are rising. Demand for cybersecurity professionals is at an all-time high. This course provides hands on experience to explore current cybersecurity topics such as: security principles, technologies and systems, procedures used to defend networks, and data. Knowledge, skills, and best practices for understanding cybercrime are essential for all future careers.

ENDURING UNDERSTANDINGS Students will understand that	ESSENTIAL QUESTIONS Students will keep considering
Creativity, innovation, and critical thinking are essential for success in a technologically advanced world.	Why is creativity and innovation important? How is creativity and innovation used in Computer Science?
	How do teams efficiently and effectively solve problems in an increasingly complex world?
	What strategies and processes can I use to become a more effective creator, thinker and problem solver?
The ability to communicate and collaborate with people with diverse backgrounds and perspectives is key to participation in a global economic society.	Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?
	What is effective teamwork? What strategies can I use/teams use to work better together? How can perspectives and experiences of a diverse group develop innovative solutions to a given problem?
Career and technical education provides pathways to high-demand, high-wage career opportunities, and personal fulfillment.	Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally?
	How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?
	What are employability skills? How do I prepare myself for a career that is in demand now and in 5, 10, or 20 years from now?

## PRIORITY CAREER & TECHNICAL STANDARDS

Students will be skilled at ...

Creativity, Critical Thinking, Communication and Collaboration

4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.

- a: I develop effective resolutions for a given problem, decision or opportunity using available information.
- b: I develop and implement a resolution for a new situation using personal knowledge and experience.

**Career Development** 

- CD4: Students will identify and apply employability skills.
- a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.
- b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job.
- c: I identify and exhibit traits for retaining employment.
- d: I develop positive relationships with others.

## Information, Media, Technology

IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.

a: I choose appropriate sources of data and information for a given purpose.

- b: I determine the relevance, validity and timeliness of data and information.
- c: I select relevant information necessary for making decisions and solving problems
- d: I apply data and information to communicate ideas and create new opportunities.

PRIORITY CONTENT STANDARDS Students will know	
Standard AP2: Students will create computational artifacts using a	lgorithms and programming
Potential INDUSTRY-RECOGNIZED CREDENTIALS (IRCs) Potential WORK BASED LEARNING (WBL) opportunities associated w Opportunities associated with the course the course	
Cisco Certifications (dpi certified)	
CertiPort	
Potential DUAL CREDIT Opportunties associated with the course	

Introduction to Cybersecurity and Digital Citzenship		p
STAGE 1: Desired Unit Results Students will be able to: - Understand what it means to be a good digital citizen. - Understand cybersecurity and why its important. -Understand organization data and why it must be protected. - Understand types and motivations of cyber attackers.		STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
ESSENTIAL QUESTION (s)		Success Criteria with Standards The criteria for evaluating performance on standards is constant
What thought-provoking questions will toster inquiry, understanding, and transfer of learning? - Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally? - How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?		CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		In their portfolio/evidence journal, students will reflect on the essential questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat	ion	
a: I develop effective resolutions for a given problem	4C2 a 11 b: I can determine the information needed to	Determine an appropriate program design to solve a problem or
decision or opportunity using available information.	address an identified problem.	accomplish a task.
	various proposed resolutions to a given situation.	
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine code that would be used to complete code segments.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Describe the behavior and conditions that produce identified results in a program.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Determine the result or output based on statement execution order in a code segment.
Career Development CD4: Students will identify and apply employability skills		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	Participate in a group discussion about the importance of time management.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
d: I develop positive relationships with others.	CD4.d.6.h: I can evaluate the best method to assist co-workers in accomplishing goals and tasks.	Determine team norms for communication and work completion.
	CD4.d.7h: I can examine the skills required to enable students to successfully transition to postsecondary opportunities.	Research and list the top skills and traits needed to be successfull at the post secondary level.
Information, Media, Technology IMT1: Students will access, interpret and evaluate informati premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
PRIORITY CONTENT STA	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Standard IC1: Students will understand the impact and effect computing technology has on our everyday lives	I can debate the social and economic implications associated with ethical and unethical computing practices (e.g., intellectual property rights, hacktivism, software piracy, new computers shipped with malware).	Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.
SUPPORTING STANDARDS AND LEARNING TARGETS		Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Standard DA1: Students will create computational artifacts using data and analysis	I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation).	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image representations).	
	I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image). Stage 3: Learning Activities	
A brief summary of the key learning activities- How will st	udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a

GUIDING UNIT QUESTIONS Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	STRATEGIES/ACTIVITIES What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	RESOURCES/MATERIALS This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.
How do you become a good digital citizen?	Group and Class discussions of digital citizenship	Cisco Networking Academy - Intro
		Cisco Neworking Academy - Essentials
Why is cybersecurity essential in our world today?	Research, analyze, and present a past security breach.	Cyber Patriot Resources
What are the motivations of cyber criminals?	End of unit quiz.	Cisco Network Training
		Cyber Patriot Training

