Syracuse City School District
Career and Technical Education Program
Course Syllabus
CSS100: Cybersecurity 100

Program Overview

Cybersecurity is the study of information technology security and focuses on protecting computers, networks, programs, and data from unintended or unauthorized access, change, or destruction. The Cybersecurity Program is designed to help students explore the process of securing computers and computer networks, and conducting investigations of cybercrimes and forensic analysis of digital devices. Students will be equipped with the knowledge and skills to manage helpdesk functions in small to medium business IT operations as well as continue on to post-secondary training for careers in computer and network security, cybercrime investigation and computer forensics. Throughout the program, students gain mastery of these skills by performing simulated hands-on exercises Students who successfully complete the program can earn up to nine college credits and obtain CompTIA A+ Certification, a fundamental accreditation for work in many IT fields.

Course Description

This course will introduce students to the fundamentals of computers and computer systems. Through hands-on experience, students will learn the basics of computers, hardware, peripherals, and networking. This course will give students the foundational knowledge and skills for the Computer Science sequence.

Work-Based Learning

Students will be connected with working computer science professionals in the community through Career Coaching, field trips and job shadowing which could lead to further opportunities for direct job training and real-world experience. Students will create and maintain a portfolio of their work-based learning experiences throughout the program to document the development of their skills.

Pre-Requisites

N/A

Course Objectives

1. Students will understand the historical and societal context of computer science.
2. Students will understand the career ready practices that will lead to success in the computer science pathway.
3. Students will understand computer operations and how it relates to computer science.
4. Students will be able to assemble and troubleshoot computers.
5. Students will understand the relation between the physical and virtual worlds.

Integrated Academics

N/A

Equipment and Supplies

- **School will provide:** All necessary technology and classroom equipment
- **Student will provide:** N/A

Textbook

TBD

Grading

10% Class Attendance and Participation
10% Oral Presentation
25% Assignments
25% Mid-Term Exam
30% Final Exam

Additional Course Policies

- Students are required to follow all safety procedures.
- All work is due at the time and day specified when the assignment is given. Submission details for work to be graded will be given at the time the work is assigned.
- Quizzes will be given throughout the semester. The lowest quiz score (one score only) will be dropped when calculating the final course grade.

Course Calendar

Quarter	Units of Study
1	• Introduction to the Program, the School, and the Future • Setting Up for Success • The Importance of Communication • The 7 Habits of Highly Effective Teens • Career Ready Practices and Workplace Readiness Skills • Proper Keyboarding Technique
2	• Digital Citizenship and Ethical Computing • How to Clean and Maintain Technology • Digital Portfolios, Resumes, and Work-Based Learning, • Safety in the Computer Lab • Protecting Ourselves and Our Technology • Introduction to the Computer Lab, Tools, and Resources • File Management, Storage and Backups
3	• Introduction to Word Processing and Microsoft Word • Introduction to Presentation Software and Microsoft PowerPoint • Introduction to Spreadsheets and Microsoft Excel • Introduction to Databases and Microsoft Access
4	• Introduction to Hardware • Introduction to Software • Introduction to Networking and Wireless Computing • Introduction to the Internet • Safe Use of the Internet, Social Media, and other Digital Tools • The Evolution of Technology Careers, Technology Trends and What's to Come • Finding and Applying for a Job • Review and Final Exam

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CSS100: Cybersecurity 100

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Weeks 1-2 **Introduction to the Program, the School, and the Future**	• What is the ultimate goal of this CTE program? • What are the expectations for the CTE Computer Pathways classroom and lab? • How do students keep themselves and others safe? • How can students be successful in school and in the CTE program? • How can students use technology appropriately and effectively? • What is the district's Code of Conduct? • What supports are available to students in the classroom, lab, school, and district?	• Explain the goals and expectations of the 4-year high school CTE program. • Summarize classroom procedures and expectations. • Describe the Code of Conduct and where to reference it. • Identify classroom, lab, school, and district supports and resources.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,10,11,12 **Cluster Standards** IT 1,4 **Pathway Standards** IT-SUP 1 IT-NET 1	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.IC.7
Weeks 3-4 **Setting Up for Success**	• What academic and social-emotional resources are available to support students? • How can students manage their time? • How can students study effectively to prepare for a test? • What notetaking methods are effective for students? • How do students build a quality portfolio over the next four years? • What are the graduation requirements for the program? • What is the Graduation Requirements Checklist? • What is the role of guidance counselors? • What are SMART Goals? • What is a rubric?	• Describe the academic and social-emotional resources available to support students. • Use curriculum delivery methods and other online resources to complete assignments and meet class requirements. • Describe effective time management, note taking, and test taking strategies and methods that can be used in class. • Explain what a portfolio is and how it will be developed over the course of four years. • Explain what the graduation requirements are for the program. • Use the Graduation Requirements Checklist to track credits earned and credits needed each year. • Describe the role of guidance counselors. • Describe and set SMART Goals. • Describe a rubric and explain its function.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,6,7,8,11 **Cluster Standards** IT 1 **Pathway Standards** IT-SUP 1 IT-NET 1	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.DL.2
Week 5 **The Importance of Communication**	• Why is communication important?	• Explain how vital the role of Communication is.	**Written** • Workbook • Research Project	**Career Ready Practices** CRP 1,2,4,7,8	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	• What methods of communication are there? • When is it appropriate to use each of the different methods? • What is the difference between professional and casual communication?	• Identify and describe the different methods of communication. • Evaluate a scenario and the best method of communication to use in addressing and/or clarifying the situation.	• Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist		9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.DL.2
Weeks 6-7 **The 7 Habits of Highly Effective Teens**	• What are the 7 Habits of Highly Effective Teens? • What is the meaning of each? • What are the risks of not using them? • What would change if these habits were implemented?	• Describe the 7 habits of Highly Effective Teens are. • Identify which habits they already possess and which they don't. • Describe specific strategies for implementing those they're not using yet.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.DL.2
Weeks 7-8 **Career Ready Practices and Workplace Readiness Skills**	• What are the Career Ready Practices and what do they mean? • What are examples of each? • What are Workplace Readiness Skills? • What are the Workplace Readiness Skills and what do they mean? • What are examples of each. • What are the differences and similarities of Career Ready Practices and Workplace Readiness Skills?	• List and explain the twelve Career Ready practices and how they tie to success. • List and explain the Workplace Readiness practices and how they tie to success. • Explain how both the Career Ready Practices and the Workplace Readiness Skills can be implemented throughout various classroom assignments and activities.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,10,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.IC.7
Weeks 9-11 **Proper Keyboarding Technique**	• What is keyboarding/home-row typing? • What are the characteristics of proper keyboarding technique? • Why is practice so important? • Why is it important to use home-row typing? • What is ergonomics and why is it important? • What is the function of each of the keys on the keyboard? • What are the differences between keyboards?	• Demonstrate proper keyboarding technique and explain its benefits. • Explain how to improve keyboarding skills. • Explain the relationship between keyboarding speed and efficiency and practice. • Explain the ergonomic concepts that can help avoid pain and injury. • Describe various types of input devices, their differences, and their functionality.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.DL.1
Weeks 12-13	• What does it mean to be a good digital citizen?	• Conduct themselves with professionalism while exchanging their	**Written** • Workbook	**Career Ready Practices** CRP 1,2,4,7,8,9,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Digital Citizenship and Ethical Computing	• What is the proper use of social media? • How can technology be used ethically to avoid hurting others and oneself? • How can information be verified as accurate and true? • Should outdated technology equipment be recycled?	ideas and interests over the internet or through social media. • Describe what kinds of information are appropriate and inappropriate to share. • Explain how use of the internet and social media can have a positive or negative impact. • Explain how outdated technology impacts our environment.	• Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist		9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.IC.3,4,5 9-12.CY.1,2,3
Week 14 **How to Clean and Maintain Technology**	• What tools and procedures are used to clean and maintain equipment? • What procedures can keep equipment, classmates, and oneself safe? • What new products, technology or procedures evolved because of COVID?	• Explain the policies and procedures that encourage safe, long-term use of equipment. • Properly disinfect key equipment in order to keep the classroom and building community safe. • Identify where appropriate cleaning supplies are located within the classroom and explain how to use them safely.	**Written** • Workbook • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.2,5
Weeks 15-16 **Digital Portfolios, Resumes, and Work-Based Learning**	• What is a portfolio and why is it important to have one? • What is a resume? • What kinds of skills and experience are important to include on a resume? • What is work-based learning and why is it important?	• Explain what a portfolio is, how to create one and its importance to a career plan. • Describe the types of skills, projects, and information that should be documented in a portfolio. • Explain what a resume is, how to create one and its importance to a career plan. • Describe the types of skills, projects, and information that should be documented in a resume. • Explain the importance of work-based learning experiences to creating effective portfolios and resumes.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Lab Simulation of computer setup • Set up a computer lab (manually) • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,10,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1	**CSDF** 9-12.IC.7 9-12.DL.1,2,5
Week 17 **Safety in the Computer Lab** **Protecting Ourselves and Our Technology**	• What is electrostatic discharge? • How can users and computer components be protected from electrostatic discharge? • How is safety maintained at all times when dealing with computer hardware and peripherals? • What does professionalism look like in the classroom and the workplace?	• Explain and demonstrate how to protect oneself and components from electrostatic discharge. • Explain and demonstrate how to safely handle computer hardware and peripherals. • Explain and demonstrate how to conduct oneself professionally in the classroom, lab room, and workplace.	**Written** • Workbook • TestOut Assignments • Self-Assessment **Performance** • ESD lab • Anti-static wrist wrap and mat assignment • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,3,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1	**CSDF** 9-12.NSD.2,3 9-12.DL.
Week 18	• Where is the computer lab and when will it be used?		**Written** • Workbook	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Introduction to the Computer Lab, Tools, and Resources	• What are the classroom procedures? • How are computers, surge protectors, and uninterruptable power supplies maintained? • What tools are used in the field of computer maintenance and repair and what are they used for? • How are tools used safely to avoid damage to users and computer hardware?	• Describe the spaces that are used for teaching and learning and the procedures for sharing it. • Explain the rules and expectations for using the lab. • Explain how computers, surge protectors, and uninterruptable power supplies are maintained. • Explain the tools that are used in the field of computer maintenance and repair and what are they used for. • Demonstrate how to properly use and put away tools necessary to assemble and repair computers. • Demonstrate how to use tools safely to avoid damage to users and computer hardware.	• TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist		9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1	**CSDF** 9-12.NSD.2,3 9-12.DL.2,4,5
Week 19 **File Management, Storage and Backups**	• What is a drive and what are the different types? • What are files and file extensions? • What are the most important file types and what do they do? • How is data transferred, shared, and backed up? • How is data protected from loss, damage, or attack? • How is data restored?	• Define and explain the function of different types of drives, including hard drives, network drives, cloud drives, internal and external drives, and thumb drives. • Describe programs and methods for navigating drives, folders, and files on a computer. • Explain the importance of folder creation in order to keep files organized and easy to find. • Explain how data is transferred, shared, • Explain how data is protected from loss, damage, or attack. • Explain how data is restored.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5	**CSDF** 9-12.NSD.1,2,3 9-12.DL.1,2,4,5
Weeks 20-23 **Introduction to Word Processing and Microsoft Word**	• What is word processing and what is it used for? • How are documents edited for errors? • What types of professional documents can be created? • How are documents manipulated to improve the professional appearance?	• Explain the importance of word processing. • Use of keyboarding skills to create word processing documents. • Navigate, highlight, format and edit word processing documents. • Use document templates to create commonly used text documents. • Create resumes, memos, business letters, and other professional documents.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2 9-12.DL.1,2,4,5
Weeks 24-25 **Introduction to Presentation Software and**	• What is a presentation and what is its purpose? • What makes an effective presentation?	• Explain what a presentation is and what it is used for. • Describe the qualities of an effective presentation.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards	**Literacy**

