PC AGE.edu

Internetwork Engineering

IT & Cybersecurity Career Training with Cloud & AI Skills

Available On-Campus • Hybrid • Live Online

960 Clock Hours/54 Credits

Prepares students for:

CompTIA® A+, Network+, Security+, Cybersecurity Analyst (CySA+)*
Microsoft® Azure Fundamentals, Microsoft® Azure AI Fundamentals and Microsoft® Azure Administrator
Splunk® Fundamentals*, Wireshark® Fundamentals*, and Linux Fundamentals

Build a High-Level Career in IT, Cybersecurity, Cloud & AI

The IT and Cybersecurity industries continue to evolve rapidly with the growth of cloud computing, artificial intelligence, and digital security. The Internetwork Engineering program is designed to prepare career changers and aspiring IT professionals for today's technology workforce through hands-on, job-focused training.

Students receive practical experience with:

- Windows & PC Support
- Networking & Infrastructure
- Cybersecurity Fundamentals
- Cloud Computing & Microsoft Azure
- Linux Systems
- AI & Cloud-Based AI Technologies

This 960-hour career training program prepares students for entry-level technical support, networking, cloud, and cybersecurity roles while building a strong foundation for long-term career growth.

Career Opportunities

Graduates may qualify for positions such as:

- IT Support Specialist
- Help Desk Technician
- Desktop Support Technician
- Junior Network Administrator
- Cloud Support Specialist
- IT Security Technician

Advanced students may continue into cybersecurity specialization training for higher-level security and analysis roles. The program incorporates **Job Placement** assistance including resume building, job searching strategies and preparation for technical interviews. The Technical Career Preparation Workshop includes **Life Skills** training such as goal setting, self-improvement and practical time and money management, all vital for success in the modern world.

Advanced Cybersecurity Specialization*

(Selective/Optional Advanced Training)

Students who demonstrate strong technical ability and successfully pass at least one certification exam may continue into advanced cybersecurity specialization training including:

- CompTIA CySA+
- Wireshark Network Analysis
- Splunk SIEM & Security Monitoring

This advanced specialization is intended for students preparing for security operations and cybersecurity analysis roles.

Why PC AGE? We are a professional career training institute designed for career changers and motivated high school graduates who want to build a long-term career in technology. Real IT professionals need a strong foundation that takes time, structure, hands-on practice, discipline, and mentorship. Our program offers that foundation. Our graduates are prepared not only for their first IT job, but for long-term career growth.

Core Course Outline

Code	Major Courses	Hours	Credits	Prepares for
IE100	Introduction to Computers and Internet Fundamentals	120	6	
IE110	Computer Hardware Installation and Troubleshooting	96	6	
IE115A	Networking Fundamentals I	72	4	
IE115B	Networking Fundamentals II	72	4	
IE115C	Networking Fundamentals III	72	4	
IE122	Supporting Microsoft Windows Server OS	72	4	
IE140	Planning and Maintaining Windows Cloud Infrastructure	72	4	
IE160	Provisioning and Maintaining a Cloud AI Infrastructure	72	4	
UN100	Linux System Administration I	72	4	
IE180	Implementing & Managing Security in a Microsoft Windows Network I	72	4	
IE180C	Implementing & Managing Security in a Microsoft Windows Network II	72	4	
IE170	Technical Career Preparation Workshop	30	2	Career Workshop and Final Project
IE200	Designing, Implementing & Troubleshooting Project	21	1	
IE210	Cloud Computing Administration	45	3	
	Internetwork Engineering Total Hours	**960**	**54**	

Cybersecurity Track Course Outline (Optional)

Code	Major Courses	Hours	Credits	Prepares for
IE230	Implementing Advanced Network Security I	72	4	
IE230C	Implementing Advanced Network Security II	72	4	
IE240	Cybersecurity Defense Fundamentals	72	4	
	Cybersecurity Track Total Hours	**216**	**12**	

Note: Taking any industry certification exam is optional. The school does not award any industry certification. Certification is not a precondition of employment nor required to perform employable functions represented in PC AGE's programs.

