



# Program Plan

## Knox Technical Center IT – Computer Systems & Networking

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Knox Technical Center  
Adult Education at KCCC  
Coordinator: Varvara Bondarenko  
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Coordinator Office Hours: 9 am – 5 pm  
Preferred Method of Contact: email

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Mount Vernon, OH 43050  
School Phone: 740.393.2933  
School Fax: 740.397.1659  
Web Site: [www.knoxtechnicalcenter.org](http://www.knoxtechnicalcenter.org)  
School Office Hours: Mon-Thurs 7:30 am – 7:00 pm  
Fri 7:30 am – 4:00 pm

### I. GENERAL INFORMATION

- A. Mission Statement: Our mission is to provide cutting-edge programs that prepare adults with career and lifelong learning skills.
- B. Adult Education Director: Kim Williams  
740.393.2933, ext. 1106  
[kwilliams@knoxcc.org](mailto:kwilliams@knoxcc.org)
- Instructor: Mr. Andrew Beal  
740.393.2933  
[abeal@knoxcc.org](mailto:abeal@knoxcc.org)
- C. Disability Accommodations. Any learner needing special accommodation on the basis of any disability must advise the instructor at the beginning of class. All necessary accommodations will be made upon presentation of relevant certification, presented in a timely manner. Learners are also responsible for making contact with the Program Coordinator prior to the start of class. For detailed KCCC Bylaws & Policies pertaining to Reasonable Accommodation, see Section 2260.01-Section 504 – ADA Prohibition Against Discrimination Based on Disability located on the website at [www.knoxcc.org](http://www.knoxcc.org).
- D. Equal Opportunity. It is the policy of the Knox County Career Center School District that employment, educational programs, and activities are provided without regard to race, color, national origin, sex, or disability. Any learner with a disability should contact the program coordinator. The Board designates the Director as the Title VI, Title IX, and Section 504 Coordinator.



- E. Title IV Eligibility. This program has been approved for Title IV funding. Adult learners requesting information about financial assistance should contact Financial Aid Coordinator Sheryl Mickley.

## II. RATIONALE FOR PROGRAM

- Employment of computer support specialists is projected to grow 12 percent from 2014 to 2024, faster than the average for all occupations. More support services will be needed as organizations upgrade their computer equipment and software ([www.bls.gov/ooh](http://www.bls.gov/ooh)).
- As of May 2, 2022, 511 jobs relating to IT support Specialists within 50 miles of Knox Technical Center/KCCC were posted on the Ohio Means Jobs website ([www.ohiomeansjobs.com](http://www.ohiomeansjobs.com)).
- As of June 2021, 60% are working in the field of Information Technology.
- June 2021 cohort had a 100% certification passage rate.

## III. PROGRAM DESCRIPTION

The IT - Computer Systems & Networking Program is a 620-hour IT program designed to prepare IT support technicians with the skills, knowledge, and attitudes necessary to pass the A + Core 1 and A + Core 2 certification examinations, the Network + certification examination, Security + certification examination, all offered by CompTIA ([www.comptia.org](http://www.comptia.org)).

The program content matches requirements as established by Computing Technology Industry Association.

## IV. PROGRAM GOALS/OBJECTIVES

- Provide fundamental entry-level skills and knowledge required to pass the CompTIA A +, Network +, and Security + certifications.
- Provide instruction as well as hands-on practice of the skills necessary to acquire entry-level employment or to enhance career opportunities for those already working in the field.
- Provide a bridge for career pathways.
- Provide quality career-oriented instruction utilizing modern teaching techniques, technology, and application.
- Graduate prepared and competent entry-level Computer Systems and Networking professionals.

## V. PROGRAM OUTCOMES



After the completion of the Computer Systems & Networking Program, a learner will be able to:

- Demonstrate knowledge of mobile devices
  - Install and configure laptop hardware and components
  - Compare and contrast the display components of mobile devices
  - Set up and configure accessories and ports of mobile devices
  - Configure basic mobile-device network connectivity and application support
- Demonstrate knowledge of networking
  - Compare and contrast TCP and UDP ports, protocols, and their purposes
  - Compare and contrast common networking hardware
  - Compare and contrast protocols for wireless networking
  - Summarize services provided by networked hosts
  - Install and configure basic wired/wireless small office/home office (SOHO) networks
  - Compare and contrast common network configuration concepts
  - Compare and contrast Internet connection types, network types, and their features
  - Use networking tools
- Demonstrate knowledge of hardware
  - Explain basic cable types and their connectors, features, and purposes
  - Install the appropriate RAM
  - Select and install storage devices
  - Install and configure motherboards, central processing units, and add-on cards
  - Install or replace the appropriate power supply
  - Deploy and configure multifunction devices/printers and settings
  - Install and replace printer consumables
- Demonstrate knowledge of virtualization and cloud computing
  - Summarize cloud-computing concepts
  - Summarize aspects of client-side virtualization
- Demonstrate knowledge of hardware and network troubleshooting
  - Apply the best practice methodology to resolve problems
  - Troubleshoot problems related to motherboards, RAM, CPU, and power
  - Troubleshoot and diagnose problems with storage drives and RAID arrays
  - Troubleshoot video, projector, and display issues
  - Troubleshoot common issues with mobile devices
  - Troubleshoot and resolve printer issues
  - Troubleshoot problems with wired and wireless networks
- Demonstrate knowledge of operating systems
  - Compare and contrast common operating system types and their purposes
  - Compare and contrast features of Microsoft Windows versions
  - Summarize general OS installation considerations and upgrade methods
  - Use appropriate Microsoft command line tools



- Use Microsoft operating system features and tools
- Use Microsoft Windows Control Panel utilities
- Summarize application installation and configuration concepts
- Configure Microsoft Windows networking on a client/desktop
- Use features and tools of the Mac OS and Linux client/desktop operating systems
- Demonstrate knowledge of security
  - Summarize the importance of physical security measures
  - Explain logical security concepts
  - Compare and contrast wireless security protocols and authentication methods
  - Detect, remove, and prevent malware using appropriate tools and methods
  - Compare and contrast social engineering, threats, and vulnerabilities
  - Compare and contrast the differences of basic Microsoft Windows OS security settings
  - Implement security best practices to secure a workstation
  - Implement methods for securing mobile devices
  - Implement appropriate data destruction and disposal methods
  - Configure security on SOHO wireless and wired networks
- Demonstrate knowledge of software troubleshooting
  - Troubleshoot Microsoft Windows OS problems
  - Troubleshoot and resolve PC security issues
  - Use best practice procedures for malware removal
  - Troubleshoot mobile OS and application issues
  - Troubleshoot mobile OS and application security issues
- Demonstrate knowledge of operational procedures
  - Compare and contrast best practices associated with types of documentation
  - Implement basic change management best practices
  - Implement basic disaster prevention and recovery methods
  - Explain common safety procedures
  - Explain environmental impacts and appropriate controls
  - Explain the processes for addressing prohibited content/activity, and privacy, licensing, and policy concepts
  - Use proper communication techniques and professionalism
  - Identify the basics of scripting
  - Use remote access technologies
- Demonstrate knowledge of networking fundamentals
  - Compare and contrast the open systems Interconnection (OSI) model layers and encapsulation concepts
  - Explain the characteristics of network topologies and network types
  - Summarize the types of cables and connectors and explain which is the appropriate type for a solution
  - Configure a subnet and use appropriate IP addressing schemes
  - Explain common ports and protocols, their application, and encrypted alternatives



- Explain the use and purpose of network services
  - Explain basic corporate and datacenter network architecture
  - Summarize cloud concepts and connectivity options
- Demonstrate knowledge of network implementations
  - Compare and contrast various devices, their features, and their appropriate placement on the network
  - Compare and contrast routing technologies and bandwidth management concepts
  - Configure and deploy common Ethernet switching features
  - Install and configure the appropriate wireless standards and technologies
- Demonstrate knowledge of network operations
  - Use the appropriate statistics and sensors to ensure network availability
  - Explain the purpose of organizational documents and policies
  - Explain high availability and disaster recovery concepts and summarize which is the best solution
- Demonstrate knowledge of network security
  - Explain common security concepts
  - Compare and contrast common types of attacks
  - Apply network hardening techniques
  - Compare and contrast remote access methods and security implications
  - Explain the importance of physical security
- Demonstrate knowledge of network troubleshooting
  - Explain the network troubleshooting methodology
  - Troubleshoot common cable connectivity issues and select the appropriate tools
  - Use the appropriate network software tools and commands
  - Troubleshoot common wireless connectivity issues
  - Troubleshoot general networking issues
- Demonstrate knowledge of threats, attacks, and vulnerabilities
  - Analyze indications of compromise and determine the type of malware
  - Compare and contrast different types of attacks
  - Explain threat actor types and attributes
  - Explain penetration testing concepts
  - Explain vulnerability scanning concepts
  - Explain the impact associated with types of vulnerabilities
- Demonstrate knowledge of technologies and tools
  - Install and configure network components, both hardware- and software-based, to support organizational security
  - Use appropriate software tools to assess the security posture of an organization
  - Troubleshoot common security issues
  - Analyze and interpret output from security technologies
  - Deploy mobile devices securely
  - Implement secure protocols
- Demonstrate knowledge of network architecture and design