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Microsoft PowerPoint	• What tools can be used to improve the appearance and effectiveness of a presentation? • What can be done to deliver a presentation in a way that engages and informs the audience?	• Explain how to deliver a presentation that will engage and inform people about the subject.	• Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3	9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.NSD.2 9-12.DL.1,2,4,5
Weeks 26-27 **Introduction to Spreadsheets and Microsoft Excel**	• What is a spreadsheet and what is its purpose? • What makes an effective spreadsheet? • What tools can be used to share data and information from a spreadsheet?	• Describe what a spreadsheet is and what it can be used for. • Explain the different parts of a spreadsheet. • Create a spreadsheet and add data. • Perform basic calculations using spreadsheet formulas. • Sort and filter data. • Create visual representations of spreadsheet data. • Explain the relationship between spreadsheets and databases.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.NSD.3 9-12.DL.1,2,4,5
Weeks 28-29 **Introduction to Databases and Microsoft Access**	• What is a database and what is its purpose? • What makes an effective database? • What tools can be used to share data and information from a database?	• Describe what a database is and what it can be used for. • Explain the different parts of a database. • Create a database file. • Use spreadsheets and forms to input, track and filter data.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3 IT-PRG 10	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.NSD.3 9-12.DL.1,2,4,5
Weeks 30-31 **Introduction to Hardware**	• What is computer hardware? • What are the key components that make-up a computer system? • What is the responsibility or function of each component?	• Define computer hardware. • Describe the key hardware components that make up a computer system. • Explain the function of each component.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11 **Pathway Standards** IT-SUP 1,2,3	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7 **CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 32 **Introduction to Software**	• What is computer software? • What are the key categories of software used and what is each used for?	• Define computer software. • Describe the key categories of computer software and explain the uses of each category.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6 **Literacy** 9-10RST 1,2,4,7,8,9

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	• How is software delivered to users and how has this evolved? • What are the qualities of an effective program? • What is coding?	• Explain how computer software can be delivered and how these processes have evolved. • Describe the qualities of an effective program. • Explain the function of computer coding. • List and describe the basic components of different types of codes.	**Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist		9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 33-34 **Introduction to Networking and Wireless Computing**	• What is the networking? • What is the history and evolution of networking? • How does a network function?	• Explain what networking is. • Describe the history and evolution of networking. • Explain how a network functions.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 2	**CSDF** 9-12.NSD.2,4,5 9-12.DL.1,2,4,5
Weeks 35-36 **Introduction to the Internet**	• What is the internet? • What is the history and evolution of the internet? • How does the Internet function?	• Explain what the internet is. • Describe the history and evolution of the internet. • Explain how the internet functions.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 2	**CSDF** 9-12.NSD.2,4,5 9-12.DL.1,2,4,5
Week 37 **Safe Use of the Internet, Social Media, and other Digital Tools**	• How can the internet be dangerous? • What can users do to protect themselves? • What are the pros and cons of social media? • What can users do to avoid negative experiences with social media? • What other digital tools are there and how can they be used in healthy ways?	• Describe some possible dangers in using the internet. • Explain ways that internet users can protect themselves from possible online dangers. • Describe the pros and cons of social media. • Identify ways to avoid negative experiences with social media. • List other digital tools and explain how they can be used in healthy ways.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,3,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2	**CSDF** 9-12.IC.4 9-12.NSD.2,3,4,5 9-12.CY.1,2,3 9-12.DL.1,2,4,5
Week 38 **The Evolution of Technology Careers,**	• How have technology careers evolved over time? • What are different careers available in the technology field	• Describe how technology careers have evolved over time.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes	**Career Ready Practices** CRP 1,2,4,7,8,10,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Technology Trends and What's to Come	and what types of skills do they require? • What are the current trends in technology careers? • What will technology careers look like in the future?	• List different careers available in the technology field and explain what types of skills they require. • Research and describe current trends in technology careers. • Predict what technology careers might look like in the future.	• Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Cluster Standards** IT 1,5,6	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1 IT-PRG 1	**CSDF** 9-12.IC.7 9-12.NSD.2,4 9-12.DL.1,2,4,5
Week 39 **Finding and Applying for a Job**	• What resources can be used in a job search? • How can a job candidate identify and apply for a position?	• Locate potential job openings using both face-to-face and digital methods. • Use employment sites like Monster and Indeed. • Fill out a formal application.	**Written** • Workbook • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,10,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1 IT-PRG 1	**CSDF** 9-12.IC.7 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 40 **Review and Final Exam**	• Are you prepared for the Final Exam?	• Prepare and take the Final Exam.	• Final Exam	**Career Ready Practices** CRP 1,2,3,4,7,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2 IT-PRG 1,10	**CSDF** 9-12.IC.1,3,4,7 9-12.NSD.1,2,3,4,5 9-12.CY.1,2,3 9-12.DL.1,2,4,5

Syracuse City School District
Career and Technical Education Program
Course Syllabus
CSS200: Cybersecurity 200

Program Overview

Cybersecurity is the study of information technology security and focuses on protecting computers, networks, programs, and data from unintended or unauthorized access, change, or destruction. The Cybersecurity Program is designed to help students explore the process of securing computers and computer networks, and conducting investigations of cybercrimes and forensic analysis of digital devices. Students will be equipped with the knowledge and skills to manage helpdesk functions in small to medium business IT operations as well as continue on to post-secondary training for careers in computer and network security, cybercrime investigation and computer forensics. Throughout the program, students gain mastery of these skills by performing simulated hands-on exercises Students who successfully complete the program can earn up to nine college credits and obtain CompTIA A+ Certification, a fundamental accreditation for work in many IT fields.