Leverage Your Training

Associate in Applied Science (AAS) - Applied Computer Studies
or
Bachelors in Information Technology
(https://www2.tesu.edu/oplr/client2.php?client=PCAGE-3)

Thomas Edison State University (TESU)		PC AGE Internetwork Engineering	
II. Administrative Studies (6 Credits)		**Program Option**	
Applied Computer Studies	**6**		
ITS-140	3	IE115 Networking Fundamentals	4
CMP-122	3	IE122 Microsoft Server Operating System	4
III. Electives (3 credits)	**3**	**Electives**	
CYB-220	3	IE180 Implementing and Managing Security and IE230 Advanced Network Security	8
Total Credits toward TESU Degree	**9**		

PC AGE has an articulation agreement creating a college degree pathway with Thomas Edison State University (TESU), a regionally accredited institution of higher education. Successful PC AGE graduates of the Internetwork Engineering program may be awarded credits toward TESU's Associate of Applied Science (AAS) in Applied Computer Studies or Bachelor's in Information Technology. TESU has one of the most flexible transfer credit policies in the country, so PC AGE graduates may also be able to apply credit earned at other regionally accredited colleges and universities toward this degree. TESU Featured Courses are listed as a guide. Please contact your admissions representative for eligibility details. Courses and credits transferred may be subject to change.

Bachelors in Cybersecurity and Information Assurance (BS)
(https://www.wgu.edu/online-it-degrees/cybersecurity-information-assurance-bachelors-program.html)

Western Governors University (WGU)		PC AGE Internetwork Engineering	
I. IT, Network and Security (20 Credits)		**Program Option (with passed certification)**	
IT Foundations	4	IE110 Computer Hardware Installation and Troubleshooting	6
IT Applications	4	IE100 Introduction to Computers and Internet Fundamentals	6
Networks	4	IE115 Networking Fundamentals	4
Network and Security - Applications	4	IE180 Microsoft Security	4
Cyber Defense and Countermeasures	4	IE230 Advanced Network Security	4
Total Credits toward WGU Degree	**20**		

Internetwork Engineering program

IE100: Introduction to Computers & Internet Fundamentals

Objective: Give students an overview of the personal computer, operating systems, Internet technologies, Network Security and Professional Ethics. This course prepares students for CompTIA A+ Exam 220-1202.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand Microsoft Operating System fundamentals
b. Install, configure, and upgrade Microsoft Operating Systems
c. Perform diagnosing and troubleshooting of Microsoft Operating Systems
d. Understand basic wired/wireless networking
e. Understand and configure Internet web browsers

IE110: Computer Hardware Installation and Troubleshooting

Objective: Give students the essential operating competencies for an entry-level IT professional or PC Service Technician. This course prepares students for CompTIA A+ Exam 220-1201.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Install, configure and upgrade computers
b. Diagnose and troubleshoot computer related problems
c. Configure the motherboard, processor, and memory
d. Troubleshoot printers
e. Understand Basic Networking

IE115A: Networking Fundamentals I

Objective: A typical candidate would have CompTIA's A+ certification or equivalent knowledge and would be able to install, configure and troubleshoot basic networking hardware, protocols and services. This course, together with IE115B and IE115C, prepares students for CompTIA Network+ Exam N10-009.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand Media and Topologies
b. Understand Protocols and Standards
c. Understand the Terminology of Network Implementation
d. Understand Network Support
e. Understand Wired/Wireless technologies

IE115B: Networking Fundamentals II

Objective: A typical candidate would have CompTIA's A+ certification or equivalent knowledge and would be able to install, configure and troubleshoot basic networking hardware, protocols and services. This course, together with IE115A and IE115C, prepares students for CompTIA Network+ Exam N10-009.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand Media and Topologies
b. Understand Protocols and Standards
c. Understand the Terminology of Network Implementation
d. Understand Network Support
e. Understand Wired/Wireless technologies

