



*Department of Teaching & Learning*  
*Parent/Student Course Information*

*Cybersecurity Systems Technology II*  
*(AT8686)*  
*Three Credits, One Year*  
*Grades 9 - 12*

*Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.*

**COURSE DESCRIPTION**

We use technology on a daily basis, but has it ever crossed your mind how it all works? This course focuses on the hardware and software of computing devices with an overview of cybersecurity. Here you will learn how to build, repair, and secure desktop computers, servers, laptops, and networks, as well as install, configure, troubleshoot, and secure various operating systems all through hands-on labs. While in this program you will have the opportunity to earn certifications like the Computing Technology Industry Association (CompTIA) A+ (1st year), Server + (2nd year), and Microsoft Technology Associate (MTA) which are highly desired in the IT and Cybersecurity job market. A+ certified second-year students will have the opportunity to participate in internships.

**CERTIFICATION**

CompTIA A+ Certification Exam

Server + (2nd year)

Microsoft Technology Associate (MTA)

**STUDENT ORGANIZATION**

SkillsUSA is a co-curricular organization for all students enrolled in trade and industrial education programs. SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. SkillsUSA helps students excel by providing educational programs, events and competitions that support career and technical education (CTE) in the nation's classrooms. Students are highly encouraged to participate.

**PREREQUISITE**

Computer Systems Technology I

**OPTIONS FOR NEXT COURSE**

None

**REQUIRED STUDENT TEXTBOOK**

None

## COMPETENCIES FOR CYBERSECURITY SYSTEMS TECHNOLOGY II

### **Demonstrating Personal Qualities and Abilities**

- 1 Demonstrate creativity and innovation.
- 2 Demonstrate critical thinking and problem-solving.
- 3 Demonstrate initiative and self-direction.
- 4 Demonstrate integrity.
- 5 Demonstrate work ethic.

### **Demonstrating Interpersonal Skills**

- 6 Demonstrate conflict-resolution skills.
- 7 Demonstrate listening and speaking skills.
- 8 Demonstrate respect for diversity.
- 9 Demonstrate customer service skills.
- 10 Collaborate with team members.

### **Demonstrating Professional Competencies**

- 11 Demonstrate big-picture thinking.
- 12 Demonstrate career- and life-management skills.
- 13 Demonstrate continuous learning and adaptability.
- 14 Manage time and resources.
- 15 Demonstrate information-literacy skills.
- 16 Demonstrate an understanding of information security.
- 17 Maintain working knowledge of current information-technology (IT) systems.
- 18 Demonstrate proficiency with technologies, tools, and machines common to a specific occupation.
- 19 Apply mathematical skills to job-specific tasks.
- 20 Demonstrate professionalism.
- 21 Demonstrate reading and writing skills.
- 22 Demonstrate workplace safety.

### **Examining All Aspects of an Industry**

- 23 Examine aspects of planning within an industry/organization.
- 24 Examine aspects of management within an industry/organization.
- 25 Examine aspects of financial responsibility within an industry/organization.
- 26 Examine technical and production skills required of workers within an industry/organization.
- 27 Examine principles of technology that underlie an industry/organization.
- 28 Examine labor issues related to an industry/organization.
- 29 Examine community issues related to an industry/organization.
- 30 Examine health, safety, and environmental issues related to an industry/organization.
- 31 Identify the purposes and goals of the student organization.
- 32 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
- 33 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.
- 34 Identify Internet safety issues and procedures for complying with acceptable use standards.

### **Exploring Work-Based Learning**

- 35 Identify the types of work-based learning (WBL) opportunities.
- 36 Reflect on lessons learned during the WBL experience.
- 37 Explore career opportunities related to the WBL experience.
- 38 Participate in a WBL experience, when appropriate.

## **Demonstrating Ethical Behavior with Computer Systems Technology**

- 39 Describe security issues related to computer hardware, software, and data.
- 40 Explain concepts related to copyright, public domain, copy protection, intellectual property, and licensing agreements.
- 41 Describe concepts of cybersecurity, honesty, courtesy, and confidentiality related to information and email systems and social networking (e.g., spam, viruses, and etiquette).
- 42 Analyze Internet privacy issues and computer crimes, including identity theft.
- 43 Comply with copyright and patent laws.
- 44 Comply with policies regarding acceptable use of technology.

## **Exploring Windows Operating Systems**

- 45 Compare features and requirements of Microsoft operating systems.
- 46 Install Windows PC operating systems.
- 47 Apply Microsoft command line tools.
- 48 Use Microsoft OS features and tools.
- 49 Use Windows Control Panel utilities.
- 50 Install Windows networking on a client/desktop.
- 51 Perform common preventive maintenance procedures.

## **Exploring Other Operating Systems and Technologies**

- 52 Identify common features and functions of the macOS and Linux OS.
- 53 Set up virtual machines on a host computer.
- 54 Identify basic cloud concepts.
- 55 Describe services provided by networked hosts.
- 56 Identify basic features of mobile operating systems.
- 57 Set up mobile device network connectivity and email.
- 58 Synchronize mobile devices.

## **Applying Operational Procedures**

- 59 Analyze appropriate safety procedures.
- 60 Analyze controls and their impact on the environment.
- 61 Summarize the process of addressing prohibited content/activity.
- 62 Explain privacy, licensing, and policy concepts.
- 63 Demonstrate communication techniques and professionalism.
- 64 Explain the troubleshooting theory.

