Syracuse City School District
Career and Technical Education Program
Computer Forensics Pathway
Summary Overview

Pathway Overview

Computer Forensics is the application of investigation and analysis techniques to gather and preserve evidence from computing devices in a way that is suitable for presentation in a court of law. The program is designed to help students on a pathway to careers in local and state police and law enforcement, government agencies, and private corporations. Students will build on skills in information processing, networks, hardware, software applications to explore the processes 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 and 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 will have the opportunity to earn college credits and obtain IT industry recognized certifications.

Calendar for Pathway

100 9th Grade			
1	**2**	**3**	**4**
• Introduction to the Pathway, 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching • Review and Final Exam

200 10th Grade			
1	**2**	**3**	**4**
• 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 • Work-Based Learning: Career Coaching	• Storage and Devices • Hardware Troubleshooting • Operating Systems, System Software, BIOS/UEFI • File Management, Application Software, and Software Troubleshooting • Printing • Work-Based Learning: Career Coaching,	• 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 • Work-Based Learning: Career Coaching	• Programming and Web Development • Data Analysis, Designing and Implementing Systems • Security Threats and Vulnerabilities • Authentication, Encryption, and Device Security • IT Career Preparation • Work-Based Learning: Career Coaching

300 11th Grade			
1	**2**	**3**	**4**
• 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 • Work-Based Learning: Career Coaching	• Internal PC Hardware and Computer Form Factors • External PC Components and Peripherals • Laptops: Components, Power Management, and Troubleshooting • Storage Devices • File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting • Work-Based Learning: Career Coaching	• Introduction to Networking • Introduction to Kali Forensics • Introduction to Windows Forensics • Mobile Devices: Networking, Security, and Troubleshooting • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching • Review and Final Exam
400 **12th Grade**			
1	**2**	**3**	**4**
• Overview of Course and Expectations • Report Writing • Identification of Digital Evidence • Securing a Crime Scene • Handling Evidence • Work-Based Learning: Career Coaching	• Wireless Technologies • File Systems • File Signatures and File Extensions • Hex Viewer • Forensics Toolkit (FTK) Imager • Work-Based Learning: Career Coaching	• Forensic Bridges, Write Blockers, and Duplicators • File Hashing • Forensics Toolkit (FTK) • Data Destruction • Anti-Forensics • Work-Based Learning: Career Coaching	• Photograph Forensics • Mobile Forensics • Federal Rules of Evidence (Admissibility of digital evidence) • Incident Response • Work-Based Learning: Internships, Job Shadowing, Career Interviews and Project Based Learning • Final Exam and Technical Assessment

Syracuse City School District
Career and Technical Education Program
Course Syllabus
CFF 100: Computer Forensics 100

Pathway Overview

Computer Forensics is the application of investigation and analysis techniques to gather and preserve evidence from computing devices in a way that is suitable for presentation in a court of law. The program is designed to help students on a pathway to careers in local and state police and law enforcement, government agencies, and private corporations. Students will build on skills in information processing, networks, hardware, software applications to explore the processes 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 and 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 will have the opportunity to earn college credits and obtain IT industry recognized certifications.

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 Forensics 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.

Additional Learning Opportunities

- **Micro-credentials:** Students may pursue learning experiences and credentials depending on the requirements of the project that they are involved in. Some examples for this pathway include, but are not limited to:
  - CompTIA ITF+ IT Fundamentals Certification
  - CompTIA Security+ Certification
  - PCEP – Certified Entry-Level Python Programmer
  - Other relevant certifications as they become available through industry collaborations, teacher certifications and student interest.
- **Summer Bridge Enrichment:** Students will have the opportunity to participate in cross-curricular Summer Bridge programs to enhance and enrich their skills. Students will explore and create solutions that address authentic needs in the school and wider community with the involvement of local industry professionals. Students will build on skills learned during the school year to work collaboratively with students from other concentrations and programs.