IE115C: Networking Fundamentals III

Objective: A typical candidate would have CompTIA's A+ certification or equivalent knowledge and would be able to install, configure and troubleshoot basic networking hardware, protocols and services. This course, together with IE115A and IE115B, prepares students for CompTIA Network+ Exam N10-009.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand Media and Topologies
b. Understand Protocols and Standards
c. Understand the Terminology of Network Implementation
d. Understand Network Support
e. Understand Wired/Wireless technologies

IE122: Supporting Microsoft Server Operating System

Objective: Students will learn to operate in medium to very large computing environments that use the Windows 2022 Server operating system.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a, Configure TCP/IP settings
b. Install Windows Server 2022
c. Deploy and configure network core services
d. Implement address management
e. Deploy and configure Active Directory

IE140: Planning and Maintaining Windows Cloud Infrastructure

Objective: Students will learn to describe cloud concepts, core Azure services, and Azure management and governance features and tools in preparation for the Microsoft Azure Fundamentals certification exam. This course prepares students for Microsoft Exam AZ-900.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Define cloud computing and concepts
b. Implement core solutions and tools
c. Configure general security and network settings
d. Deploy Azure identity, access and security
e. Implement cost management mechanisms

IE160: Provisioning and Maintaining a Cloud AI Infrastructure

Objective: Students will learn how to manage, monitor, configure, and troubleshoot a Microsoft Azure cloud and AI infrastructures. This course prepares students for Microsoft Exam AI-900.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Define fundamental AI concepts
b. Implement core AI solutions using Python
c. Describe and use computer vision
d. Deploy AI solutions in Microsoft Azure
e. Manage Azure costs and AI services

UN100: Linux System Administration I

Objective: Enable a student to install and support Linux environments and provide fundamental support to networked Linux environments.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Install Linux Operating System
b. Install Linux software packages and patches
c. Manage user and Group accounts
d. Manage files and directory structure, file permissions and ownership
e. Perform administrative tasks and customize the shell environment

IE180: Implementing and Managing Security in a Microsoft Windows Network I

Objective: Give students the knowledge and skills to design, implement, administer, and troubleshoot network security. This course, together with IE180C, prepares students for the CompTIA Security+ exam SY0-701.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand the concepts of authentication, encryption, access control and logging
b. Implement hardening practices and procedures
c. Differentiate between different network devices and their roles
d. Conduct risk assessments and implement risk mitigation
e. Identify and implement appropriate disaster recovery procedures

IE180C: Implementing and Managing Security in a Microsoft Windows Network II

Objective: Give students the knowledge and skills to design, implement, administer, and troubleshoot network security. This course, together with IE180, prepares students for the CompTIA Security+ exam SY0-701.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Understand the concepts of authentication, encryption, access control and logging
b. Implement hardening practices and procedures
c. Differentiate between different network devices and their roles
d. Conduct risk assessments and implement risk mitigation
e. Identify and implement appropriate disaster recovery procedures

IE170: TCPW Technical Career Preparation Workshop

This workshop prepares students to seek employment in the computer networking field. Students will learn how to create an effective resume, methods for job search, and how to get ready for a job interview. Includes online modules on Life Skills such as goal setting and time and money management.

IE210: Cloud Computing Administration

Objective: Students will learn how to implement, manage, monitor, and troubleshoot core Microsoft Azure services. This course prepares students for the Microsoft Azure Administrator (AZ-104) certification.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Manage Azure identities and governance
b. Implement and manage Azure storage
c. Deploy and manage Azure compute resources
d. Configure and manage virtual networking
e. Monitor, optimize, and troubleshoot Azure resources

IE200: Designing, Implementing & Troubleshooting Project

Objective: Enable the student to Design, Implement, and Troubleshoot Local and Wide Area networks working as a team.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Design and Implement a TCP/IP Network for a medium sized company
b. Install and configure all the components of a network including application servers
c. Implement firewall and Internet Access
d. Install and configure Cisco routers for public network access
e. Implement Remote Access to access company network through Internet