Course Description

This course provides an overview and exploration of computer hardware and software, including memory, input/output devices, operating systems, and troubleshooting. Students will learn about the how the internet functions, as well as the uses and abuses of social media. Student will work with both wired and wireless networks and learn the basics of computer programming. Student will become familiar with the vulnerabilities in computer systems and learn about how to protect both devices and users from security threats. Students will also explore different career options within the computer science field to determine areas of personal interest. The course emphasizes practical hands-on labs and exercises that will be used by students to gain an understanding of software technologies that are relevant to computer science. By writing lab reports that document their findings and results, students will implement knowledge and skills in authentic situations.

Work-Based Learning

Students will be connected with working computer science professionals in the community through Career Coaching, field trips and job shadowing which could lead to further opportunities for direct job training and real-world experience. Students will create and maintain a portfolio of their work-based learning experiences throughout the program to document the development of their skills.

Pre-Requisites

N/A

Course Objectives

6. Students will understand the historical and societal context of computer systems.
7. Students will understand the career ready practices that will lead to success in the computer science pathway.
8. Students will understand both the hardware and software technology used in computer operations.
9. Students will assemble and troubleshoot computers.
10. Students will demonstrate basic programming and data analysis skills.
11. Students will recognize security threats and identify ways to protect both computer systems and users.

Integrated Academics

N/A

Concurrent Enrollment

Upon successful completion of Computer Science 200, students who earn a grade of B or higher will earn 3 college credits for CRJ 107 Computer Hardware and Peripherals from Utica College.

Equipment and Supplies

- **School will provide:** All necessary technology and classroom equipment
- **Student will provide:** N/A

Textbook

TBD

Grading

10% Class Attendance and Participation

10% Oral Presentation
25% Assignments
25% Mid-Term Exam
30% Final Exam

Additional Course Policies

- Students are required to follow all safety procedures.
- All work is due at the time and day specified when the assignment is given. Submission details for work to be graded will be given at the time the work is assigned.
- Quizzes will be given throughout the semester. The lowest quiz score (one score only) will be dropped when calculating the final course grade.

Course Calendar

Quarter	Units of Study
1	• Introduction to Course, Classroom Practices, and Expectations: Being Successful • Technology and Ethics • History of Computers and Their Use in Society • Digital Media: Digital Data and Media Formatting • Computer Hardware: Internal Components • Input And Output Devices and Peripherals
2	• Storage and Devices • Hardware Troubleshooting • Operating Systems, System Software, BIOS/UEFI • File Management, Application Software, and Software Troubleshooting • Printing
3	• The Internet and How It Works: Web Browsers, and Cloud Computing • Social Media, and Internet Communication Technologies • The Internet of Things and Internet Technology Careers • Networking Basics: Topologies, IP Addresses, and Networking Devices • Wired and Wireless Networking: Network/Ethernet Cables, Wireless Standards, and Creating a Home Network • Internet Connectivity, Networking Protocols, and Network Troubleshooting • Databases
4	• Programming and Web Development • Data Analysis, Designing and Implementing Systems • Security Threats and Vulnerabilities • Authentication, Encryption, and Device Security • IT Career Preparation

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CSS200: Cybersecurity 200

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Weeks 1-2 **Introduction to Course, Classroom Practices, and Expectations: Being Successful**	• What do students wish to get out of this class? • How can students be successful in this course? • How can students manage their time? • How can students appropriately and effectively use technology?	• Explain and follow classroom procedures. • List and explain classroom rules and safety precautions and procedures. • Use tools to effectively manage their time. • Use computer hardware and software to participate in class.	**Written** • Assignments • Self-Assessment **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.IC.7 9-12.DL.2,5
Week 3 **Technology and Ethics**	• What does ethics mean? • How is ethics similar to or different from morals? • How does one act ethically in the workplace? In school? • How is technology used ethically? • What uses of technology would be unethical?	• Define ethics. • Differentiate between ethics and morals. • Differentiate between appropriate behavior and inappropriate behavior in a business and school setting.	**Written** • Ethics in Technology Article • Talking with the Text Assignment • Journal Entry **Performance** • Ethics Scenario Quiz	**Career Ready Practices** CRP 1,2,3,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1 IT-NET 1	**CSDF** 9-12.IC.3,4,5
Week 4 **History of Computers and Their Use in Society**	• What is a computer? • What have computers been used for throughout history? • How have computers and their use changed over time?	• Define computer. • Explain the shift in use and reliance on computers and technology over time. • Identify major turning points in history related to computers.	• Research/Presentation on Computers in Society • Section Quiz	**Career Ready Practices** CRP 1,2,5,7,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,6	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1	**CSDF** 9-12.IC.1,7
Weeks 5-6 **Digital Media: Digital Data and Media Formatting**	• How do computers store data? • How are numbers converted between binary and decimal systems?	• Describe how computers store data. • Explain decimal, binary, octal, and hexadecimal number systems. • Perform binary addition. • Convert numbers from binary to decimal and decimal to binary forms.	**Assignments** • Binary Conversions Assignment • MS Paint Exercise (Pixel Mapping) **Performance** • Binary to Decimal Quiz • Decimal to Binary Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3
Weeks 7-8	• What are the essential internal components of a PC?	• Identify and describe all internal PC components.	• Explore A Motherboard Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Computer Hardware: Internal Components	• What are the internal components responsible for and how do they function? • How do the internal components interface with each other? • How are components installed into a desktop PC?	• Describe appearance and function of each internal PC component. • Describe how each component interfaces with the rest of the PC (cables, slots on motherboard, socket, etc.). • Install PC components into a PC case and onto a motherboard.	• Install Memory Lab • Upgrade A Video Card Lab **Performance** • Hardware Quiz		9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3
Weeks 9-10 **Input And Output I/O) Devices and Peripherals**	• What is an input device? • What is an output device? • What types of devices are I/O devices? • How do I/O devices interface with a PC? • What are the main ports and cables that are used to connect PC peripherals?	• Define input devices vs. output devices. • Identify common I/O devices and peripherals. • Describe ports, connectors, and cables used to connect I/O devices and peripherals.	**Labs** • Connect a Monitor Lab • Set Up a Computer Lab **Performance** • I/O Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 11-12 **Storage and Devices**	• What is the difference between memory and storage? • What types of storage devices exist? • How do different types of storage devices function to hold data? • What is a file system? • How is information organized on a storage device?	• Compare and contrast the features of different external storage devices, including hard disk drives, optical drives, flash storage, and solid-state drives. • Describe common file system features, including compression, encryption, permissions, journaling, and file naming rules. • Describe disk partitioning and formatting methods.	**Labs** • Install SATA Devices Lab • Create Volumes Lab • Format Drives Lab • Perform Disk Management Lab **Performance** • Storage Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2.3 9-12.DL.1,2,4,5
Weeks 13-14 **Hardware Troubleshooting**	• How does a malfunction in one part of the computer affect the rest of the system? • What is the most effective way to troubleshoot a problem? • Why is it important to troubleshoot a problem before implementing a potential solution?	• Identify the proper sequence of steps to follow in the troubleshooting methodology. • Diagnose and resolve common motherboard problems. • Diagnose and resolve common computer memory problems. • Diagnose and resolve common processor problems.	**Labs** • Troubleshoot System Power Lab • Troubleshoot Memory Lab • Troubleshoot Processor Installation Lab • Troubleshoot SATA Devices Lab **Performance** • Troubleshooting Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 15-16 **Operating Systems, System Software, BIOS/UEFI**	• What is an operating system? • How does the operating system coordinate the work of hardware and software? • What are the similarities and differences between mobile	• Identify common operating systems, including systems designed for mobile devices. • Describe the basic functions of different types of operating systems. • Identify and describe components of the Windows 10 operating system.	**Labs** • Explore Windows 10 Lab • Change Windows Settings Lab • Explore iOS Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	and desktop operating systems?		• Operating System History Presentation	**Pathway Standards** IT-SUP 1,2,3,4	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 17-18 **File Management, Application Software, and Software Troubleshooting**	• What is a file system? • How does a file system organize files? • What is the relationship between files and directories? • What file systems do each operating system use and how are they different? • What are user permissions and what do they allow an administrator to do?	• Compare and contrast the features of various file systems. • Create folders in the Windows file system. • Copy, rename, and delete files in Windows. • Manage files using the command line and graphical user interface.	**Labs** • Manage Files and Folders Lab • Assign File Permissions Lab • Copy Files from USB Lab • Configure NTFS Permissions Lab • Use Windows Powershell Commands Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,1,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,4	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 19 **Printing**	• What are some common types of printers? • What are the benefits and drawbacks of inkjet printers and laser printers? • What is a 3D printer and what can they be used for?	• Describe different types of printers commonly in use. • Compare and contrast inkjet and laser printers • Describe 3D printers and their uses. • Print a document. • Install device drivers for a printer. • Connect to a shared printer in Windows.	• Printer Type Presentation • Install and Configure a Local Printer Lab • Print a Document Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 20 **The Internet and How It Works: Web Browsers, and Cloud Computing**	• What are the similarities and differences between the internet and the world wide web? • How have the internet and the web impacted our lives?	• Compare and contrast the internet and the world wide web. • Describe the essential components of the web (URLS, hyperlinks, web browsers, etc.). • Compare and contrast desktop applications and web applications.	• Clear Browser Cache Lab • Configure Browser Settings Lab • Use a Proxy Server Lab • Internet/IoT Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Week 21 **Social Media, and Internet Communication Technologies**	• What is social media? • How has social media helped and hurt society? • How can social media be used as a way to reach personal goals? • Why should users be careful about what they post online?	• Define social media and describe what it is used for. • Describe the risks involved with using social media. • Define what it means to be a good digital citizen.	• Digital Citizenship Assignment Article and TWTT • Digital Citizenship Presentation • Social Media Investigation Lab	**Career Ready Practices** CRP 1,2,3,4,5,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 9-12.CY.1,2 9-12.DL.1,2,4,5,6,7
Week 22				**Career Ready Practices**	**ELA**