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

100 9th Grade			
1	**2**	**3**	**4**
• Introduction to the Pathway, 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching • Review and Final Exam

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CFF 100: Computer Forensics 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 Pathway, 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	• Why is communication important?	• Explain how vital the role of Communication is.	**Written** • Workbook	**Career Ready Practices** CRP 1,2,4,7,8	**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
The Importance of Communication	• 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.	• 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	**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. • 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** **Work-Based Learning: Career Coaching**	• 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. • Participate in Career Coaching process.	**Written** • Workbook • Research Project • Tests and Quizzes • Career Coaching 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

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 can be learned from computer forensics professionals?				
Weeks 12-13 **Digital Citizenship and Ethical Computing**	• What does it mean to be a good digital citizen? • 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?	• Conduct themselves with professionalism while exchanging their 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.	**Written** • Workbook • Research Project • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,9,11 **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.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 **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.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 **Cluster Standards** IT 1 **Pathway Standards** IT-SUP 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 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?	• 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	**Career Ready Practices** CRP 1,2,3,4,8,11 **Cluster Standards** IT 1,4 **Pathway Standards**	**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**

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 does professionalism look like in the classroom and the workplace?		• Teacher Observation Checklist	IT-SUP 1	9-12.NSD.2,3 9-12.DL.
Week 18 **Introduction to the Computer Lab, Tools, and Resources**	• Where is the computer lab and when will it be used? • 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.	**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	**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.2,4,5
Week 19 **File Management, Storage and Backups** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals? •	• 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. • Participate in Career Coaching process.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Career Coaching 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 1,2,3,5	**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.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 **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.2 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
Weeks 24-25 **Introduction to Presentation Software and Microsoft PowerPoint**	• What is a presentation and what is its purpose? • What makes an effective presentation? • 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 what a presentation is and what it is used for. • Describe the qualities of an effective presentation. • Explain how to deliver a presentation that will engage and inform people about the subject.	**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.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** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Career Coaching 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

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
Week 32 **Introduction to Software**	• What is computer software? • What are the key categories of software used and what is each used for? • How is software delivered to users and how has this evolved? • What are the qualities of an effective program? • What is coding?	• Define computer software. • Describe the key categories of computer software and explain the uses of each category. • 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.	**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.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 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3,5 IT-NET 2	**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.2,4,5 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 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3 IT-NET 2	**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.2,4,5 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 **Cluster Standards** IT 1,4,11,12 **Pathway Standards** IT-SUP 1,2,3 IT-NET 1,2	**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.4 9-12.NSD.2,3,4,5 9-12.CY.1,2,3 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
Week 38 **The Evolution of Technology Careers, Technology Trends and What's to Come**	• How have technology careers evolved over time? • What are different careers available in the field of technology 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?	• Describe how technology careers have evolved over time. • 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.	**Written** • Workbook • TestOut Assignments • Tests and Quizzes • Self-Assessment • Professional Portfolio **Performance** • Class Presentation • Procedure Checklist • Teacher Observation Checklist	**Career Ready Practices** CRP 1,2,4,7,8,10,11	**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 1,5,6	**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** **Work-Based Learning: Career Coaching**	• What resources can be used in a job search? • How can a job candidate identify and apply for a position? • What can be learned from computer forensics professionals?	• Locate potential job openings using both face-to-face and digital methods. • Use employment sites like Monster and Indeed. • Fill out a formal application. • Participate in Career Coaching process.	**Written** • Workbook • Tests and Quizzes • Career Coaching 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
CFF 200: Computer Forensics 200

Pathway Overview

Computer Forensics is the application of investigation and analysis techniques to gather and preserve evidence from computing devices in a way that is suitable for presentation in a court of law. The program is designed to help students on a pathway to careers in local and state police and law enforcement, government agencies, and private corporations. Students will build on skills in information processing, networks, hardware, software applications to explore the processes 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 and 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 will have the opportunity to earn college credits and obtain IT industry recognized certifications.

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.