	Computer System / Network Essentials	
STAGE 1: Des	red Unit Results	STAGE 2: Assessment Evidence
Students v	vill be able to:	By what criteria will performances of understanding be assessed?
- Understand the structure and function of a computer network		the desired unit results?
- Understand and d	eploy a virtual machine	
ESSENTIAL QUESTION (s) What thouaht-provoking auestions will foster inquiry, understanding, and transfer of learning?		Success Criteria with Standards The criteria for evaluating performance on standards is constant
- Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs		CTE standards-based Rubric: Throughout the course, students and
locally, regionally, and nationally?		teachers use the rubric for communication of success criteria,
<ul> <li>How might technical knowledge and skills influence one's work settings?</li> </ul>	employability and advancement opportunities within various	reflection, goal setting, and teedback.
		In their portfolio/evidence journal, students will reflect on the essential
PRIORITY CAREER & TECHNICA	STANDARDS & Learning Targets	Questions inrough a quick write, constructed response.
		Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat 4C2: Students will formulate and defend judgments and dec	on isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem,	4C2.a.11.h: I can determine the information needed to	Determine an appropriate program design to solve a problem or
decision or opportunity using available information.	4C2.a.12.h: I can contrast the benefits and drawbacks of	Determine if two or more code seaments vield equivalent results.
	various proposed resolutions to a given situation.	
	4C2.a.15.h: I can determine the best resolution for a problem,	Determine an appropriate program design to solve a problem or
	C2 a 16 b: I can defend an action taken or a decision	accomplish a lask.
	implemented.	a program.
b: I develop and implement a resolution for a new situation	4C2.b.5.h: I can apply past experience to develop a course of	Determine the result or output based on statement execution order in a
using personal knowledge and experience.	action for a new situation.	code segment.
	resolution for a new situation, problem or opportunity.	a program.
Career Development		
cD4: Students will identify and apply employability skills.	CD4 a 9 b: I can use positive workqualities typically desired	Arrive on-time to all classes and meetings
personal qualities needed to be employable.	in each of the career cluster's pathways.	
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate informati premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for	IMT1.a.8.h: I can model how raw data can be applied	Organize and present collected data visually to highlight relationships
b: I determine the relevance, validity and timeliness of data	IMT1.b.9.h: I can defend a position or decision using	Use data to highlight or propose cause-and-effect relationships.
and information.	relevant, valid and timely data and information.	predict outcomes, or communicate an idea.
PRIORITY CONTENT STANDARDS & Learning Targets F		
	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard
Standard DA1: Students will create computational artifacts using data and analysis	IDARDS & Learning Targets I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation).	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways. Use data analysis tools and techniques to identify patterns in data representing complex systems.
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UNIT 3: THREATS, VULNERABILITIES, ATTACKS		
STAGE 1: Desired Unit Results What will students understand as a result of the unit? - Understanding the most common cybersecurity attacks - Understanding cybercriminal infiltration tactics like deception. - Common methods used by cybercriminals.		STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
- Understanding wireless and mobile device. vulnerabilities and threats     ESSENTIAL OUESTION (a)		Success Criteria with Standards
What thought-provoking questions will foster i	nquiry, understanding, and transfer of learning?	The criteria for evaluating performance on standards is constant.
<ul> <li>Why is career and life readiness important? What jobs an locally, regionally, and nationally?</li> <li>How might technical knowledge and skills influence one's work settings?</li> </ul>	d careers are available to meet individual and societal needs employability and advancement opportunities within various	CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		In their portfolio/evidence journal, students will reflect on the essential auestions through a guick write, constructed response.
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat 4C2: Students will formulate and defend judgments and dec	on isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem,	4C2.a.11.h: I can determine the information needed to	Determine an appropriate program design to solve a problem or accomplish a task
	4C2.a.12.h: I can contrast the benefits and drawbacks of	Determine if two or more code segments yield equivalent results.
	4C2.a.15.h: I can determine the best resolution for a problem,	Determine an appropriate program design to solve a problem or
	decision or opportunity based on given criteria. C2.a.16.h: I can defend an action taken or a decision	accomplish a task. Describe the behavior and conditions that produce identified results in
by I develop and implement a resolution for a new situation	implemented.	a program.
using personal knowledge and experience.	action for a new situation.	code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and	CD4.a.9.h: I can use positive workqualities typically desired	Arrive on-time to all classes and meetings.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.		
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
PRIORITY CONTENT STAL	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Standard DA1: Students will create computational artifacts using data and analysis	I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation). I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image representations)	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image).	
Standard IC1: Students will understand the impact and effect computing technology has on our everyday lives	I can debate the social and economic implications associated with ethical and unethical computing practices (e.g., intellectual property rights, hacktivism, software piracy, new computers shipped with malware).	Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.
SUPPORTING STANDARDS AND LEARNING TARGETS		Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied wavs.
enter supporting standards here, add more rows as needed	enter learning targets, add more rows as needed	
A brief summary of the key learning activities- How will st	Stage 3: Learning Activities udents build knowledge & develop skills? How will learning be natural flow?	relevant, accessible, and engaging? How will the learning unforld in a
GUIDING UNIT QUESTIONS	STRATEGIES/ACTIVITIES	RESOURCES/MATERIALS
and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	certification software/tools, subcriptions (such asPLTW), etc.

How can you classify and analyze the different cyber security attacks that exist?	Group and Class discussion	Cisco Networking Academy - Intro
	Create a cybersecurity awareness poster.	Cisco Neworking Academy - Essentials
How do cyber criminals use deception techniques to steal information?	Lab - Install and use a virtual machine	Cyber Patriot Resources
	Lab - Using a port scanner to detect open ports	
Summarize the vulnerabilities exist with wireless and mobile devices	Lab - Build a homenetwork in packet tracer	
	Written responses to summarize understanding of topics.	
	End of unit quiz.	

	Cybersecurity Principles, Process, and Practices	
STAGE 1: Desired Unit Results What will students understand as a result of the unit? - Understanding the three principles of information security - Understanding organizational data and why it must be protected - Understanding safeguards, training and standards that can protect against cyber attacks. - Authentication, authorization and accounting access methods. - Types of encryption and key management.		STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
- Preventing attacks using	hash algorithms and salting	
ESSENTIAL What thought-provoking questions will foster	QUESTION (s)	Success Criteria with Standards The criteria for evaluating performance on standards is constant.
- Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally? - How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?		CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		In their portfolio/evidence journal, students will reflect on the essential questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborati 4C2: Students will formulate and defend judgments and dec	on isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate information premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose.	Organize and present collected data visually to highlight relationships and support a claim.
	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.
	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
PRIORITY CONTENT STAT	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.

