



**Dublin City Schools
Cybersecurity Academy Year 2
Graded Course of Study**

Course Goals

The Cybersecurity Academy is for students interested in the rapidly advancing field of Cybersecurity. Students learn skills that prepare them for certification exams and internship potential, setting them apart when applying to post-secondary institutions and/or careers.

Semester 1, Option 1

Cyber Year 2 - Option 1: CompTIA A+	
Topic	Student Competencies
1.0 Mobile Devices	Given a scenario, install and configure laptop hardware and components. Given a scenario, install components within the display of a laptop. Given a scenario, use appropriate laptop features. Compare and contrast characteristics of various types of other mobile devices. Given a scenario, connect and configure accessories and ports of other mobile devices. Given a scenario, use methods to perform mobile device synchronization.
2.0 Networking	Compare and contrast TCP and UDP ports, protocols, and their purposes. Compare and contrast common networking hardware devices. Given a scenario, install and configure a basic wired/wireless SOHO network. Compare and contrast wireless networking protocols. Summarize the properties and purposes of services provided by networked hosts. Explain common network configuration concepts. Compare and contrast Internet connection types, network types, and their features. Given a scenario, use appropriate networking tools.
3.0 Hardware	Explain basic cable types, features, and their purposes. Identify common connector types. Given a scenario, install RAM types. Given a scenario, select, install and configure storage devices. Given a scenario, install and configure motherboards, CPUs, and add-on cards.



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	<p>Explain the purposes and uses of various peripheral types. Summarize power supply types and features. Given a scenario, select and configure appropriate components for a custom PC configuration to meet customer specifications or needs. Given a scenario, install and configure common devices. Given a scenario, configure SOHO multifunction devices/printers and settings. Given a scenario, install and maintain various print technologies.</p>
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Semester 2, Option 1

Cyber Year 2 - Option 1: CompTIA A+	
Topic	Student Competencies
4.0 Virtualization and Cloud Computing	<p>Compare and contrast cloud computing concepts. Given a scenario, set up and configure client-side virtualization.</p>
5.0 Hardware and Network Troubleshooting	<p>Given a scenario, use the best practice methodology to resolve problems. Given a scenario, troubleshoot problems related to motherboards, RAM, CPUs, and power. Given a scenario, troubleshoot hard drives and RAID arrays. Given a scenario, troubleshoot video, projector, and display issues. Given a scenario, troubleshoot common mobile device issues while adhering to the appropriate procedures. Given a scenario, troubleshoot printers. Given a scenario, troubleshoot common wired and wireless network problems.</p>



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Semester 1, Option 2

Cyber Year 2 - Option 2: CompTIA Network +	
Topic	Student Competencies
1.0 Networking Concepts	<p>Explain the purposes and uses of ports and protocols. Explain devices, applications, protocols and services at their appropriate OSI layers. Explain the concepts and characteristics of routing and switching. Given a scenario, configure the appropriate IP addressing components. Compare and contrast the characteristics of network topologies, types and technologies. Given a scenario, implement the appropriate wireless technologies and configurations. Summarize cloud concepts and their purposes. Explain the functions of network services.</p>
2.0 Infrastructure	<p>Given a scenario, deploy the appropriate cabling solution. Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them. Explain the purposes and use cases for advanced networking devices. Explain the purposes of virtualization and network storage technologies. Compare and contrast WAN technologies.</p>
3.0 Network Operations	<p>Given a scenario, use appropriate documentation and diagrams to manage the network Compare and contrast business continuity and disaster recovery concepts. Explain common scanning, monitoring and patching processes and summarize their expected outputs. Given a scenario, use remote access methods. Identify policies and best practices.</p>



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Semester 2, Option 2

Cyber Year 2 - Option 2: CompTIA Network +	
Topic	Student Competencies
4.0 Network Security	Summarize the purposes of physical security devices. Explain authentication and access controls. Given a scenario, secure a basic wireless network. Summarize common networking attacks. Given a scenario, implement network device hardening. Explain common mitigation techniques and their purposes.
5.0 Network Troubleshooting and Tools	Explain the network troubleshooting methodology. Given a scenario, use the appropriate tool. Given a scenario, troubleshoot common wired connectivity and performance issues. Given a scenario, troubleshoot common network service issues.

Semester 1, Option 3

Cyber Year 2 - Option 3: CompTIA Security +	
Topic	Student Competencies
1.0 Attacks, Threats, and Vulnerabilities	Compare and contrast different types of social engineering techniques. Given a scenario, analyze potential indicators to determine the type of attack. Given a scenario, analyze potential indicators associated with application attacks. Given a scenario, analyze potential indicators associated with network attacks. Explain different threat actors, vectors, and intelligence sources. Explain the security concerns associated with various types of vulnerabilities. Summarize the techniques used in security assessments. Explain the techniques used in penetration testing.
2.0 Architecture and Design	Explain the importance of security concepts in an enterprise environment. Summarize virtualization and cloud computing concepts.



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	<p>Summarize secure application development, deployment, and automation concepts. Summarize authentication and authorization design concepts. Given a scenario, implement cybersecurity resilience. Explain the security implications of embedded and specialized systems. Explain the importance of physical security controls. Summarize the basics of cryptographic concepts.</p>
3.0 Implementation	<p>Given a scenario, implement secure protocols. Given a scenario, implement host or application security solutions. Given a scenario, implement secure network designs. Given a scenario, install and configure wireless security settings. Given a scenario, implement secure mobile solutions. Given a scenario, apply cybersecurity solutions to the cloud. Given a scenario, implement identity and account management controls. Given a scenario, implement authentication and authorization solutions. Given a scenario, implement public key infrastructure.</p>

Semester 2, Option 3

Cyber Year 2 - Option 3: CompTIA Security +	
Topic	Student Competencies
4.0 Operations and Incident Response	<p>Given a scenario, use the appropriate tool to assess organizational security. Summarize the importance of policies, processes, and procedures for incident response. Given an incident, utilize appropriate data sources to support an investigation. Given an incident, apply mitigation techniques or controls to secure an environment. Explain the key aspects of digital forensics.</p>
5.0 Governance, Risk, and Compliance	<p>Compare and contrast various types of controls. Explain the importance of applicable regulations, standards, or frameworks that impact organizational security posture. Explain the importance of policies to organizational security. Summarize risk management processes and concepts. Explain privacy and sensitive data concepts in relation to security.</p>