Additional Learning Opportunities

- **Micro-credentials:** Students may pursue learning experiences and credentials depending on the requirements of the project that they are involved in. Some examples for this pathway include, but are not limited to:
    - CompTIA ITF+ IT Fundamentals Certification
    - CompTIA Security+ Certification
    - PCEP – Certified Entry-Level Python Programmer
    - Other relevant certifications as they become available through industry collaborations, teacher certifications and student interest.
- **Summer Bridge Enrichment:** Students will have the opportunity to participate in cross-curricular Summer Bridge programs to enhance and enrich their skills. Students will explore and create solutions that address authentic needs in the school and wider community with the involvement of local industry professionals. Students will build on skills learned during the school year to work collaboratively with students from other concentrations and programs.

Pre-Requisites

N/A

Course Objectives

1. Students will understand the historical and societal context of computer systems.
2. Students will understand the career ready practices that will lead to success in the computer science pathway.
3. Students will understand both the hardware and software technology used in computer operations.
4. Students will assemble and troubleshoot computers.
5. Students will demonstrate basic programming and data analysis skills.

6. 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

200 10th Grade			
1	**2**	**3**	**4**
• 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 • Work-Based Learning: Career Coaching	• Storage and Devices • Hardware Troubleshooting • Operating Systems, System Software, BIOS/UEFI • File Management, Application Software, and Software Troubleshooting • Printing • Work-Based Learning: Career Coaching,	• 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 • Work-Based Learning: Career Coaching	• Programming and Web Development • Data Analysis, Designing and Implementing Systems • Security Threats and Vulnerabilities • Authentication, Encryption, and Device Security • IT Career Preparation • Work-Based Learning: Career Coaching

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CFF 200: Computer Forensics 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

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
				Pathway Standards IT-SUP 1,2,3	**CSDF** 9-12.NSD.2,3
Weeks 7-8 **Computer Hardware: Internal Components**	• What are the essential internal components of a PC? • 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?	• Identify and describe all internal PC components. • 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.	• Explore A Motherboard Lab • Install Memory Lab • Upgrade A Video Card Lab **Performance** • Hardware 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
Weeks 9-10 **Input And Output I/O) Devices and Peripherals** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	**Labs** • Connect a Monitor Lab • Set Up a Computer Lab **Performance** • I/O Quiz • Career Coaching 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 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

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 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 and desktop operating systems?	• 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 • Operating System History Presentation	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11 **Pathway Standards** IT-SUP 1,2,3,4	**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
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 **Cluster Standards** IT 1,1,12 **Pathway Standards** IT-SUP 1,2,3,4	**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 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 **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.2,3 9-12.DL.1,2,4,5
Week 20 **The Internet and How It Works: Web Browsers, and Cloud Computing** **Work-Based Learning: Career Coaching**	• What are the similarities and differences between the internet and the world wide web? • How have the internet and the web impacted our lives? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	• Clear Browser Cache Lab • Configure Browser Settings Lab • Use a Proxy Server Lab • Internet/IoT Quiz • Career Coaching Self-Assessment	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12 **Pathway Standards** IT-SUP 1,2,3 IT-NET 1,2	**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.2,3,4,5 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
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 **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	**Career Ready Practices** CRP 1,2,4,5,7,8,10,11	**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 1,6,11,12	**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	**CSDF** 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
				IT-NET 1,2	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** **Work-Based Learning: Career Coaching**	• What is a database? • How are databases used in everyday life? • What's the difference between a database and a spreadsheet? • What can be learned from computer forensics professionals?	• Describe use cases of databases. • Explain how databases are more complex than spreadsheets. • Use Microsoft Access to explore database components. • Participate in Career Coaching process.	• Explore an Access Database Lab • Create Queries in a Database Lab • Tables and Relationships Lab • Intro to Databases Quiz • Career Coaching 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 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-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, and 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	**CSDF** 9-12.CT.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
				IT-NET 1,2 IT-PRG 1,3,4,5	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? • What is encryption?	• 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 IT-SUP 1,2,3 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
Weeks 39-40 **IT Career Preparation** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	• College and Career Research Project • Course Reflection Paper • Career Coaching Self-Assessment	**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
CFF 300: Computer Forensics 300

Pathway Overview

Computer Forensics is the application of investigation and analysis techniques to gather and preserve evidence from computing devices in a way that is suitable for presentation in a court of law. The program is designed to help students on a pathway to careers in local and state police and law enforcement, government agencies, and private corporations. Students will build on skills in information processing, networks, hardware, software applications to explore the processes 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 and 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 will have the opportunity to earn college credits and obtain IT industry recognized certifications.