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
The Internet of Things and Internet Technology Careers	• What is the Internet of Things? • What kinds of devices connect to the internet? • What is a smart device and how do these devices interact with a network? • What new careers will the Internet of Things create?	• Define Internet of Things. • Describe IoT devices and their use cases. • Explain why more and more devices are connected. • Brainstorm the possibilities and new careers that will result from the evolution of IoT.	• Configure Smart Devices Lab • IoT Careers Brainstorm/ Research Paper	CRP 1,2,4,5,7,8,10,11	9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,6,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2	**CSDF** 9-12.IC.7 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Weeks 23-24 **Networking Basics: Topologies, IP Addresses, and Networking Devices**	• What is networking? • What devices, interfaces, and protocols exist in networking? • How does information travel over a network? • What is an IP address?	• Explain difference between a LAN and a WAN. • Describe network topologies and their advantages and disadvantages. • Describe standard devices and interfaces used in wired and wireless networking. • Describe the purposes of network interface cards, routers, switches, and hubs.	• Install a Network Adapter Lab • Set Up an Ethernet Connection Lab • Network Topology Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Weeks 25-26 **Wired and Wireless Networking: Network/Ethernet Cables, Wireless Standards, and Creating a Home Network**	• What are the advantages and disadvantages of wireless vs. wired networks? • What's the difference between wi-fi and Bluetooth? • What is an RJ45 cable and how is one made? • What is a wireless access point? • How are resources shared over a network?	• Describe different types of networking cables (twisted pair, coaxial, fiber optic). • Create an Ethernet/RJ45 cable. • Compare public wi-fi networks with secure wireless networks. • Connect to a public wi-fi network. • Connect to a secure wireless network. • Share a printer over a network.	• Use a Wireless Network Lab • Configure Network Printing/Share a Printer Lab • Create a Home Wireless Network Lab (Configure a Wireless Router)	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Weeks 27-28 **Internet Connectivity, Networking Protocols, and Network Troubleshooting**	• What is an ISP? • What is a VPN? • How is data secured over a network? • What is TCP? • What is UDP? • Why is it important for computers and networks to use protocols?	• Describe the relationship between ISPs and the Internet. • Define VPN and explain what it does and how it protects transfer of data. • Describe secure shell connections and encrypted traffic. • Define Transmission Control Protocol and User Datagram Protocol.	• Connect a Cable Modem Lab • Configure a Wireless Network Lab • Configure a VPN Connection Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Week 29-30 **Databases**	• What is a database? • How are databases used in everyday life? • What's the difference between a database and a spreadsheet?	• Describe use cases of databases. • Explain how databases are more complex than spreadsheets. • Use Microsoft Access to explore database components.	• Explore an Access Database Lab • Create Queries in a Database Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards	**Literacy**

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
			• Tables and Relationships Lab • Intro to Databases Quiz	IT 1,11,12	9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-PRG 1,10	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 31-33 **Programming and Web Development**	• What is computer programming? • How is computer programming related to computer hardware? • What is a compiled language? • What is an interpreted language? • What are HTML, CSS, and JavaScript?	• Explain what computer programming is and what it is used for. • Describe the difference between programming and scripting. • Compare and contrast programming languages (interpreted vs. compiled vs. query).	• JS Code Labs 1-4 • JavaScript Labs 1-4 • Basic HTML Website Design Assignment • Programming Logic Quiz	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2 IT-PRG 1,2,3,4	**CSDF** 9-12.CT.6 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Week 34-35 **Data Analysis, Designing and Implementing Systems**	• Why do businesses use data to make decisions? • How do spreadsheets, tables, charts, graphs make it easier to interpret data?	• Describe the steps involved in data analytics. • Format data in an Excel spreadsheet. • Analyze data in an Excel spreadsheet. • Analyze data in Microsoft Access.	• Excel Tables Lab • Excel Charts Analysis Lab • Microsoft Access Reports/Data Analysis Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3 IT-NET 1,2 IT-PRG 1,3,4,5	**CSDF** 9-12.CT.2,3 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 36 **Security Threats and Vulnerabilities**	• Why is securing a computer/computer network important? • What can a hacker/attacker do with access to someone's private information? • How can users protect themselves online?	• Describe the components of the CIA triad. • Describe the most common threats to confidentiality, integrity, and availability. • Define social engineering and describe social engineering tactics used by bad actors.	• Recognize Social Engineering Exploits Lab 1 and 2	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,8,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2,5 IT-PRG 1,3,4	**CSDF** 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Week 37-38 **Authentication, Encryption, and Device Security**	• What do authentication, authorization, and accounting mean and how do they work together to secure a computer? • How can users make their passwords secure? • What is two-factor authentication and why is it important?	• Describe common forms of authentication and their purpose. • Explain multifactor authentication. • Secure a device using a user account and access control management software. • Define encryption and explain how it secures data.	• Create a User Account Lab • Configure Access Control and Authentication Lab • Encrypt A File/Encrypt A Drive on Windows Lab	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,8,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards	**CSDF**

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	• What is encryption?			IT-SUP 1,2,3 IT-NET 1,2,5 IT-PRG 1,3,4	9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 39-40 **IT Career Preparation**	• How has this course prepared students for a career in IT? • What skills and education are required for careers in this area? • How can students continue to prepare for a career in these fields?	• Describe various career paths in the field of IT. • Identify growing areas within IT and future outlook for jobs. • Research and identify college programs that prepare students for IT careers.	• College and Career Research Project • Course Reflection Paper	**Career Ready Practices** CRP 1,2,3,4,7,8,10,11	**ELA** 9-10R 1,2,4,7,8,9 9-10W 2,5,6,7 9-10SL 1,2,3,4,5,6 9-10L 1,2,3,4,5,6
				Cluster Standards IT 1,4,6,8,11,12	**Literacy** 9-10RST 1,2,4,7,8,9 9-10WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,5 IT-NET 1,2,5 IT-PRG 1,3,4	**CSDF** 9-12.IC.1,2,3,4,5,7 9-12.CT.6 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5

Syracuse City School District
Career and Technical Education Program
Course Syllabus
CSS300: Cybersecurity 300

Program Overview

Cybersecurity is the study of information technology security and focuses on protecting computers, networks, programs, and data from unintended or unauthorized access, change, or destruction. The Cybersecurity Program is designed to help students explore the process of securing computers and computer networks, and conducting investigations of cybercrimes and forensic analysis of digital devices. Students will be equipped with the knowledge and skills to manage helpdesk functions in small to medium business IT operations as well as continue on to post-secondary training for careers in computer and network security, cybercrime investigation and computer forensics. Throughout the program, students gain mastery of these skills by performing simulated hands-on exercises Students who successfully complete the program can earn up to nine college credits and obtain CompTIA A+ Certification, a fundamental accreditation for work in many IT fields.