Standard AP2: Students will create computational artifacts using algorithms and programming	I can use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions. I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AI) algorithm to play a game against a human opponent or solve a problem. I can demostrate code reuse by creating programming solutions using libraries and application program interfaces (APIs) (e.g., graphics libraries, maps, API).	Write and implement a solution to a computational problem.
	Stage 3: Learning Activities	
A brief summary of the key learning activities- How will st	udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a
	natural flow?	
GUIDING UNIT QUESTIONS	STRATEGIES/ACTIVITIES	RESOURCES/MATERIALS
Using Costas Level of Thinking, what questions will hook	What learning strategies and experiences will authentically	This includes an applicable textbooks, software, industry recognized
and hold students so that they develop a deep	engage students so that they gain understanding the	certification software/tools, subcriptions (such asPLTW), etc.
understanding of the desired results? The guiding	desired results? This includes strategies and activities that	
questions are more topic-specific to the particular unit.	help learners acquire targeted knowledge and skills, make	
They guide the exploration of the essential questions and	meaning of important ideas, and transfer their learning to	
rigor of the standards. This may include questions that	new situations. Consider now the learning will be tailored	
guide project based/ problem based learning	and liexible to address the interests and learning styles of all	
Why are systems needed to secure information?	Group and Class discussion	Cisco Networking Academy - Intro
	l abs - In Packet Tracer	Cisco Neworking Academy - Essentials
Summarize processes to protect organizational data.	Labs - Linux Access Control, Cryptography	Cyber Patriot Resources
	Written responses to summarize understanding of topics.	
Justify safeguards and defenses that can prevent cyber	End of unit quiz.	
attacks.		
1	1	

	System and Network Defense	
STAGE 1: Desi What will students unders - How to secure you - Protecting and secu- - Securing network - How to secure - How to secure - Using segmentativ - Securing winches	red Unit Results stand as a result of the unit? r systems and devices uring your applications services and protocols e network devices secure VPNs on to secure a network s and mohile devices	STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
- Jeculing wireles.		
ESSENTIAL	QUESTION (s)	Success Criteria with Standards
What thought-provoking questions will foster i	nquiry, understanding, and transfer of learning?	The criteria for evaluating performance on standards is constant.
<ul> <li>Why is career and lite readiness important? What jobs and locally, regionally, and nationally?</li> <li>How might technical knowledge and skills influence one's a work settings?</li> </ul>	d careers are available to meet individual and societal needs employability and advancement opportunities within various	CIE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborati 4C2: Students will formulate and defend judgments and dec	ion isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem,	4C2.a.11.h: I can determine the information needed to	Determine an appropriate program design to solve a problem or
decision or opportunity using available information.	address an identified problem.	accomplish a task.
	various proposed resolutions to a given situation.	belefinine in wool more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision	Describe the behavior and conditions that produce identified results in
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	a program. Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a	Describe the behavior and conditions that produce identified results in
Career Development	resolution for a new stradition, problem or opportunity.	
CD4: Students will identify and apply employability skills.	CD4.a.9.h: I can use positive workqualities typically desired	Arrive on-time to all classes and meetings.
personal qualities needed to be employable.	in each of the career cluster's pathways.	
c: I identify and exhibit fraits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between feacher, feam members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate information premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose.	Organize and present collected data visually to highlight relationships and support a claim.
	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an araument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.
	IMT1.b.9.h: I can defend a position or decision using relevant valid and timely data and information	Use data to highlight or propose cause-and-effect relationships, predict outcomes or communicate an idea
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information	Use data analysis tools and techniques to identify patterns in data
	IMTLc.6.h: I can interpret and select appropriate information to develop a propulation for a given a titudion	Collect data using computational tools and transform the data to make
d: I apply data and information to communicate ideas and	INTI.d.6.h: I can defend a proposal for a new product or service based on data and information analysis	Evaluate the ability of models and simulations to test and support the refinement of hypotheses
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and	Store, copy, search, retrieve, modify, and delete information using a
PRIORITY CONTENT STAT	Information for a specific purpose.	compuring device and define the information stored as data. Performance Tasks Options/ Assessment Strateaies by Standard
	5 5	Students may be given options to show their learning in varied ways.