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.

Additional Learning Opportunities

- **Micro-credentials:** Students may pursue learning experiences and credentials depending on the requirements of the project that they are involved in. Some examples for this pathway include, but are not limited to:
    - CompTIA ITF+ IT Fundamentals Certification
    - CompTIA Security+ Certification
    - PCEP – Certified Entry-Level Python Programmer
    - Other relevant certifications as they become available through industry collaborations, teacher certifications and student interest.
- **Summer Bridge Enrichment:** Students will have the opportunity to participate in cross-curricular Summer Bridge programs to enhance and enrich their skills. Students will explore and create solutions that address authentic needs in the school and wider community with the involvement of local industry professionals. Students will build on skills learned during the school year to work collaboratively with students from other concentrations and programs.

Pre-Requisites

N/A

Course Objectives

1. Students will understand the career ready practices that will lead to success in the computer science pathway.
2. Students will understand both the hardware and software technology used in computer operations.
3. Students will assemble, maintain, and troubleshoot computers.
4. Students will demonstrate basic file management and networking skills.
5. Students will demonstrate use, maintain, and troubleshoot printers, laptops, and mobile devices.

6. 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

300 **11th Grade**			
1	**2**	**3**	**4**
• 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 • Work-Based Learning: Career Coaching	• Internal PC Hardware and Computer Form Factors • External PC Components and Peripherals • Laptops: Components, Power Management, and Troubleshooting • Storage Devices • File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting • Work-Based Learning: Career Coaching	• Introduction to Networking • Introduction to Kali Forensics • Introduction to Windows Forensics • Mobile Devices: Networking, Security, and Troubleshooting • Work-Based Learning: Career Coaching	• 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 • Work-Based Learning: Career Coaching • Review and Final Exam

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CFF 300: Computer Forensics 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 the operating system's core functions? • What are the most common operating systems and what are their similarities and differences?	• Describe the core components of a desktop or laptop PC. • Explain what each computer component is responsible for. • Set up a computer. • Describe the most common operating systems in use, including Windows, Linux, Ubuntu and Kali. • Explain the similarities and differences in the most common operating systems. • 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?	• 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.	**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	**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