Course Description

In this course, students will continue to build on their knowledge of computers, equipment, operating systems, file management, and computer storage. Students will learn to install, maintain, and troubleshoot both external and internal computer components and equipment, and will explore networking options with printers, laptops, and mobile devices. Students will learn the basics of the Windows operating system including installation, system management, troubleshooting, backup, and recovery. Students will research different career options within the computer science field to determine areas of personal interest. The course emphasizes practical hands-on labs and exercises that will be used by students to gain an understanding of hardware and software technologies that are relevant to computer science. By writing lab reports that document their findings and results, students will implement knowledge and skills in authentic situations.

Work-Based Learning

Students will be connected with working computer science professionals in the community through Career Coaching, field trips and job shadowing which could lead to further opportunities for direct job training and real-world experience. Students will create and maintain a portfolio of their work-based learning experiences throughout the program to document the development of their skills.

Pre-Requisites

N/A

Course Objectives

12. Students will understand the career ready practices that will lead to success in the computer science pathway.
13. Students will understand both the hardware and software technology used in computer operations.
14. Students will assemble, maintain, and troubleshoot computers.
15. Students will demonstrate basic file management and networking skills.
16. Students will demonstrate use, maintain, and troubleshoot printers, laptops, and mobile devices.
17. Students will install and troubleshoot the Windows operating system, including backup and recovery.

Integrated Academics

N/A

Equipment and Supplies

- **School will provide:** All necessary technology and classroom equipment
- **Student will provide:** N/A

Textbook

TBD

Grading

10% Class Attendance and Participation
10% Oral Presentation
25% Assignments
25% Mid-Term Exam
30% Final Exam

Additional Course Policies

- Students are required to follow all safety procedures.
- All work is due at the time and day specified when the assignment is given. Submission details for work to be graded will be given at the time the work is assigned.
- Quizzes will be given throughout the semester. The lowest quiz score (one score only) will be dropped when calculating the final course grade.

Course Calendar

Quarter	Units of Study
1	• Classroom Practices: Being Successful • Computer/IT Specialist: Roles and Responsibilities • Computer Basics: Hardware, Software, and Operating Systems • Safety, Protection, and Professionalism • PC Toolkit and Maintenance
2	• Internal PC Hardware and Computer Form Factors • External PC Components and Peripherals • Storage Devices • File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting
3	• Introduction to Networking • Printers, Printer Configuration, and Network Printing • Printer Maintenance and Troubleshooting • Laptops: Components, Power Management, and Troubleshooting • Mobile Devices: Networking, Security, and Troubleshooting
4	• Windows Pre-Installation, Installation, and Post Installation • File Management • Windows System Tools • System Management and Active Directory • Windows Backup and System Recovery • Operating System Troubleshooting • Review and Final Exam

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CSS300: Cybersecurity 300

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Weeks 1-2 **Classroom Practices: Being Successful** **Computer/IT Specialist: Roles and Responsibilities**	• What are the expectations for the classroom and hands-on computer lab? • How can students be successful in this class? • What strategies can students use to manage their time? • How can students use technology appropriately and effectively? • What strategies can students use to study effectively to prepare for tests? • What are the essential roles and responsibilities of a computer specialist?	• Explain and follow classroom procedures. • List and follow rules for general classroom safety. • Evaluate ways to manage time. • Investigate various study skills for test taking and identify two effective skills. • Describe the roles and responsibilities a Computer/IT Specialist has in a professional workplace.	**Written** • Workbook/TestOut Assignments • Career Exploration Research Project • Written Objective Quiz • Self-Assessment **Performance** • Procedure Checklist • Mock Lab Procedure Practical	**Career Ready Practices** CRP 1,2,4,7,8,10,11 **Cluster Standards** IT 1,3 **Pathway Standards** IT-SUP 1 IT-NET 1 IT-PRG 1	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.IC1,.7
Weeks 3-4 **Computer Basics: Hardware, Software, and Operating Systems**	• What hardware components are required for a computer to function? • What hardware components are optional? • How do components interface with one another? • What is the purpose of an operating system (OS)? • What are an operating system's core functions?	• Describe the core components of a desktop or laptop PC. • Explain what each computer component is responsible for. • Set up a computer. • Navigate a Windows 10 graphical user interface (GUI).	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Simulation of Computer Setup Lab • Set Up a Computer Lab (Manually)	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,4	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 5-6 **Safety, Protection, and Professionalism**	• What is electrostatic discharge (ESD)? • How are users and computer components protected from electrostatic discharge? • How is safety maintained at all times when dealing with electricity or tools? • What does professional behavior look like in the classroom and workplace?	• Explain what electrostatic discharge is and the effects it can have on computer equipment and computer users. • Explain and demonstrate how to protect oneself and components from ESD. • Explain and demonstrate how to safely handle PC hardware and peripherals. • Explain and demonstrate how to conduct oneself professionally in a classroom, lab room, workplace.	**Written** • Workbook/TestOut Assignments • Anti-Static Wrist Wrap and Mat Assignment • Self-Assessment **Performance** • ESD Lab	**Career Ready Practices** CRP 1,2,3,4,8,10,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1 IT-NET 1 IT-PRG 1	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.IC.3,4,5 9-12.NSD.2,3 9-12.DL.1,2,4,5,6,7
Weeks 7-8		• Explain an uninterruptable power supply and how is one set up.	**Written**	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
PC Toolkit and Maintenance	• What tools are used in the field of PC maintenance and repair? • What is each tool used for? • How are PC surge protectors and uninterruptable power supplies maintained? • How are tools used appropriately and safely that will not cause damage to PC hardware?	• Explain and demonstrate how to use a surge protector to prevent electrical surges from damaging components. • Demonstrate appropriate and safe use of tools in disassembling, assembling, and repairing PCs and components.	• Workbook/TestOut Assignments • PC Tools Quiz • Self-Assessment **Performance** • Labs: PC Tools Practical Application, Install a UPS		11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 9-13 **Internal PC Hardware and Computer Form Factors**	• What are the essential components in a PC and what are their functions? • How are internal components installed in a PC? • How do internal components interface with one another?	• Define and describe the functions of internal PC components. • Differentiate between components, their installation method, interface method, and functionality. • Determine the compatibility of computer components with another PC.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Install Power Supply, Choose and Install Motherboard, Select and Install Processor 1 & 2, Install Triple Channel Memory	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 14-15 **External PC Components and Peripherals**	• What is a PC peripheral? • What interfaces and ports allow external components to connect to a PC? • What are the different versions and form factors of USB?	• Explain and demonstrate how to connect and configure peripheral devices. • Differentiate between USB versions and form factors as well as their advantages and disadvantages. • Explain and demonstrate how to connect and configure external components to be used with a PC.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Connect a KVM Switch, Install USB Devices, Select and Install Dual Displays, Manage Devices	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 16-18 **Storage Devices**	• How does a computer store information? • What types of storage devices allow for permanent storage of data on a PC? • What is the difference between SATA and IDE? • What is the difference between an HDD and an SSD? • What is the difference between flash storage and magnetic storage? • What is a RAID array?	• Explain different ways that a computer can store information. • Compare and contrast SATA and IDE. • Compare and contrast an HDD and an SSD. • Compare and contrast flash storage and magnetic storage. • Explain and demonstrate how to install a hard drive. • Explain and demonstrate how to install an SSD. • Differentiate between logical and physical volumes.	**Written** • Workbook/TestOut Assignments • GPT Partitioning Questions • Unit Quiz • Self-Assessment **Performance** • Labs: Install SATA Devices, Create RAID Arrays, Implement a Raid Solution, Format Drives	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	• What is a partition and how is it configured?	• Explain and demonstrate how to create a RAID array. • Explain and demonstrate how to create partitions on a hard drive.			
Weeks 19-20 **File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting**	• What is a file system? • What file system is most popular on current Windows PC, Mac, and Linux computers? • What is the Master Boot Record (MBR)?	• Create an MBR partition. • Explain the difference between FAT32 and NTFS file systems. • Create new volumes with command prompt and disk management software. • Explain and demonstrate how to shrink or extend disk partitions. • Explain and demonstrate how to perform disk management.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Format Drives, Add Space to Existing Volumes, Implement Storage Spaces, Perform Disk Management	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 21-24 **Introduction to Networking**	• What are network topologies and how do they operate? • What network infrastructure devices exist? • What is the OSI model? • How are IP addresses created, classed and/or assigned? • What is a subnet mask? • What is a wireless network?	• Explain the differences between network topologies and how data is transferred between devices. • Define the 7 layers of the OSI model. • Explain IP address classes and how to differentiate between network and host portion of IP address. • Explain default subnet mask vs. CIDR address. • Explain how wireless networking and wireless networking devices work.	**Written** • Workbook/TestOut Assignments • Topology Facts Questions Assignment • TCP/IP Protocol Assignment • Unit Quiz • Self-Assessment **Performance** • Labs: Select and Install Network Adapter, Configure TCP/IP Settings, Configure Internet Connection • Windows Command Prompt Networking Commands Practical Assignment	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,5 IT-NET 1,2	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.NSD.2,3,4,5 9-12.DL.1,2,4,5
Week 25 **Printers, Printer Configuration, and Network Printing**	• What printer types exist? • What is the way to select the best printer for a specific task? • How is a printer connected and configured?	• Explain the difference between an inkjet and laser printer. • List and explain the seven steps to the laser print process. • Explain and demonstrate how to configure a printer. • Explain and demonstrate how to find and install printer driver software.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Choose a Printer, Select and Install a Printer, Configure Network Printing	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,5 IT-NET 1,2	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 26 **Printer Maintenance and Troubleshooting**	• What is the process for maintaining and	• Explain and demonstrate how to perform preventative maintenance on a laser printer.	**Written** • Workbook/TestOut Assignments	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	troubleshooting a laser printer? • What is the process for maintaining and troubleshooting an inkjet printer?	• Explain and demonstrate how to change a toner cartridge and refill paper in a laser printer. • Explain and demonstrate how to change ink cartridges and align inkjet printer. • Explain and demonstrate how to stop and restart the print spooler.	• Printer Troubleshooting Quiz • Self-Assessment **Performance** • Labs: Maintain Laser Printers, Maintain Inkjet Printers		11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 27-28 **Laptops: Components, Power Management, and Troubleshooting**	• What benefits does a laptop have over a desktop PC? • What are external facing laptop ports and their functions? • What components on a laptop are modular and how are components repaired or replaced? • How is laptop power managed?	• Determine external ports available on laptop. • Describe functionality of laptop ports. • Disassemble a laptop. • Repair laptop keyboard, lcd, and upgrade RAM. • Configure laptop power management features.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Laptop Special Keys Practical Assignment • Labs: Install Laptop Memory, Replace Laptop Keyboard, Replace Laptop LCD, Create a Power Plan	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 29-30 **Mobile Devices: Networking, Security, and Troubleshooting**	• What components are unique to mobile devices and what are their functions? • What is an IMEI (international mobile equipment identity) number? • What is an IMSI (international mobile subscriber identity) number? • What operating systems do mobile devices run on and how are they similar to and different from their desktop counterparts? • What is 3G, 4G, LTE, 5G?	• Define and describe hardware components of mobile device (GPS, Bluetooth radio, cellular radio). • Secure a mobile device. • Setup and configure iOS and Android OS devices.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Mobile Device Troubleshooting Questions • Self-Assessment **Performance** • Labs: Manage Mobile Devices, Secure Mobile Devices, Configure iPad Access Control and Authentication	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 31 **Windows Pre-Installation, Installation, and Post Installation**	• What are the different versions of Windows? • How is Windows installed on a new computer? • How is a Windows license activated? • How is system compatibility verified?	• Determine OS compatibility with hardware. • Install Windows on a new computer. • Prepare disk for Windows installation or reinstallation.	**Written** • Workbook/TestOut Assignments • Pre-Installation Planning Exercise • Self-Assessment **Performance** • Verify System Compatibility Assignment	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,4	**CSDF** 9-12.NSD.2,3 9-12.DL.1,2,4,5