Standard X2: Students will create computational ortification of using algorithms and programming         Com use user-centered research and design techniques diverse solutions of computational problems. Loss integrate grade-level appropriate mathematical techniques, concepts and programming         With early integrate grade-level appropriate mathematical techniques, concepts and programming and the integrate grade-level appropriate mathematical techniques, concepts and programming and the integrate grade-level appropriate mathematical techniques, concepts and programming and the integrate grade-level appropriate mathematical techniques, concepts and solutions or classes. Loss fluctuations and techniques concepts and programming and the import one of the appropriate mathematical performs and appropriate mathematical performs are appropriate mathematical performs and programming and the import one of the appropriate mathematical performs and programming and the import one of the appropriate mathematical performs and participation programming and the import the develop programming and the import one of the appropriate mathematical performs and participation programming and the import the develop ment and use of ability appropriate mathematical performance and participation programming and participation and appropriate mathematical performs and appropriate mathematical performance and participation programming and programming and participation of the set levents and appropriate mathematical performance and participation and appropriate mathematical performance and appropriate mathematical performance and participation and appropriate mathematical performance and participation andintegratenterely appropriate mathematical performance and partit	Standard AP2: Students will create computational artifacts I can use user-centered research and design techniques Write and implement a using algorithms and programming (e.g., surveys, interviews) to create software solutions.	1 M M M M M M M M M M M M M M M M M M M
Shadard IC3: Students will understand the importance of proper use of data and information in a computing societ proper use of data and information information in a computing societ proper use of data and information in the information in the information in the exploration of the esploration of the esploration of the esploration informations in the information in the esploration of the esploration informating informatin (data soft data software)? <ul< td=""><th>I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AD algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries, maps, APD.</th><td>solution to a computational problem.</td></ul<>	I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AD algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries, maps, APD.	solution to a computational problem.
Stage 3: Learning Activities           A brief summary of the key learning activities- How will students build knowledge & develop kills? How will tearning be relevant, accessible, and engaging? How will the learning unford in a natural flow?           GUIDING UNIT QUESTIONS         STRATEGIES/ACTIVITIES           Build actual flow?         RESOURCES/MATERIALS           registry of the desired results? The guiding questions are more topic-specific to the particular unit.         Their actual flow?           They guide the exploration of the essential questions full guide project based? problem based learning actual flow?         RESOURCES/MATERIALS           Which hearning activities that help learners acquire targeted knowledge and skills, make maning of important ideas, and ransfer their learning to me situations. Consider how the learning will be tailored and flexible to address the interests and learning students.         Cisco Networking Academy - Intro           Which methods can be used to secure systems,devices, and software?         Group and Class discussion         Cisco Networking Academy - Essentials           What is importance of networking hardening?         Labs - Linux: System hardening, possword recovery         Cisco Networking Academy - Essentials           Summarize ways to defend against wireless and mobile devices.         End of unit quiz.         End of unit quiz.	Standard IC3: Students will understand the importance of proper use of data and information in a computing society development and use of software and be able to explain the main arguments from multiple perspectives.	ations that impact the development and use of
CUDING UNT OUESTONS Using Costos Level of Thinking, what questions will hoby a deep understanding of the desired results? The guiding and hold students so that they develop a deep understanding of the desired results? The guiding encycledath so what they gain understanding the help learners acquire targeted knowledge and skills, make anding of the standards. This may include questions and ingor of the standards. This may include questions and and flexible to address the interests and learning will be tailored students. Consider how the learning will be tailored students. Consider how the learning will be tailored students.RESOURCES/MATERIALS This includes and applicable textbooks, software, industry recognized textbooks, software/tools, subcriptions (such asPLTW), etc.Which methods can be used to secure systems, device and software?Coso Networking Academy - IntroMhat is inportance of networking hardening?Lobs - Linux: System hordening, pasword recovery the Virteles RoutersCisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit quiz.Cisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit quiz.Cisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit quiz.Cisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit quiz.Cisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit quiz.Cisco Networking Academy - EssentiolsSummarize ways to defend against wireless and mobile devices.Adof unit qui	Stage 3: Learning Activities A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and natural flow?	d engaging? How will the learning unforld in a
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Which methods can be used to secure systems, devices, and software?       Group and Class discussion       Cisco Networking Academy - Intro         Labs - Linux: System hardening, password recovery       Cisco Networking Academy - Essentials         What is importance of networking hardening?       Labs - Dacket Tracer - Configuring VPNs, Co	CUIDING UNIT OUESTIONS STRATEGIES/ACTIVITIES DESCUBRES/MATERIAL	.S
Labs - Linux: System hardening, password recovery       Cisco Neworking Academy - Essentials         What is importance of networking hardening?       Labs - Packet Tracer - Configuring VPNs, Configuring Wireless Routers       Cyber Patriot Resources         Writter responses to summarize understanding of topics.       Writter responses to summarize understanding of topics.       Summarize ways to defend against wireless and mobile devices.         Summarize ways to defend against wireless and mobile devices.       End of unit quiz.       Image: Control Contenter Contenter Control Control Control Control Contro	Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and guide project based/ problem based learning	able textbooks, software, industry recognized ools, subcriptions (such asPLTW), etc.
What is importance of networking hardening?       Labs - Packet Tracer - Configuring VPNs, Configuring Wireless Routers       Cyber Patriot Resources         Written responses to summarize understanding of topics.       Summarize ways to defend against wireless and mobile devices.       End of unit quiz.         Image: Summarize ways to defend against wireless and mobile devices.       End of unit quiz.       Image: Summarize ways to defend against wireless and mobile devices.         Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.         Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.         Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.         Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.         Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless and mobile devices.       Image: Summarize ways to defend against wireless add ways to defend against wireless add ways to devices.         I	Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning Which methods can be used to secure systems, devices, and software?	able textbooks, software, industry recognized pols, subcriptions (such asPLTW), etc. emy <u>- Intro</u>
Written responses to summarize understanding of topics.         Summarize ways to defend against wireless and mobile devices.         End of unit quiz.         Image: Comparison of the problem of t	Output       Structure	able textbooks, software, industry recognized pols, subcriptions (such asPLTW), etc. emy - Intro emy - Essentials
Summarize ways to defend against wireless and mobile devices.       End of unit quiz.         devices.       End of unit quiz.      <	What is importance of networking hardening?       Sint Cotto Ymaths       Sint Cotto Ymaths       Sint Cotto Ymaths         With the control of the standards.       This includes strategies and experiences will authentically engage students so that they gain understanding the desired results? The guiding questions are more topic-specific to the particular unit.       This includes strategies and experiences will authentically engage students so that they gain understanding the desired results? The guiding questions are more topic-specific to the particular unit.       This includes strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire torgeted knowledge and skills, make meaning of important ideas, and transfer their learning to the standards. This may include questions that guide project based / problem based learning       This includes strategies and activities that help learners acquire torgeted knowledge and skills, make meaning of important ideas, and transfer their learning to the standards. This may include questions that guide the standards. This may include questions that guide project based / problem based learning       This includes strategies and activities that help learners acquire torgeted knowledge and skills, make meaning of important ideas, and transfer their learning to the students.         Which methods can be used to secure systems, devices, and software?       Group and Class discussion       Cisco Networking Acade         What is importance of networking hardening?       Labs - Linux: System hardening, password recovery       Cisco Neworking Acade         Witheres Routeres       Witeless Routers       Wit	able textbooks, software, industry recognized pols, subcriptions (such asPLTW), etc. e <u>my - Intro</u> e <u>my - Essentials</u>
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Defending The Enterprise		
STAGE 1: Desired Unit Results What will students understand as a result of the unit? - Securing embedded and special systems. - Securing devices and networks on the public cloud. - Managing account permissions. - Using cryptography to secure networks, devices and data.		STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
ESSENTIAL	QUESTION (s)	Success Criteria with Standards
What thought-provoking questions will foster i	nquiry, understanding, and transfer of learning?	The criteria for evaluating performance on standards is constant.
<ul> <li>Why is career and lite readiness important? What jobs and locally, regionally, and nationally?</li> <li>How might technical knowledge and skills influence one's of work settings?</li> </ul>	a careers are available to meet individual and societal needs employability and advancement opportunities within various	CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		un their portfolio/evidence journal, students will reflect on the essential questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
4C2: Students will formulate and defend judgments and dec	on isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.		
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose.	Organize and present collected data visually to highlight relationships and support a claim.
	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.
	relevant, valid and timely data and information.	predict outcomes, or communicate an idea.
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
PRIORITY CONTENT STAF	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.