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 does professional behavior look like in the classroom and workplace?	• Explain and demonstrate how to conduct oneself professionally in a classroom, lab room, workplace.		IT-NET 1 IT-PRG 1	9-12.NSD.2,3 9-12.DL.1,2,4,5,6,7
Weeks 7-8 **PC Toolkit and Maintenance** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals?	• Explain an uninterruptable power supply and how one is set up. • 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. • Participate in Career Coaching process.	**Written** • Workbook/TestOut Assignments • PC Tools Quiz • Career Coaching Self-Assessment **Performance** • Labs: PC Tools Practical Application, Install a UPS	**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
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 **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
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 **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
Weeks 16-17 **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?	• Determine external ports available on laptop. • Describe functionality of laptop ports. • Disassemble a laptop.	**Written** • Workbook/TestOut Assignments • Self-Assessment **Performance**	**Career Ready Practices** CRP 1,2,4,8,11 **Cluster Standards** IT 1,11,12	**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 **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
	• What components are modular on a laptop and how are components repaired or replaced? • How is laptop power managed?	• Repair laptop keyboard, lcd, and upgrade RAM. • Configure laptop power management features.	• Laptop Special Keys Practical Assignment • Labs: Install Laptop Memory, Replace Laptop Keyboard, Replace Laptop LCD, Create a Power Plan		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 18-20 **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? • What is a partition and how is it configured?	• 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. • Explain and demonstrate how to create a RAID array. • Explain and demonstrate how to create partitions on a hard drive.	**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
Weeks 21-22 **File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting** **Work-Based Learning: Career Coaching**	• 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)? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Career Coaching 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	**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
Week 23-24 **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.	**Written** • Workbook/TestOut Assignments • Topology Facts Questions Assignment • TCP/IP Protocol Assignment • Unit Quiz • Self-Assessment **Performance** • Labs: Select and Install Network Adapter,	**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 1,2,3,5 IT-NET 1,2	**CSDF** 9-12.NSD.2,3,4,5 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
		• Explain how wireless networking and wireless networking devices work.	Configure TCP/IP Settings, Configure Internet Connection • Windows Command Prompt Networking Commands Practical Assignment		
Weeks 25-26 **Introduction to Kali Forensics**	• How is the Kali Linux OS used in cybersecurity and network analysis?	• Describe the unique features of the Kali Linus OS. • Correctly install, set-up and access the Kali Linux OS. • Explain and demonstrate the use of core features of the Kali Linux OS for network mapping, packet capture and analysis, and penetration testing.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Network Mapping, Packet Capture and Analysis, Penetration Testing	**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
Weeks 27-28 **Introduction to Windows Forensics**	• How is the Windows OS used in cybersecurity and network analysis?	• Describe Windows file systems, including Fat32, ExFat, and NTFS. • Explain how these systems store data, what happens when a file gets written to disc, and what happens when a file gets deleted from disc. • Recover deleted files. • Navigate and analyze the Registry to obtain user profile and system data. • Demonstrate investigative methods to prove that a specific user performed keyword searches, executed specific programs, opened and saved files, perused folders, and used removable devices.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Self-Assessment **Performance** • Labs: Profile a Computer System Using Windows Registry, Conduct a Detailed Profile of User Activity, Examine Which Applications a User Executed, Examine Recently Opened Files, Perform Cloud Storage Forensics	**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
Weeks 29-30 **Mobile Devices: Networking, Security, and Troubleshooting** **Work-Based Learning: Career Coaching**	• 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?	• 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. • Participate in Career Coaching process.	**Written** • Workbook/TestOut Assignments • Unit Quiz • Mobile Device Troubleshooting Questions • Career Coaching Self-Assessment **Performance** • Labs: Manage Mobile Devices, Secure Mobile Devices, Configure iPad	**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

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 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? • What can be learned from computer forensics professionals?		Access Control and Authentication		
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 • Labs: Prepare Disks for Installation, Install Windows	**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
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	**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.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	**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.CT.6,7 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
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	**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.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	**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
Weeks 38-39 **Operating System Troubleshooting** **Work-Based Learning: Career Coaching**	• 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? • What can be learned from computer forensics professionals?	• 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. • Participate in Career Coaching process.	**Written** • Workbook/TestOut Assignments • Career Coaching 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

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
				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
CFF 400: Computer Forensics 400

Pathway Overview

Computer Forensics is the application of investigation and analysis techniques to gather and preserve evidence from computing devices in a way that is suitable for presentation in a court of law. The program is designed to help students on a pathway to careers in local and state police and law enforcement, government agencies, and private corporations. Students will build on skills in information processing, networks, hardware, software applications to explore the processes 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 and 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 will have the opportunity to earn college credits and obtain IT industry recognized certifications.

Course Description

In this course, students will continue to build on their knowledge of computers, equipment, operating systems, file management, and computer storage as they learn the fundamentals of computer forensic investigations. Students will learn the investigative methods for the acquisition, extraction, preservation, analysis, and deposition of digital evidence from storage devices. Through hands-on experience with a wide array of forensics situations that are applicable to the real world, students will learn how to find traces of illegal or illicit activities with computer forensics tools and manual techniques, and how to recover data intentionally hidden or encrypted by perpetrators. Students will document their findings and results and learn about presenting digital evidence in accordance with what is legally accepted in a court of law. Students who successfully complete the course will have the opportunity to obtain industry recognized certifications.

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.