Cybersecurity Track (Optional)

IE230: Implementing Advanced Network Security I

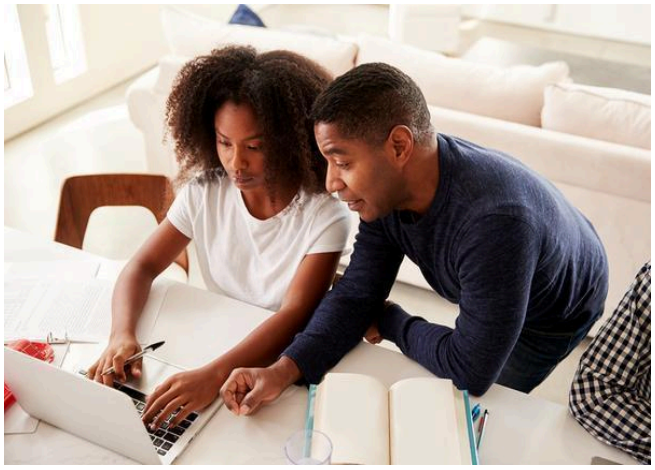
Objective: Provide students with skills on risk management, research and identification of threats and applicable countermeasures and learn how to collaborate securely. This course, together with IE230C, prepares students for the CompTIA Cybersecurity Analyst (CySA+) exam CS0-003.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Analyze network security concepts, components, and architectures, and implement controls
b. Use research and analysis to secure the enterprise
c. Implement security controls
d. Conduct vulnerability assessments
e. Conduct incident and emergency responses

IE230C: Implementing Advanced Network Security II

Objective: Provide students with skills on risk management, research and identification of threats and applicable countermeasures and learn how to collaborate securely. This course, together with IE230, prepares students for the CompTIA Cybersecurity Analyst (CySA+) exam CS0-003.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Analyze network security concepts, components, and architectures, and implement controls
b. Use research and analysis to secure the enterprise
c. Implement security controls
d. Conduct vulnerability assessments
e. Conduct incident and emergency responses

IE240: Cybersecurity Defense Fundamentals

Objective: Provides students with hands-on skills on security network management using tools such as Splunk and Wireshark. This course prepares students for the Splunk Core Certified User SPLK-1001 exam.
Learning Outcomes: Upon successful completion of this course, the student will be able to:
a. Basic searching
b. Transforming commands
c. Creating visualizations
d. Using Wireshark to capture live network traffic
e. Applying the use of capture filters



Certification Test Preparation courses are provided as additional exposure to testing objectives. Please refer to the School Catalog for the description of the Certification Test Preparation and Lab Companion courses.
Program contents may change any time, for the most updated listing please go to PCAGE.edu - Student Resources – School Catalog.
PC AGE graduates may earn a degree from our partner college TESU upon transferring a portion of the required credits. PC AGE does not award any degree.

Consumer Disclosures at PCAGE.edu/disclosures

PC AGE EDU

Learn from the Experts!

Advisory Committee

Khalid Zia; M.S. Computer and Information Systems; Director, Network Management

Dr. Ajaz Rana; Ph.D. Computer and Information Systems; IT Principal

Sahir Sarwar; M.S. Computer and Information Systems; Sr. Systems Engineer

Kavita Joshi; M.S. Computer and Information Systems; Lead Systems Analyst

Student Mentors

Connect with a Mentor - it could change your life

Bilal Zuberi; M.S. Computer Science, CISSP, CCSP, MCSE, CEH, Security+, Azure Solutions Architect Expert; AVP, Security Architect

Luis Galvez; PC AGE Graduate, A+, MCSE, MCTS, CCNA, Citrix, C++; Help Desk Manager/Senior Systems Administrator.