Standard AP2: Students will create computational artifacts using algorithms and programming	I can use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions. I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AI) algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries and application program interfaces (APIs) (e.g., graphics libraries, maps, API).	Write and implement a solution to a computational problem.
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.
	Stage 3: Learning Activities	
A brief summary of the key learning activities- How will st	udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a
	natural flow?	
Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	STRATEDIES/ACTIVITIES What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.
Why is it important to secure embedded systems?	Group and Class discussion	Cisco Networking Academy - Intro
	Labs - Packet Tracer: Configuring Site to site VPN	Cisco Neworking Academy - Essentials
What are similarities and differences to securing devices and networks from a cloud vs a local system?	Labs - Linux: Implementing Encryption, Generating Digital Signatures	Cyber Patriot Resources
	Written responses to summarize understanding of topics.	
How do you manage permissions?	End of unit quiz.	
Why is cryptography a beneficial tool for security?		

Cybersecurity Operations		
STAGE 1: Desired Unit Results What will students understand as a result of the unit? - Understand cybersecurity in defense in depth approach - Ensuring that systems remain securely implemented and configured - What physical security measures can help protect against cybercrime? - Identifying vulnerabilities and misconfigurations in security defenses - Designing high availability systems and how to maintain them - Attack frameworks for incident detection and response		STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
ESSENTIAL	QUESTION (s)	Success Criteria with Standards
What thought-provoking questions will toster i - Why is career and life readiness important? What jobs and locally, regionally, and nationally? - How might technical knowledge and skills influence one's a work settings?	nquiry, understanding, and transfer of learning? d careers are available to meet individual and societal needs employability and advancement opportunities within various	The criteria for evaluating performance on standards is constant. CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		In their portfolio/evidence journal, students will reflect on the essential questions through a quick write constructed response
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborati 4C2: Students will formulate and defend judgments and dec	on isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.		
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose.	Organize and present collected data visually to highlight relationships and support a claim.
	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.
	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
PRIORITY CONTENT STAT	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.

Standard AP2: Students will create computational artifacts       I can use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions. I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable       Write and implement a solution to a compu- techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable       I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AI) algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries and application program interfaces (APIs) (e.g., graphics libraries, maps, API).	tational problem.
Stage 3: Learning Activities	
A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How wi natural flow?	If the learning unforld in a
GUIDING UNIT QUESTIONS         STRATEGIES/ACTIVITIES         RESOURCES/MATERIALS           Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning         STRATEGIES/ACTIVITIES What learning strategies and experiences will authentically enderstanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations.         RESOURCES/MATERIALS This includes an applicable textbooks, softw certification software/tools, subcriptions (su ending of important ideas, and transfer their learning to new situations.	ware, industry recognized uch asPLTW), etc.
Why do organizations need a layered approach to group and Class discussion Cisco Networking Academy - Intro	
Labs - Packet Tracer Using Diagnostic Commands, IoT Cisco Neworking Academy - Essentials security	
Why physical security measures can help prevent cyber Labs - Use Wireshark to analyze network traffic Cyber Patriot Resources crimes?	
Written responses to summarize understanding of topics. Cyber.org	
How can organizations manage and monitor cyber threats End of unit quiz. to prevent attacks?	
What security assessments and tests can be done to expose vulnerabilities?	

Incident Response		
STAGE 1: Desi What will students under - Incident response - Implementing disaster recove - Investigatir	ired Unit Results stand as a result of the unit? e plans and processes ry and business continuity plans. ng digital crime	STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
ESSENTIAL What thought-provoking questions will foster i	QUESTION (s)	Success Criteria with Standards The criteria for evaluating performance on standards is constant.
<ul> <li>Why is career and life readiness important? What jobs an locally, regionally, and nationally?</li> <li>How might technical knowledge and skills influence one's work settings?</li> </ul>	d careers are available to meet individual and societal needs employability and advancement opportunities within various	CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
		In their portfolio/evidence journal, students will reflect on the essential questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat 4C2: Students will formulate and defend judgments and dec	ion isions by employing critical thinking skills.	
a: I develop effective resolutions for a given problem,	4C2.a.11.h: I can determine the information needed to address an identified problem	Determine an appropriate program design to solve a problem or accomplish a task
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	Use test-cases to find errors or validate results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
Information, Media, Technology IMT1: Students will access, interpret and evaluate informati premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose.	Organize and present collected data visually to highlight relationships and support a claim.
	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of	Identify and describe patterns in data visualizations, such as charts or graphs to make predictions
	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.
5,	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
PRIORITY CONTENT STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Standard DA1: Students will create computational artifacts using data and analysis	I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation). I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image).	