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
			• Labs: Prepare Disks for Installation, Install Windows		
Weeks 32-33 **File Management**	• What are Windows file and folder properties? • What are file attributes? • How are files managed from the graphical user interface (GUI)? • How are files managed from the command prompt (CMD)?	• Define and differentiate between file types and extensions. • Explain and demonstrate how to view and manipulate file extensions and file attributes. • Manage directories from GUI and CMD.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Labs: Manage Files (GUI), Manage Files and Folders (CMD)	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,4	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.6,7 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 34 **Windows System Tools**	• What is the Windows Task Manager? • What is the control panel? • What is Regedit? • How are system commands used to manipulate the operating system and file system?	• Use task manager to monitor and adjust system resources. • Use control panel to adjust software settings of OS. • Use Regedit to make alterations to specific functions in Windows. • Use system commands to manage resources and domain properties.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Labs: Task Manager, Use System Commands • Regedit Exercise	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,4	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.6,7 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 35 **System Management and Active Directory**	• What is Active Directory? • What is the process to join a domain? • What are user accounts? • What are organizational units?	• Manage Active Directory domains and accounts. • Use remote desktop to troubleshoot and assist users. • Create and delete organization units.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Labs: Manage Users and Groups, Create User Accounts, Create and Delete OUs, Configure Remote Services	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,4	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.6,7 9-12.NSD.2,3 9-12.DL.1,2,4,5
Weeks 36-37 **Windows Backup and System Recovery**	• How are files backed up on Windows? • How is a complete backup of the OS created? • How are files backed up on a Mac?	• Create a Windows backup. • Create a file history backup. • Create a Mac backup using Time Machine. • Use restore points to restore Windows to a prior state.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Lab: Back Up a Windows Computer, Configure File History, Create a Time Machine Backup, Create A Restore Point	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,7,11,12 **Pathway Standards** IT-SUP 1,2,3,4	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.6,7 9-12.NSD.2,3

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
					9-12.DL.1,2,4,5
Weeks 38-39 **Operating System Troubleshooting**	• What is Windows "Automatic Repair" and why might Windows boot into it? • What is the process to troubleshoot a Windows PC that is booting into automatic repair repeatedly? • What is the process to troubleshoot a Windows PC that won't boot?	• Explain and demonstrate how to determine what a Windows error code means and resolve the issue. • Explain and demonstrate how to configure the boot order. • Explain and demonstrate how to troubleshoot issues at system startup.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance** • Labs: Troubleshoot System Startup, Use Advanced Boot Options	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,7,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,4	**CSDF** 9-12.CT.6,7 9-12.NSD.2,3 9-12.DL.1,2,4,5
Week 40 **Review and Final Exam**	• What were the learning goals this year? • What are the roles and responsibilities of an individual who works as a computer specialist?	• Complete assessment demonstrating a thorough knowledge of the technical concepts covered throughout the course.	• Final Assessment	**Career Ready Practices** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1,4,6,7,8,11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,4,5 IT-NET 1,2	**CSDF** 9-12.IC.1,3,4,5,7 9-12.CT.6,7 9-12.NSD.2,3,4,5 9-12.CY.1,2,3 9-12.DL.1,2,4,5

Syracuse City School District
Career and Technical Education Program
Course Syllabus
CSS400: Cybersecurity 400

Program Overview

Cybersecurity is the study of information technology security and focuses on protecting computers, networks, programs, and data from unintended or unauthorized access, change, or destruction. The Cybersecurity Program is designed to help students explore the process of securing computers and computer networks, and conducting investigations of cybercrimes and forensic analysis of digital devices. Students will be equipped with the knowledge and skills to manage helpdesk functions in small to medium business IT operations as well as continue on to post-secondary training for careers in computer and network security, cybercrime investigation and computer forensics. Throughout the program, students gain mastery of these skills by performing simulated hands-on exercises Students who successfully complete the program can earn up to nine college credits and obtain CompTIA A+ Certification, a fundamental accreditation for work in many IT fields.

Course Description

This course presents the student with foundational concepts and processes to achieve better information security in a modern organization. The student will develop an appreciation for the threat and risk of information exposure, as well as risk management and mitigation techniques to limit losses. Students will explore the essential elements of an information security policy and the importance of incident response, reporting, and containment in the context of timely restoration of information. Students will also learn procedures for notification of appropriate authorities leading to potential prosecution. Modern information security technologies and their limitations will be explored as well as legal, ethical, and privacy issues.