Faculty

Zafar Khizer, Founder, CEO and CAO: MS Computer Science, MS Electronics, Enterprise Certified Novell Engineer (ECNE), Master Certified Novell Engineer (MCNE), Microsoft Certified Systems Engineer (MCSE).

Humberto Hilario, Director of Education: M.S. Information Technology Management [Western Governors University], Certified Information Systems Security Professional (CISSP), Certified Ethical Hacker (CEH), Cisco Certified Network Associate (CCNA): Routing & Switching/Security, Certified Design Associate (CCDA), Microsoft Certified Trainer (MCT), Microsoft Certified Solutions Associate (MCSA): Server 2012/2008, VMware Certified Professional (VCP6-DCV), CompTIA A+ Certified, Network + Certified, Security+ Certified, Linux+ Certified, Cybersecurity Analyst (CySA+), CompTIA Advanced Security Practitioner (CASP) Certified.

Andrew Peruzzi: A.S. Computer Science [Sussex County Community College], Certified Ethical Hacker (CEH), Certified Network Associate (CCNA): Routing & Switching, VMware Certified Professional (VCP6-DCV), Microsoft Certified Educator (MCE), Microsoft Certified Solutions Associate (MCSA): Server 2012/2016/Windows 10, CompTIA A+ Certified, Network+ Certified, Linux+ Certified, Security+ Certified, CompTIA Advanced Security Practitioner (CASP) Certified.

Carlos Bayron: A.S. Applied Science [Hudson County Community College], RHCE - Red Hat Certified Engineer RHEL 4, MCSA - Microsoft Certified Systems Administrator Windows 2000, CompTIA A+ Certified, CompTIA Network+ Certified.

Dennis Lovatt: CompTIA A+ Certified, CompTIA Network+ Certified, CompTIA Security+ Certified, CompTIA Linux+ Certified**.**

Humberto A. Hilario: CompTIA A+ Certified, CompTIA Network+ Certified, CompTIA Security+ Certified, CompTIA Linux+ Certified, CompTIA Cybersecurity Analyst (CySA+) Certified, Microsoft Azure Fundamentals Certified, VMware Certified Associate (VCA6-DCV) Certified.

Mohamed Ismail: B.S. Business Marketing [Blida University], CompTIA A+ Certified, Network + Certified, Security+ Certified, Cisco Certified Network Associate (CCNA): Routing & Switching, Microsoft Azure Fundamentals Certified.

Shawn Lawton: B.S. Cybersecurity and Information Assurance [Western Governors University], Certified Information Systems Security Professional (CISSP), Systems Security Certified Practitioner (SSCP), Cisco Certified Network Associate (CCNA): Routing & Switching, CompTIA A+ Certified, CompTIA Healthcare IT Certified, Network + Certified, Security+ Certified, Linux+ Certified, Cybersecurity Analyst (CySA+), CompTIA Pentest+ Certified, CompTIA Project+ Certified, LPI Linux Essentials Certified, T Information Library Foundations Certification (ITIL), Proofpoint Certified Email Authentication Specialist 2025, Proofpoint Certified AI Email Security Specialist 2025, OneTrust Tech Risk & Compliance Track Badge, Enterprise Wireless Solutions Certified Network Associate, Foundations of Leadership Certificate, XM Cyber- Exposure Management Expert.

Instructional Support Staff – All Campuses

Alizeh Jafri: M.S. Cybersecurity Engineering [Middlesex University], CompTIA A+ Certified, CompTIA Network+ Certified, CompTIA Security+ Certified, Certified, Cybersecurity Analyst (CySA+).

Akaparna Debnath: CompTIA A+ Certified, CompTIA Network+ Certified, CompTIA Security+ Certified, Certified, Cybersecurity Analyst (CySA+) Certified, AWS Solutions Architect, Microsoft Azure Fundamentals Certified, Microsoft Azure AI Fundamentals Certified.

PC AGE grads continue to get the jobs and salaries they need for the life they envision.

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