A brief summary of the key learning activities. How will a	Stage 3: Learning Activities	relevant accessible and engaging? Here will the learning unforted in a
A brief summary of the key learning activities- How will s	natural flow?	relevant, accessible, and engaging? How will the learning uniona in a
GUIDING UNIT QUESTIONS Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	STRATEGIES/ACTIVITIES What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	RESOURCES/MATERIALS This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.
Why is it important to do deep analysis of incidents that have occured?	Group and Class discussion	<u>Cisco Networking Academy - Intro</u>
	Labs - Linux: Gather Information from attack	Cisco Neworking Academy - Essentials
What are the components of a good incident response plan?	Labs - Packet Tracer: Investigate Disaster Recovery	Cyber Patriot Resources
	Written responses to summarize understanding of topics.	
	End of unit quiz.	

Asset and Risk Management		
STAGE 1: Desi What will students unders - Identifying assets that need to be pro - The risks and vulnerabilities tha	red Unit Results stand as a result of the unit? stected though the asset lifecyble stages. t threaten and organization's assets	STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?
- Using risk assessment to help assess and examine operation risks. - Types of controls that can be implemented to reduce and mitigate risk		
ESSENTIAL	QUESTION (s)	Success Criteria with Standards
- Why is career and life readiness important? What jobs an locally, regionally, and nationally?     - How might technical knowledge and skills influence one's work settings?	adury, understanding, and transfer of learning? d careers are available to meet individual and societal needs employability and advancement opportunities within various	The criteria for evaluating performance on standards is constant. CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
-		In their portfolio/evidence journal, students will reflect on the essential
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	questions through a quick write, constructed response. Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat	ion isions by employing critical thinking skills	
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in	Use test-cases to find errors or validate results.
	unintended consequences, both positive and negative. 4C2.a.14.h: I can analyze the impact of a decision using a	Determine code that would be used to complete code seaments.
	systems thinking model.	
	decision or opportunity based on given criteria.	accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
using personal knowledge and experience.	action for a new situation.	code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.6.h: I can evaluate how selfdiscipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status.	Document a list of desired skills and traits local employers desire in their employees.
	CD4.a.7.h: I can assess how flexibility and willingness to learn new knowledge and skills affect employment status.	Interview a computer science profesional to learn about previous, current, and future learning required for their position.
	CD4.a.8.h: I can apply communication strategies when adapting to a culturally diverse environment.	Participate in a cross cultural discussion of computer science careers with students in another school district.
	CD4.a.9.h: I can use positive workqualities typically desired	Arrive on-time to all classes and meetings.
	CD4.a.10.h: I can manage work roles and responsibilities to	Participate in a group discussion about the importance of time
b: I demonstrate skills related to seeking and applying for	CD4.b.5.h: I can use multiple resources to locate job	Use multiple on-line resources to construct a list potential
employment to find and obtain a desired job.	opportunities.	employement opportunities.
	CD4.b.6.h: I can prepare a resume, cover letter, employment application.	Produce a resume and review it with a hiring manager.
	CD4.b.7.h: I can employ critical thinking and decision-making skills to exhibit qualifications to a potential employer in an interview.	Participate in mock interviews with educators and community members.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/iobsite.	Document appropriate dress for computer science positions at local companies.
	CD4.c.6.h: I can complete required employment forms and documentation.	Complete an application for a local job opportunity.
	CD4.c.7.h: I can summarize key activities necessary to retain a job in an industry.	Create a prioritzed list of leadership qualities desired by local employers.
d: I develop positive relationships with others.	CD4.d.5.h: I can participate in cocurricular and community activities to enhance the school experience.	Participate in a job shadow.
	CD4.d.6.h: I can evaluate the best method to assist co-workers in accomplishing goals and tasks.	Determine team norms for communication and work completion.
	CD4.d.7.h: I can examine the skills required to enable students to successfully transition to postsecondary opportunities.	Research and list the top skills and traits needed to be successfull at the post secondary level.
	CD4.d.8.h: I can use a systematic approach to academic and career planning for students to achieve their learning, socio-cultural and work goals.	Create an academic and career plan with the help of parents, teachers, counselors, and mentors.
Information, Media, Technology IMT1: Students will access, interpret and evaluate informati premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a given purpose.	sources for a given purpose.	and support a claim.

	IMT1.a.7.h: I can explain the level of objectivity for a given source of information.	Collect data using computational tools.
	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.
	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
PRIORITY CONTENT STA	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard
Standard DA1: Students will create computational artifacts using data and analysis	"I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation).	Use data analysis tools and techniques to identify patterns in data representing complex systems.
	I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image representations). I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image)."	
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.
A brief summary of the key learning activities- How will st	Stage 3: Learning Activities udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a
GUIDING UNIT QUESTIONS Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep	STRATEGIES/ACTIVITIES What learning strategies and experiences will authentically engage students so that they gain understanding the	RESOURCES/MATERIALS This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.
understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	
How do you identify and prioritize assets in an organization?	Group and Class discussion	Cisco Networking Academy - Intro
	Activities on Risk Management, Risk Analysis	Cisco Neworking Academy - Essentials
What are the risks and threats to an organizations assets?	Written responses to summarize understanding of topics.	Cyber Patriot Resources
How can cyber professionals reduce and mitigate risks to its companies assets?		