## **Understanding Security**

- 65 Identify common threats and vulnerabilities.
- 66 Describe the methods used to make computers and networks more secure.
- 67 Configure security settings.
- 68 Describe methods for securing mobile devices.
- 69 Use data destruction and disposal methods.
- 70 Secure SOHO wireless and wired networks.
- 71 Troubleshoot PC OS problems.
- 72 Troubleshoot common PC security issues.
- 73 Troubleshoot mobile OS and application issues.
- 74 Troubleshoot mobile OS and application security issues.

## **Exploring Network Architecture**

- 75 Explain the functions and applications of various network devices.
- 76 Compare networking services and applications.
- 77 Install networking services/applications.

- 78 Explain the characteristics and benefits of various wide area network (WAN) technologies.
- 79 Install various cable types and connectors.
- 80 Differentiate between common network topologies.
- 81 Differentiate between network infrastructure implementations.
- 82 Configure addressing schema.
- 83 Explain basic routing concepts and protocols.
- 84 Identify the basic elements of unified communication (UC) technologies.
- 85 Compare technologies that support cloud virtualization.
- 86 Given a set of requirements, implement a basic network.

### **Exploring Network Operations**

- 87 Demonstrate use of monitoring tools.
- 88 Analyze metrics and reports from monitoring and tracking performance tools.
- 89 Demonstrate use of resources to support configuration management.
- 90 Explain the importance of implementing network segmentation.
- 91 Install patches and updates.
- 92 Configure a switch.
- 93 Install wireless LAN infrastructure.

### **Understanding Network Security**

- 94 Compare risk-related concepts.
- 95 Compare common network vulnerabilities and threats.
- 96 Demonstrate network hardening techniques.
- 97 Compare physical security controls.
- 98 Install a basic firewall.
- 99 Explain the purpose of various network access control models.
- 100 Describe basic forensic concepts.

### **Troubleshooting Networks**

- 101 Implement network troubleshooting methodology.
- 102 Analyze the output of troubleshooting tools.
- 103 Troubleshoot common wireless issues.
- 104 Troubleshoot common copper cable issues.
- 105 Troubleshoot common fiber cable issues.
- 106 Troubleshoot common network issues.
- 107 Troubleshoot common security issues.
- 108 Troubleshoot common WAN issues.

### **Applying Industry Standards, Practices, and Network Theory**

- 109 Describe OSI layers.
- 110 Explain the basics of network theory and concepts.
- 111 Deploy the appropriate wireless standard.
- 112 Deploy wired connectivity standards.
- 113 Implement network policies and procedures.
- 114 Summarize safety practices.
- 115 Install equipment.
- 116 Explain the basics of change management procedures.
- 117 Compare ports and protocols.
- 118 Configure ports and protocols.

Aaron C. Spence, Ed.D., Superintendent  
Virginia Beach City Public Schools  
2512 George Mason Drive, Virginia Beach, VA 23456-0038

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For further information, please call (757) 263-1070.

### **Notice of Non-Discrimination Policy**

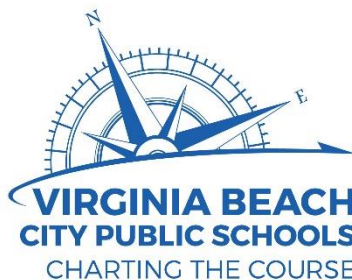
Virginia Beach City Public Schools does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation/gender identity, pregnancy, childbirth or related medical condition, disability, marital status, age, genetic information or veteran status in its programs, activities, employment, or enrollment, and provides equal access to the Boy Scouts and other designated youth groups. School Board policies and regulations (including, but not limited to, Policies 2-33, 4-4, 5-7, 5-19, 5-20, 5-44, 6-33, 6-7, 7-48, 7-49, 7-57 and Regulations 4-4.1, 4-4.2, 5-44.1, 7-11.1, 7-17.1 and 7-57.1) provide equal access to courses, programs, enrollment, counseling services, physical education and athletic, vocational education, instructional materials, extracurricular activities and employment.

Title IX Notice: Complaints or concerns regarding discrimination on the basis of sex or sexual harassment should be addressed to the Title IX Coordinator, at the VBCPS Office of Student Leadership, 641 Carriage Hill Road, Suite 200, Virginia Beach, 23452, (757) 263-2020, [Mary.Dees@vbschools.com](mailto:Mary.Dees@vbschools.com) (student complaints) or the VBCPS Department of School Leadership, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia, 23456 (757) 263-1088, [Elizabeth.Bryant@vbschools.com](mailto:Elizabeth.Bryant@vbschools.com) (employee complaints). Additional information regarding Virginia Beach City Public Schools' policies regarding discrimination on the basis of sex and sexual harassment, as well as the procedures for filing a formal complaint and related grievance processes, can be found in School Board Policy 5-44 and School Board Regulations 5-44.1 (students), School Board Policy 4-4 and School Board Regulation 4-4.3 (employees), and on the School Division's website at [Diversity, Equity and Inclusion/Title IX](#). Concerns about the application of [Section 504 of the Rehabilitation Act](#) should be addressed to the Section 504 Coordinator/Executive Director of Student Support Services at (757) 263-1980, 2512 George Mason Drive, Virginia Beach, Virginia, 23456 or the Section 504 Coordinator at the student's school. For students who are eligible or suspected of being eligible for special education or related services under IDEA, please contact the Office of Programs for Exceptional Children at (757) 263-2400, Plaza Annex/Family and Community Engagement Center, 641 Carriage Hill Road, Suite 200, Virginia Beach, VA 23452.

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Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write The Department of Teaching and Learning, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038. Telephone 263-1070 (voice); fax 263-1424; 263-1240 (TDD) or email at [Brandon.Martin@vbschools.com](mailto:Brandon.Martin@vbschools.com).

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