Additional Learning Opportunities

- **Micro-credentials:** Students may pursue learning experiences and credentials depending on the requirements of the project that they are involved in. Some examples for this pathway include, but are not limited to:
    - CompTIA ITF+ IT Fundamentals Certification
    - CompTIA Security+ Certification
    - PCEP – Certified Entry-Level Python Programmer
    - Other relevant certifications as they become available through industry collaborations, teacher certifications and student interest.
- **Summer Bridge Enrichment:** Students will have the opportunity to participate in cross-curricular Summer Bridge programs to enhance and enrich their skills. Students will explore and create solutions that address authentic needs in the school and wider community with the involvement of local industry professionals. Students will build on skills learned during the school year to work collaboratively with students from other concentrations and programs.

Pre-Requisites

N/A

Course Objectives

1. Students will understand the career ready practices that will lead to success in the computer forensics pathway.
2. Students will understand both the hardware and software technology used in computer forensics operations.
3. Students will be able to use computer forensics techniques.
4. Students will understand the historical and societal context of computer forensics.
5. Students will understand the chain of custody in a computer forensics investigation.

6. Students will understand how to present digital evidence in accordance with what is legally admissible in a court of law.

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

400 12th Grade			
1	**2**	**3**	**4**
• Overview of Course and Expectations • Report Writing • Identification of Digital Evidence • Securing a Crime Scene • Handling Evidence • Work-Based Learning: Career Coaching	• Wireless Technologies • File Systems • File Signatures and File Extensions • Hex Viewer • Forensics Toolkit (FTK) Imager • Work-Based Learning: Career Coaching	• Forensic Bridges, Write Blockers, and Duplicators • File Hashing • Forensics Toolkit (FTK) • Data Destruction • Anti-Forensics • Work-Based Learning: Career Coaching	• Photograph Forensics • Mobile Forensics • Federal Rules of Evidence (Admissibility of digital evidence) • Incident Response • Work-Based Learning: Internships, Job Shadowing, Career Interviews and Project Based Learning • Final Exam and Technical Assessment

Syracuse City School District
Career and Technical Education Program
Scope and Sequence
CFF 400: Computer Forensics 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
Week 1 **Overview of Course and Expectations**	• What are the expectations for the Computer Forensics 400 course? • How can students be successful in Computer Forensics 400? • How can students manage time effectively? • What careers exist in the area of computer forensics? • What are the responsibilities of a professional in a computer forensics career?	• Follow rules and procedures to ensure classroom safety. • Describe essential components of course completion to receive CTE credential (senior portfolio components, work-based learning hours, passing score on Precision exam, etc.) • Describe the various careers that exist within the area of computer forensics. • Describe the roles and responsibilities of a professional in a computer forensics position.	• Do It Now • Ticket Out the Door • Rules and Expectations Checklist • Review Quiz from Prior Coursework • Computer Forensics Career Research	**Career Ready Practices** CRP 1,2,4,10,11	**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 1,4,7,8,10,	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.10 9-12.DL.1,2,4,5,6,7
Weeks 2-3 **Report Writing**	• How is a technical report written? • What should a Computer Forensics report look like?	• Apply writing techniques to technical report writing. • Use technical report writing formats to write Computer Forensics reports.	• Lab Report • "Replace Remote Control Batteries" Report	**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 1,4,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.DL.1,2,4,5,6,7
Weeks 4-5 **Identification of Digital Evidence**	• What is classified as digital evidence? • How has technology changed over the last 20 years? • What purpose does the hard drive have in an investigation?	• Identify various technologies and peripherals. • Explain what electronics should be taken during a computer forensics investigation. • Identify all parts of a hard drive.	• Quiz: Digital Evidence • Quiz: Hard Drive • Performance Assessment: Identify Digital Evidence	**Career Ready Practices** 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 1,4,8,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 6-7 **Securing a Crime Scene**	• How is a crime scene secured? • How does an investigator enter a crime scene safely?	• Enter a crime scene safely. • Photograph a crime scene. • Document a crime scene using proper documentation procedures.	• Quiz: Securing a Crime Scene • Performance Assessment: Arriving at the Scene	**Career Ready Practices** CRP 1,2,4,8,11,12	**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