	Governance and Compliance	
STAGE 1: Des What will students under - Understanding an organiza The cada a transpo	ired Unit Results stand as a result of the unit? tion's approach to cybersecurity. apilla diairta labaraire	STAGE 2: Assessment Evidence By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired wit recutit?
- Understanding the	ISO/IEC security model	
ESSENTIAL What thought provoking questions will faster	QUESTION (s)	Success Criteria with Standards
- Why is career and life readiness important? What jobs an locally, regionally, and nationally?     - How might technical knowledge and skills influence one's	d careers are available to meet individual and societal needs employability and advancement opportunities within various	CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
work semings?		In their portfolio/evidence journal, students will reflect on the essential questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat	ion	
a: I develop effective resolutions for a given problem	4C2 a 11 b: I can determine the information needed to	Determine an appropriate program design to solve a problem or
decision or opportunity using available information.	address an identified problem.	accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	Determine it two or more code segments yield equivalent results.
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	Determine an appropriate program design to solve a problem or accomplish a task.
	C2.a.16.h: I can defend an action taken or a decision implemented.	Describe the behavior and conditions that produce identified results in a program.
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	Determine the result or output based on statement execution order in a code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development		
a: I identify and demonstrate positive work behaviors and	CD4.a.9.h: I can use positive workqualities typically desired	Arrive on-time to all classes and meetings.
personal qualities needed to be employable. c: I identify and exhibit traits for retaining employment.	in each of the career cluster's pathways. CD4.c.4.h: I can model behaviors that demonstrate reliability	Use electronic communication between teacher, team members, and
Information, Media, Technoloay	and dependability.	mentors.
IMT1: Students will access, interpret and evaluate informati premises, arguments, decisions, ideas and initiatives.	on from a variety of sources in order to inform and support	
a: I choose appropriate sources of data and information for a given purpose.	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationships and support a claim.
PRIORITY CONTENT STA	NDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Standard AP2: Students will create computational artifacts using algorithms and programming	I can use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions. I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AI) algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries and application program interfaces (APIS) (e.g., graphics libraries, maps, API).	Write and implement a solution to a computational problem.
using data and analysis	representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation). I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image representations). I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image).	representing complex systems.
Standard IC1: Students will understand the impact and effect computing technology has on our everyday lives	I can debate the social and economic implications associated with ethical and unethical computing practices (e.g., intellectual property rights, hacktivism, software piracy, new computers shipped with malware).	Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.
A brief summary of <u>the key learning activities- How will st</u>	Stage 3: Learning Activities udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a

<b>GUIDING UNIT QUESTIONS</b> Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	STRATEGIES/ACTIVITIES What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	RESOURCES/MATERIALS This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.
Why is it important for organizations to communicate a code of ethics in dealing with cybersecurity?	Group and Class discussion	<u>Cisco Networking Academy - Intro</u>
	Project - Develop cybersecurity policies/procedures	Cisco Neworking Academy - Essentials
What are the ISO/IEC security models?	Lab - Packet Tracer: Skills integration challenge	Cyber Patriot Resources
	Written responses to summarize understanding of topics.	
What are good and bad digital behaviors?	End of unit quiz.	

Careers and Certification		
STAGE 1: Desi	ired Unit Results	STAGE 2: Assessment Evidence
What will students understand as a result of the unit? - Students will understand career pathways of cybersecurity		By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate
- Students will have opportunities to complete a CISCO certification.		the desired unit results?
ESSENTIAL What thought-provoking questions will foster i	QUESTION (S) inquiry, understanding, and transfer of learning?	The criteria for evaluating performance on standards is constant.
<ul> <li>Why is career and life readiness important? What jobs an locally, regionally, and nationally?</li> <li>How might technical knowledge and skills influence one's work settings?</li> </ul>	d careers are available to meet individual and societal needs employability and advancement opportunities within various	CTE standards-based Rubric: Throughout the course, students and teachers use the rubric for communication of success criteria, reflection, goal setting, and feedback.
work sennigs:		In their portfolio/evidence journal, students will reflect on the essential
		questions through a quick write, constructed response.
PRIORITY CAREER & TECHNICA	L STANDARDS & Learning Targets	Pertormance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.
Creativity, Critical Thinking, Communication and Collaborat 4C2: Students will formulate and defend judgments and dec	ion isions by employing critical thinking skills. -	
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Determine an appropriate program design to solve a problem or accomplish a task.
	4C2.a.12.h: I can contrast the benefits and drawbacks of	Determine if two or more code segments yield equivalent results.
	4C2.a.13.h: I can predict how an action could result in	Use test-cases to find errors or validate results.
	Unintended consequences, both positive and negative. 4C2.a.14.h: I can analyze the impact of a decision using a custome thicking model	Determine code that would be used to complete code segments.
	4C2.a.15.h: I can determine the best resolution for a problem,	Determine an appropriate program design to solve a problem or
	decision or opportunity based on given criteria. C2.a.16.h: I can defend an action taken or a decision	accomplish a task. Describe the behavior and conditions that produce identified results in
	implemented.	a program.
using personal knowledge and experience.	action for a new situation.	code segment.
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	Describe the behavior and conditions that produce identified results in a program.
Career Development CD4: Students will identify and apply employability skills.		
a: I identify and demonstrate positive work behaviors and	CD4.a.6.h: I can evaluate how selfdiscipline, self-worth, positive attitude and integrity displayed in a work situation	Document a list of desired skills and traits local employers desire in their employees
personal qualities needed to be employable.	affect employment status.	
	learn new knowledge and skills affect employment status.	current, and future learning required for their position.
	CD4.a.8.h: I can apply communication strategies when adapting to a culturally diverse environment.	Participate in a cross cultural discussion of computer science careers with students in another school district.
	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	Arrive on-time to all classes and meetings.
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	Participate in a group discussion about the importance of time management.
b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job.	CD4.b.5.h: I can use multiple resources to locate job opportunities.	Use multiple on-line resources to construct a list potential employement opportunities.
	CD4.b.6.h: I can prepare a resume, cover letter, employment application.	Produce a resume and review it with a hiring manager.
	CD4.b.7.h: I can employ critical thinking and decision-making skills to exhibit qualifications to a potential employer in an interview.	Participate in mock interviews with educators and community members.
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	Use electronic communication between teacher, team members, and mentors .
	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.	Document appropriate dress for computer science positions at local companies.
	CD4.c.6.h: I can complete required employment forms and documentation.	Complete an application for a local job opportunity.
	CD4.c.7.h: I can summarize key activities necessary to retain a job in an industry.	Create a prioritzed list of leadership qualities desired by local employers.
d: I develop positive relationships with others.	CD4.d.5.h: I can participate in cocurricular and community activities to enhance the school experience.	Participate in a job shadow.
	CD4.d.7.h: I can examine the skills required to enable students to successfully transition to postsecondary opportunities.	Research and list the top skills and traits needed to be successfull at the post secondary level.
	CD4.d.8.h: I can use a systematic approach to academic and career planning for students to achieve their learning, socio-cultural and work goals.	Create an academic and career plan with the help of parents, teachers, counselors, and mentors.
Information, Media, Technology IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.		
a: I choose appropriate sources of data and information for	IMT1.a.6.h: I can justify the selection of various information	Organize and present collected data visually to highlight relationships
	IMT1.a.7.h: I can explain the level of objectivity for a given	Collect data using computational tools.
	source of information.	

	IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.	Organize and present collected data visually to highlight relationshi and support a claim.					
b: I determine the relevance, validity and timeliness of data and information.	IMT1.b.7.h: I can use raw data and information appropriately to support an argument, idea or initiative.	Determine an appropriate program design to solve a problem or accomplish a task.					
	IMT1.b.8.h: I can compare and contrast validity of information from electronic and non-electronic sources.	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.					
	IMT1.b.9.h: I can defend a position or decision using relevant, valid and timely data and information.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.					
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	Use data analysis tools and techniques to identify patterns in data representing complex systems.					
	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	Collect data using computational tools and transform the data to make it more useful and reliable.					
d: I apply data and information to communicate ideas and create new opportunities.	IMT1.d.6.h: I can defend a proposal for a new product or service based on data and information analysis.	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.					
	IMT1.d.7.h: I can synthesize data and information from multiple sources to identify new trends.	Refine computational models based on the data they have generated.					
	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.					
PRIORITY CONTENT STAL	Performance Tasks Options/ Assessment Strategies by Standard Students may be given options to show their learning in varied ways.						
Standard AP2: Students will create computational artifacts using algorithms and programming	I can use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions. I can integrate grade-level appropriate mathematical techniques, concepts, and processes in the creation of computational artifacts. I can use mathematical operations to change a value stored in a variable I can decompose a computational problem by creating new data types, functions, or classes. I can develop programs for multiple computing platforms (e.g., computer desktop, web, mobile). I can implement an Artificial Intelligence (AI) algorithm to play a game against a human opponent or solve a problem. I can demonstrate code reuse by creating programming solutions using libraries and application program interfaces (APIs) (e.g., graphics libraries, maps, API).	Write and implement a solution to a computational problem.					
Standard DA1: Students will create computational artifacts using data and analysis	I can convert between binary, decimal, and hexadecimal representations of data (e.g., convert hexadecimal color codes to decimal percentages, ASCII/ Unicode representation). I can analyze the representation tradeoffs among various forms of digital information (e.g., lossy vs. lossless compression, encrypted vs. unencrypted, various image representations). I can discuss how data sequences (e.g., binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g., instructions, numbers, text, sound, image).	Use data analysis tools and techniques to identify patterns in data representing complex systems.					
Standard IC1: Students will understand the impact and effect computing technology has on our everyday lives	I can debate the social and economic implications associated with ethical and unethical computing practices (e.g., intellectual property rights, hacktivism, software piracy, new computers shipped with malware).	Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.					
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	I can debate laws and regulations that impact the development and use of software and be able to explain the main arguments from multiple perspectives.	Debate laws and regulations that impact the development and use of software.					
A brief summary of the key learning activities- How will st	Stage 3: Learning Activities udents build knowledge & develop skills? How will learning be	relevant, accessible, and engaging? How will the learning unforld in a					
GUIDING UNIT QUESTIONS	STRATEGIES/ACTIVITIES	RESOURCES/MATERIALS					
Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.	This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.					
What careers are available to a cybersecurity expert?	Group and Class discussion Project - Investigate and present career paths in	<u>Cisco Networking Academy - Intro</u> Cisco Neworking Academy - Essentials					
	cybersecurity	C les Debiet Deseures					
what certifications can receive mrough CISCO?		Syber Fumor Resources					

Priority Standards	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
Creativity, Critical Thinking, Communication and Collaboration 4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills. a: I develop effective resolutions for a given problem, decision or opportunity using available information. b: I develop and implement a resolution for a new situation using personal knowledge and experience.	x	x	x	X	x	x	x	x	x	X	X
Career Development CD4: Students will identify and apply employability skills. a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable. b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job. c: I identify and exhibit traits for retaining employment. d: I develop positive relationships with others.	x	x	X	x	X	x	x	X	x	X	x
Information, Media, Technology IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives. a: I choose appropriate sources of data and information for a given purpose. b: I determine the relevance, validity and timeliness of data and information. c: I select relevant information necessary for making decisions and solving problems d: I apply data and information to communicate ideas and create new opportunities.	x	x	x	x	x	x	x	x	x	x	x
Standard AP2: Students will create computational artifacts using algorithms and programming				х	х	х	х			Х	х
Standard DA1: Students will create computational artifacts using data and analysis	Х	Х	Х					Х	х	Х	х
Standard IC1: Students will understand the impact and effect computing technology has on our everyday lives	x		x							x	x
Standard IC3: Students will understand the importance of proper use of data and information in a computing society	x		x		x	x			x	х	X