- Explain use cases and purpose for frameworks, best practices and secure configuration guides
- Implement secure network architecture concepts
- Implement secure systems design
- Explain the importance of secure staging deployment concepts
- Explain the security implications of embedded systems
- Summarize secure application development and deployment concepts
- Summarize cloud and virtualization concepts
- Explain how resiliency and automation strategies reduce risk
- Explain the importance of physical security controls
- Demonstrate knowledge of identity and access management
  - Compare and contrast identity and access management concepts and controls
  - Install and configure identity and access services
  - Differentiate common account management practices
- Demonstrate knowledge of risk management
  - Explain the importance of policies, plans, and procedures related to organizational security
  - Summarize business impact analysis concepts
  - Explain risk management processes and concepts
  - Follow incident response procedures
  - Summarize basic concepts of forensics
  - Explain disaster recovery and continuity of operation concepts
  - Compare and contrast various types of controls
  - Carry out data security and privacy practices
- Demonstrate knowledge of cryptography and PKI
  - Compare and contrast basic concepts of cryptography
  - Explain cryptography algorithms and their basic characteristics
  - Install and configure wireless security settings
  - Implement public key infrastructure

## **VI. CREDENTIALS**

A +, Network +, Security + Certification(s) available through Computing Technology Industry Association (CompTIA). Topics will be introduced in increments of 4 terms, and the student will attempt certification at the end of each of four (4) terms.

## **VII. TARGET POPULATION**

- Any person 18 years of age and older with a high school diploma or GED
- Any person interested in a career in information technology and/or career enhancement within the industry.



## VIII. PROGRAM MODEL

- A. 620 hours of instruction
- Classes take place Mondays through Thursdays, 5:00 pm – 9:30 pm
  - Theory and lab are blended, with approximately 25% theory in each topic area

## IX. ASSESSMENT STRATEGIES

- A. Preassessment Skills Review
- WorkKeys
  - Aspire remediation referral when applicable.
- B. Throughout Program
- WorkKeys
  - Topic quizzes
  - Topic exams
  - Competency checks
  - Homework
  - Projects
  - Group work
- C. Graduation
- Maintain a 75% or higher per term
  - Maintain 90% attendance per term and overall
  - Successfully complete all coursework
  - Successfully complete all competency checks and other related work
  - Participate in all classroom and group activities

## X. EVALUATION PLAN TO DETERMINE PROGRAM EFFECTIVENESS

- Survey of graduates entering into the industry within six months of graduation to determine employment rate
- Survey of employers to determine employment success of graduates
- Maintain close contact with industry professionals in the community to determine the strengths and or weaknesses of the program/graduates
- Learner evaluation of instructors halfway through the program and at the end of the program
- Learner evaluation of course halfway through the program and at the end of the program
- Meetings with Advisory Committee at least twice a year (spring and fall)
- Meetings with Faculty or with director or advisor on a monthly basis



## XI. TRAINING PATHWAYS

- B. Before: A career pathway system is a series of connected educational and training programs and support services that prepare and enable individuals, often while they are working, to secure a job and advance over time to successively higher levels of education and employment in a specific industry/field. Pathway goals are to increase access, awareness, affordability, resources, and alignment for high school students, adult learners, and the current workforce.

The Knox Technical Center's Adult Computer Systems & Networking program is an entry-level program designed for learners with little to novice experience in the field of information technology, those who already work in the field and wish to enhance their skills, or those who simply wish to enter an information technology career pathway.

Prior to admission, potential learners must have the following:

- High school diploma or GED
  - Completed application form with a \$50 deposit
  - Skills Assessment (WorkKeys)
  - Appointment with the financial coordinator
- B. After: University System of Ohio CT2 plus articulation agreements with higher institutions such as Central Ohio Technical College (COTC) and North Central State College (NCSC) will be pursued.