

¹Utica City School District Career and Technical Education Program Cybersecurity Pathway Summary Overview



Pathway Overview

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

Work-Based Learning

Students will be connected with working computer science professionals in the community through meetings, 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 could include, but are not limited to:
 - o Microsoft Office Specialist: Word Associate
 - o Microsoft Office Specialist: Excel Associate
 - o CompTIA IT Fundamentals (ITF+)
 - o CompTIA A+
 - o CompTIA Security+
 - o CompTIA Network+
 - o Microsoft Fundamentals
 - o Amazon Web Services (AWS) Cloud Practitioner
 - o Google Cloud Digital Leader
- **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 pathways and programs.

Integrated High School Academics

TBD

Concurrent College Enrollment

TBD

Calendar for Cybersecurity Pathway

Level	Quarter	Units of Study
100 9 th Grade	1	• 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

¹ *UCSD will offer all Career and Technical Education opportunities without regard to race, color, national origin, sex, or disability. The District will also take steps to assure that the lack of English language skills will not be a barrier to admission and participation in Career and Technical Education programs.

Level	Quarter	Units of Study
		• Proper Keyboarding Technique
	2	• Digital Citizenship and Ethical Computing • How to Clean and Maintain Technology • Digital Portfolios, Resumes, and Work-Based Learning, • Safety in the Computer Lab • Protecting Ourselves and Our Technology • Introduction to the Computer Lab, Tools, and Resources • File Management, Storage and Backups
	3	• Introduction to Word Processing and Microsoft Word • Introduction to Presentation Software and Microsoft PowerPoint • Introduction to Spreadsheets and Microsoft Excel • Introduction to Databases and Microsoft Access
	4	• Introduction to Hardware • Introduction to Software • Introduction to Networking and Wireless Computing • Introduction to the Internet • Safe Use of the Internet, Social Media, and other Digital Tools • The Evolution of Technology Careers, Technology Trends and What's to Come • Finding and Applying for a Job • Review and Final Exam
200 10 th Grade	1	• Introduction to Course, Classroom Practices, and Expectations: Being Successful • Technology and Ethics • History of Computers and Their Use in Society • Digital Media: Digital Data and Media Formatting • Computer Hardware: Internal Components • Input And Output Devices and Peripherals
	2	• Storage and Devices • Hardware Troubleshooting • Operating Systems, System Software, BIOS/UEFI • File Management, Application Software, and Software Troubleshooting • Printing
	3	• The Internet and How It Works: Web Browsers, and Cloud Computing • Social Media, and Internet Communication Technologies • The Internet of Things and Internet Technology Careers • Networking Basics: Topologies, IP Addresses, and Networking Devices • Wired and Wireless Networking: Network/Ethernet Cables, Wireless Standards, and Creating a Home Network • Internet Connectivity, Networking Protocols, and Network Troubleshooting • Databases
	4	• Programming and Web Development • Data Analysis, Designing and Implementing Systems • Security Threats and Vulnerabilities • Authentication, Encryption, and Device Security • IT Career Preparation
300 11 th Grade	1	• Classroom Practices: Being Successful • Computer/IT Specialist: Roles and Responsibilities • Computer Basics: Hardware, Software, and Operating Systems • Safety, Protection, and Professionalism • PC Toolkit and Maintenance
	2	• Internal PC Hardware and Computer Form Factors • External PC Components and Peripherals • Storage Devices • File Systems: Creation, Storage Management, Disk Optimization, Storage Troubleshooting
	3	• Introduction to Networking • Printers, Printer Configuration, and Network Printing • Printer Maintenance and Troubleshooting • Laptops: Components, Power Management, and Troubleshooting • Mobile Devices: Networking, Security, and Troubleshooting
	4	• Windows Pre-Installation, Installation, and Post Installation • File Management • Windows System Tools • System Management and Active Directory • Windows Backup and System Recovery • Operating System Troubleshooting • Review and Final Exam
400	1	• Course Introduction and Introduction to Cybersecurity

Level	Quarter	Units of Study
12th Grade		• Recon and Denial, Spoofing, and Security Appliances • Demilitarized Zones (DMZ), Firewalls, Network Address Translation (NAT), and Virtual Private Networks (VPN)
	2	• Network Threats, Network Device Vulnerabilities, Network Applications, Switch Attacks and Security, and VLAN's • Security Policies, Auditing and Accountability, and Risk Management • Access Control, Authentication and Authorizations • Cryptography and Cryptography Implementations and Attacks • Steganography • Data Management, Data Transmission Security, and Data Lost Prevention (DLP)
	3	• Monitoring and Diagnosing Networks • Devices and Infrastructures • Malware, Vulnerabilities, and Threats • Host, Data, and Application Security • Protecting Wireless Networks, Wireless Attacks and Defense, and Securing the Cloud • Operations Security (OPSEC) and Security Administrations
	4	• Computer Forensics and Digital Evidence • Disaster Recovery and Incident Response • Defense Planning • Internship • Review, Final Presentation, Final Examination