Work-Based Learning

Students will be connected with working computer science professionals in the community through Career Coaching, field trips and job shadowing which could lead to further opportunities for direct job training and real-world experience. Students will create and maintain a portfolio of their work-based learning experiences throughout the program to document the development of their skills.

Pre-Requisites

N/A

Course Objectives

1. Explain the role of information and the need for security in a modern organization.
2. Identify general classes of security threats and vulnerabilities in an organization.
3. Understand how to create and critically evaluate an information security policy to ensure that critical functions are sustainable while addressing the greatest information security risks.
4. Apply the security management process to mitigate threats of information disclosure for core processes.
5. Explain the fundamentals behind currently-employed computer security technologies.
6. Describe the legal, ethical, and privacy-related issues pertaining to information security.
7. Develop an incident response and recovery plan for first responders as well as an entire organization.
8. Realize that there is no such thing as perfect security.

Integrated Academics

1 CTE Integrated ELA Credit

Equipment and Supplies

- **School will provide:** All necessary technology and classroom equipment
- **Student will provide:** Outside access to the Internet, preferably broadband hi-speed, to complete readings, assignments, and communicate with the teacher and other students.

Textbook

TBD

Grading

Quizzes	30%
Labs	20%
Classroom Participation Assignments	10%
Final Project and Presentation	20%

Final Exam 20%

Additional Course Policies

- Quizzes will consist of T/F, multiple choice, fill-in-the-blank, and short essay questions.
- Labs will be assigned to address topics related to information security and cybersecurity. Labs will typically consist of hands-on assignments completed in groups. The output of each lab will be a 2 to 3-page lab report, consisting of an introduction section, a results section, and a conclusion. The lab report must be cited using APA format.
- Classroom Participation Assignments will range from answering questions at the end of each chapter to addressing contemporary topics completed in groups. The output of these assignments will be either written material or PowerPoint slides. All work must be cited in APA format.
- Final Project will be a hands-on lab project of the student's choice approved by the instructor. The output of this project will be a 10-to-20-minute PowerPoint presentation, cited using APA format.
- Final Exam will be comprehensive and will consist of T/F, multiple choice, fill-in-the-blank, and short essay questions.
- Group work is a very important part of the cyber security field; therefore many class assignments will be done in groups. It is important that every group member participate in group assignments and activities. The instructor reserves the right to adjust individual grades for group projects based on participation, frequency of communication, and feedback from group members.

Course Calendar

Quarter	Units of Study
1	• Course Introduction and Introduction to Cybersecurity • Recon and Denial, Spoofing, and Security Appliances • Demilitarized Zones (DMZ), Firewalls, Network Address Translation (NAT), and Virtual Private Networks (VPN)
2	• Network Threats, Network Device Vulnerabilities, Network Applications, Switch Attacks and Security, and VLAN's • Security Policies, Auditing and Accountability, and Risk Management • Access Control, Authentication and Authorizations • Cryptography and Cryptography Implementations and Attacks • Steganography • Data Management, Data Transmission Security, and Data Lost Prevention (DLP)
3	• Monitoring and Diagnosing Networks • Understanding Devices and Infrastructures • Malware, Vulnerabilities, and Threats • Host, Data, and Application Security • Protecting Wireless Networks, Wireless Attacks and Defense, and Securing the Cloud • Operations Security (OPSEC) and Security Administrations
4	• Computer Forensics and Digital Evidence • Disaster Recovery and Incident Response • Defense Planning • Internship • Review, Final Presentation, Final Examination

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CSS400: Cybersecurity 400

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Weeks 1-2 **Course Introduction** **Introduction to Cybersecurity**	• What knowledge and skills are developed in this course? • What is cybersecurity? • Why is cybersecurity important? • How are the personal effects of cybersecurity?	• Explain what cybersecurity is and how it affects the world. • Create an argument on the importance of cybersecurity. • Define and explain key vocabulary terms.	• Syllabus • Assignment #1: Cybersecurity • Cyber Lab • Cyber Terms Bingo	**Career Ready Practices** CRP 1,2,3,4,5,9,10	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 4,5,6,	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,6	**CSDF** 9-12.IC.1,2,3,4,7 9-12.CY.1,2,3
Weeks 3-5 **Recon and Denial** **Spoofing** **Security Appliances**	• What types of resources make organizational reconnaissance readily available? • How does a distributed reflective denial of service (DRDoS) increase the severity of a DoS attack? • What countermeasures can be used to control TCP/IP hijacking? • What methods should be employed to prevent a replay attack? • What are the uses of a DMZ?	• Explain the types of resources that make organizational reconnaissance readily available. • Perform reconnaissance. • Explain how a distributed reflective denial of service (DRDoS) increases the severity of a DoS attack. • Describe the countermeasures that can be used to control TCP/IP hijacking. • Explain the methods that should be employed to prevent a replay attack. • Explain the uses of a DMZ. • Perform a User Datagram Protocol (UDP) flood attack. • Perform zone transfers. • Demonstrate how to configure network security appliance access.	• Performing a UDP Flood Attack Lab • Recon and Denial Quiz • Prevent Zone Transfers Lab • Spoofing Quiz • Configure Network Security Appliance Access Lab • Security Appliances Quiz	**Career Ready Practice** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 6,9	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 6-8 **Demilitarized Zones (DMZ)** **Firewalls** **Network Address Translation (NAT)**	• What is the typical configuration for a DMZ configured as a dual-homed gateway? • What makes bastion hosts vulnerable to attack? • How should bastion hosts be hardened? • What is the difference between a network-based firewall and an application/host-based firewall?	• Explain and demonstrate how to configure a DMZ. • Explain what makes bastion hosts vulnerable to attack and how they can be hardened. • Explain the difference between a network-based firewall and an application/host-based firewall. • Explain and demonstrate how to configure a perimeter firewall.	• Labs: Configure DMZ, Configure Firewall, VPN Connection • Quiz	**Career Ready Practice** CRP 1,2,4,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 11,12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 6,9	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Virtual Private Networks (VPN)	• What traffic characteristics can be specified in a filtering rule for a packet filtering firewall? • What is a VPN?	• Demonstrate how to set up a remote access VPN. • Demonstrate how to set up a VPN connection on an iPad.			9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 9-12 **Network Threats** **Network Device Vulnerabilities** **Network Applications** **Switch Attacks and Security** **VLAN's**	• How does segmenting a network increase network security? • How does a passive attack differ from an active attack? • Why is it important to apply new firmware or patches for devices within an organization? • What security measures should be incorporated to control the use of networking software? • What types of attacks are commonly perpetrated against switches? • What are two advantages to creating VLANs on a network?	• Demonstrate how to secure a switch. • Explain how segmenting a network increases network security. • Explain how a passive attack differs from an active attack. • Explain why it is important to apply new firmware or patches for devices within an organization. • Describe the security measures that control the use of networking software. • Describe the types of attacks that are commonly perpetrated against switches. • Demonstrate how to harden a switch and secure access. • List two advantages to creating VLANs on a network. • Explore VLAN's from the Command Line Interface (CLI).	• Labs: Securing a Switch, Harden a Switch, Secure Access to a Switch • Exploring VLAN's in the CLI • Quiz	**Career Ready Practice** CRP 1,2,7,8,11 **Cluster Standards** IT 4,5,7,12 **Pathway Standards** IT-SUP 1,2,4,7,8,9 IT-NET 3,4 IT-PRG 1,3,7,9	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 13-14 **Security Policies** **Auditing and Accountability** **Risk Management**	• What are security policies? • Why might security policies be crucial to have? • How would you describe an audit? • What is the significance of an audit? • What does accountability mean in cybersecurity? • What components are used to measure risk quantitatively?	• Explain what security policies are and why they are crucial to have. • Demonstrate how to put security policies in place by creating policies. • Describe an audit and explain its significance. • Demonstrate how an audit is conducted through example. • Explain what accountability means in cybersecurity. • Explain what components are used to measure risk quantitatively.	• Security Policies Lab • Security Policies Quiz • Enable Device Logs Lab • Audits Quiz • Risk Management Quiz	**Career Ready Practice** CRP 1,2,4,11,12 **Cluster Standards** IT 1 **Pathway Standards** IT-SUP 1,2,6 IT-NET 2	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7 **CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Week 15 **Access Control, Authentication and Authorizations**	• What are access control, authentication, and authorization? • What purpose do they serve? • Which authentication type requires proof of identity?	• Explain access control, authentication, and authorization and their similarities and differences. • Give examples of each and scenarios where they would be used.	• Access Control Quiz • Authentication Quiz • Authorization Quiz	**Career Ready Practice** CRP 1,2,4,11 **Cluster Standards** IT 12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6 **Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
	• What are the seven layers in layered security?	• Describe the seven layers in layered security.		**Pathway Standards** IT-SUP 1,2,6 IT-NET 2	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 16-17 **Cryptography** **Cryptography Implementations and Attacks**	• What is cryptography and what is its main purpose? • What significance does cryptography have in the cybersecurity field? • How is the strength of a cryptosystem related to the length of the key?	• Explain what cryptography is and its significance in cybersecurity. • Explain how the strength of a cryptosystem is related to the length of the key. • Create an encrypted message. • Decrypt encrypted emails and passwords.	• Assignment: Encrypting Secret Messages • Assignment: Decrypting Secret Messages • Cryptography Lab • Cryptography Quiz	**Career Ready Practice** CRP 1,2,4,7,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 7,9	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 2,4,9,10 IT-NET 1	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 18-20 **Steganography** **Data Management, Data Transmission Security, and Data Lost Prevention (DLP)**	• What is steganography and what purpose does it serve? • How can steganography be used ethically and unethically? • Why is steganography important in cybersecurity? • Which governmental regulations should be followed when destroying data? • How does wiping differ from degaussing? • How does SSL verify authentication credentials? • What is the purpose of a DLP system and how can it be implemented?	• Define steganography and explain its importance in cybersecurity. • Explain how steganography can be used both ethically and unethically. • List and explain the governmental regulations that should be followed when destroying data. • Explain how wiping differs from degaussing. • Explain how SSL verifies authentication credentials. • Describe the purpose of a DLP system and how it can be implemented. • Describe host-based security tools including antivirus software and firewalls. • Use host-based security tools to improve computer security.	• Assignment: Hiding and Finding Data within images • Data Hiding Lab • Quiz: Date Hiding and Steganography • Data Management Quiz • Allow SSL Connections Lab • Data Transmissions Security Quiz • DLP Quiz	**Career Ready Practice** CRP 1,2,4,7,8,9,11,12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 2,3,4,5,8,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 6,8,10	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 21-22 **Monitoring and Diagnosing Networks** **Understanding Devices and Infrastructures**	• What are some different network-based security tools? • How are network security tools implemented on a system? • What devices are needed in building a network? • What is a Faraday cage designed to do? • How does fiber optic cabling protect infrastructure?	• Describe network-based security tools, including intrusion detection and prevention systems. • Explain the function of Network Access Controls and DMZ (demilitarized zone) in computer security. • Explain the devices needed to build a network.	• Event Logs Lab • Network Monitoring Quiz • Mobile Devices Quiz • Assignment: Designing a Network • Network Infrastructures Quiz • Network Infrastructures Protection Quiz	**Career Ready Practice** CRP 1,2,4,5,7,8,11,12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 2,3,4,8,9	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 5,6,9,8	**CSDF** 9-12.CT.8,9