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 the proper way to document a crime scene?		• Lab: Crime Scene	**Cluster Standards** IT 1,4,8,9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 8-9 **Handling Evidence** **Work-Based Learning: Career Coaching**	• How should evidence be handled? • What does chain of custody mean? • Why is labeling and documenting all evidence important? • What can be learned from computer forensics professionals?	• Handle evidence using proper procedures. • Explain how to maintain chain of custody. • Document serial numbers of evidence. • Participate in Career Coaching process.	• Quiz: Handling Evidence • Performance Assessment: Proper Evidence Handling • Lab: Handling Evidence • Career Coaching Self-Assessment	**Career Ready Practices** CRP 1,2,4,8,9,11	**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 1,4,8,9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 10-11 **Wireless Technologies**	• What are different wireless technologies that can be present in a computer forensics case? • What is a faraday box/bag?	• Use a faraday box or bag to help preserve wireless evidence.	• Performance Assessment: Android vs iPhone • Lab: Faraday	**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 1,4,6,8,9,10	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 12-13 **File Systems**	• How do file systems relate to computer forensics? • What is the relationship between different types of file systems and different operating systems?	• Distinguish the difference between FAT, NTFS, and Ext File Systems. • Explain the relationship between different file systems and different operating systems.	• Quiz File Systems • Lab: File Systems	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4

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.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 14-15 **File Signatures and File Extensions**	• What are different file signatures? • What are different file extensions? • Where is the location of a file signature?	• Identify different file signatures. • Modify file extensions.	• Lab: File Signatures • Lab: File Extensions • Performance Assessments: Viewing Windows File Extensions	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 16-17 **Hex Viewer**	• What is Hexadecimal notation? • What is a hex viewer? • How does a hex viewer apply to computer forensics?	• Use a hex viewer. • Convert hexadecimal notation.	• Lab: WinHex • Performance Assessment: Hex Viewer	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 18-19 **Forensics Toolkit (FTK) Imager** **Work-Based Learning: Career Coaching**	• What is a forensic image? • What is the purpose of FTK Imager? • What can be learned from computer forensics professionals?	• Create a forensic image with FTK Imager. • Explain how an image applies to computer forensics. • Navigate through FTK Imager. • Participate in Career Coaching process.	• Lab: FTK Images • Performance Assessments: Create an E01 Image • Career Coaching Self-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 1,4,7,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 20-21 **Forensic Bridges, Write**	• What is a forensic bridge? • What is a forensic write blocker? • What is a forensic duplicator?	• Use a bridge and a write blocker in an investigation. • Create a forensic image with a duplicator.	• Lab: Write Blocker • Lab: Duplicator • Performance Assessment: Computer Forensic Tools	**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

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
Blockers, and Duplicators				**Cluster Standards** IT 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Week 22-23 **File Hashing**	• What is a file hash? • How does a file hash relate to computer forensics?	• Distinguish an MD5 hash. • Distinguish a sha1 hash.	• Lab: File Verification • Performance Assessment: Compare File Hashes	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 24-25 **Forensics Toolkit (FTK)**	• What is Forensic Toolkit? • How does an investigator utilize FTK?	• Navigate through FTK. • Use FTK to find evidence on a computer system.	• Labs: Computer Forensic Cases • Performance Assessments: Finding Evidence that Pertains to Cases	**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 1,4,7,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 26-27 **Data Destruction**	• What is data destruction? • Can data still be retrieved if deleted?	• Destroy electronic data properly. • Retrieve deleted files.	• Lab: Data Destruction • Performance Assessment: DoD 7 Pass Wipe	**Career Ready Practices** CRP 1,2,4,8,9,11	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4