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
		• Create a network working with a team. • Describe what a Faraday cage is and what it is designed to do. • Explain how fiber optic cabling protects infrastructure.		IT-NET 1,4,5	9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 23-24 **Malware, Vulnerabilities, and Threats** **Host, Data, and Application Security**	• How can host, data, and application security be evaluated? • How can outsiders obtain information about a computer system? • What steps can be taken to secure a personal computer?	• Explain how to evaluate host, data, and application security. • Describe how outsiders can obtain information about a computer system. • Explain how access into a system is maintained after exploitation. • Describe and use Backdoor Trojan software. • Describe the steps to secure a personal computer. • Secure a system from vulnerabilities. • Securely remove malware and document procedures.	• Configure Windows Defender Lab • Malware Quiz • Linux Host Security Quiz • Adding Virtual Network Adapters Lab • Host Virtualization Quiz • Data Transmission Quiz	**Career Ready Practice** CRP 1,2,4,5,7,8,9,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 5,8,9	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 2,5,6,9,10 IT-NET 1,4,5	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 25-27 **Protecting Wireless Networks** **Wireless Attacks and Defense** **Securing the Cloud**	• Why is it important to protect wireless networks? • What is the cloud in computing? • What does WEP use for the encryption key and why does this present a security problem? • Which encryption methods are used with WPA and WPA2?	• Explain why it is important to protect wireless networks. • Define WEP, WPA, and WPA2. • Describe what WEP uses for an encryption key and why this presents a security problem. • Describe the encryption methods used with WPA and WPA2. • Describe penetration testing tools. • Use penetration testing to find vulnerabilities in a computer system. • Define the cloud as used in computing. • Create a cloud application.	• Labs: Configure a Wireless Network, Configure a Rogue Host Protection, Harden a Wireless Network, Configure a WIPS • Wireless Attacks and Defenses Quiz • Cloud Services Quiz	**Career Ready Practice** CRP 1,2,4,7,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 5,6 IT-NET 2	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 28-29 **Operations Security (OPSEC)** **Security Administrations**	• What is social engineering? • How does social engineering compare to other foes? • What is OPSEC? • What is the purpose of security administrations?	• Define social engineering and explain methods for preventing it. • Compare and contrast exploitation, social engineering, and phishing. • Define and explain OPSEC. • Demonstrate the role of security administrations. • Create security admin accounts and non admin accounts and compare the two accounts.	• Operations Security Lab • Operations Security Quiz • Respond to Social Engineering Lab • Security Administrations Quiz	**Career Ready Practice** CRP 1,2,7,8,11	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 5,8,9	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 5,6 IT-NET 2	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
					9-12.DL.1,2,4,5
Weeks 30-31 **Computer Forensics and Digital Evidence**	• What is the relationship between cybersecurity and computer forensics? • What are the similarities and differences between cybersecurity and computer forensics?	• Explain the relationship between cybersecurity and computer forensics. • Analyze the similarities and differences between cybersecurity and computer forensics. • Demonstrate computer forensics processes through examining files and hard drives. • Demonstrate how to secure an area.	• Digital Investigation Lab • Hackers Lab • Computer Forensics and Digital Evidence Quiz	**Career Ready Practice** CRP 1,2,3,5,7,8,9,11,12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 5,8,9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 5,6 IT-NET 2	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 32-33 **Disaster Recovery and Incident Response** **Defense Planning**	• What are the effects on a company of a major security incident? • How would a cybersecurity team handle a data breach? • What is a countermeasure and how does it reduce the risk of threat?	• Describe the effects of a major security incident. • Demonstrate how an incident is properly handled using chain of custody form. • Create a scenario of a security incident and how should be handled. • Explain chain of custody	• SANS Top Twenty Presentation • Incident Response Report Lab • Data Breach Project • Disaster Recovery and Incident Response Quiz	**Career Ready Practice** CRP 1,2,3,5,7,8,9,11,12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 4,5,8,9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 5,6 IT-NET 2	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 34-39 **Internship**	• What purpose does the internship serve? • How does an employee convey professionalism in the workplace? • Why are internships necessary? • How does an internship experience contribute to a professional portfolio? • What are areas of improvement and challenge during the internship experience?	• Complete a variety of real-world activities. • Apply the knowledge and skills learned in the classroom to working in a professional setting. • Explain and demonstrate professionalism and ethics in the workplace. • Comply with workplace policies and regulations. • Communicate effectively both verbally and in writing. • Explain the importance of being prompt, being able to take directions and being motivated to accomplish assigned tasks. • Analyze and resolve problems that arise in completing assigned tasks.	• Final Project Based on Internship • Internship Evaluation	**Career Ready Practice** CRP 1,2,3,5,7,8,9,11,12	**ELA** 11-12R 1,2,4,7,8,9 11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 5,8,9	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,4,9,10 IT-NET 1,5 IT-PRG 3	**CSDF** 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5
Weeks 40			• Final Presentation	**Career Ready Practice** CRP 1,2,4,5,6,10,12	**ELA** 11-12R 1,2,4,7,8,9

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	CCTC Standards	NYS Standards
Review **Final Presentation** **Final Examination**	• How can the knowledge and skills learned in this course be applied?	• Apply knowledge and skills to solve problems.	• Final Examination		11-12W 2,5,6,7 11-12SL 1,2,3,4,5,6 11-12L 1,2,3,4,5,6
				Cluster Standards IT 1-12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 9	**CSDF** 9-12.IC.1,2,3,4,5,7 9-12.CT.8,9 9-12.NSD.2,3,4,5 9-12.CY.1,2,3,4,5 9-12.DL.1,2,4,5