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.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 28-29 **Anti-Forensics** **Work-Based Learning: Career Coaching**	• What is anti-forensics and how is it used? • What can be learned from computer forensics professionals?	• Compare different methods of hiding data. • Find hidden files in a system. • Participate in Career Coaching process.	• Lab: Anti-Forensics • Performance Assessments: Steganography • Career Coaching Self-Assessment	**Career Ready Practices** CRP 1,2,4,8,9,11	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 30-31 **Photograph Forensics**	• What digital photo file types exist and how is their digital makeup different? • What kinds of information can be retrieved from a digital photograph? • How can this information be used in a digital forensics investigation?	• Explain what metadata is. • Retrieve EXIF data from digital photographs. • Use EXIF data to determine facts about a digital photograph that can further an investigation or serve as direct evidence for trial.	• Photo Forensics Labs 1 and 2 • Social Media Photo Forensics Discussion • Photo Forensics Quiz	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Week 32-33 **Mobile Forensics**	• What mobile operating systems exist? • What types of evidence can be retrieved from a mobile device? • How can digital evidence from a mobile device further an investigation?	• Describe the differences between mobile operating systems. • Navigate different mobile operating systems. • Recover digital evidence from a mobile device through manual analysis or full device capture (data dump).	• Mobile Phone Forensics Lab 1 (Extraction) • Mobile Phone Forensics Lab 2 (Manual) • Apple vs. FBI Case Study Written Report	**Career Ready Practices** CRP 1,2,4,8,9,11	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Week 34-36 **Federal Rules of Evidence**	• What is the role of constitutional law as it pertains to computer forensics?	• Explain the role of the constitution in computer forensics.	• Case Study Research Project And Presentation	**Career Ready Practices** CRP 1,2,4,8,9,11	**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

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
(Admissibility of Digital Evidence)	• How does the 1st Amendment relate to digital activity and the Internet? • How does the 4th Amendment relate to the admissibility of digital evidence? • What are the rules for admissibility of evidence at trial?	• Explain admissibility and how seizure of evidence can impact the ability to use evidence at trial. • Explain what the 1st and 4th Amendments of the U.S. Constitution state and mean and evaluate their impact on digital evidence admissibility in court.		**Cluster Standards** IT 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC. 9-12.CT. 9-12.NSD. 9-12.CY. 9-12.DL.1,2,4,5,6,7
Weeks 37-38 **Incident Response**	• What is incident response and how does it relate to computer forensics? • What key actions should occur upon the detection of a security compromise, attack, or breach? • How can evidence be collected from compromised computers or network infrastructure?	• Respond to a compromise, breach or attack on a computer or network. • Remove or mitigate the system/infrastructure from the active threat. • Examine system artifacts on local devices or network infrastructure to recover evidence.	• Cyber Forensics TWTT • Live Analysis Lab (RAM Capture) • Incident Response Procedural Exercise (In-Person Mock Response to Digital Crime Scene) • Incident Response Quiz	**Career Ready Practices** CRP 1,2,4,8,9,11	**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 1,4,8,9,10,11	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7
Weeks 39-40 **Work-Based Learning: Internships, Job Shadowing, Career Interviews and Project Based Learning** **Final Exam and Technical Assessment**	• How can the knowledge and skills learned in this course be applied? • How does an employee convey professionalism in the workplace? • How do professionals work together to solve problems?	• Apply the knowledge and skills learned in the classroom to working in a professional setting. • Explain how various professionals work together toward the common goal of solving problems. • Explain how the demands of a job can change according to the setting and the needs of the employer or client. • Explain and demonstrate professionalism and ethics in the workplace. • Complete the Final Examination. • Complete Pathway Technical Assessment	• Internship Report • Self-Assessment • Project Rubrics and Evaluation • Course Reflection • Final Exam • Technical Assessment	**Career Ready Practices** CRP 1,2,4,7,8,9,10,11,12	**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 1-12	**Literacy** 11-12RST 1,2,4,7,8,9 11-12WHST 2,5,6,7
				Pathway Standards IT-SUP 1,2,3,7,9 IT-NET 2,5 IT-PRG 3,9	**CSDF** 9-12.IC.3,10 9-12.CT.2 9-12.NSD.1,2,3,4 9-12.CY.1,2,5 9-12.DL.1,2,4,5,6,7