

## Internetwork Engineering

Prepares students for:

**CompTIA® A+, Network+ and Security+ Certifications**

**Microsoft® Certified Information Technology Professional (MCITP) Server Administrator**

**Microsoft® Certified Information Technology Professional (MCITP) Enterprise Administrator**

**Cisco® Certified Network Associate (CCNA)**

**Introduction to Linux**

### Program Information

#### Vocational Objectives:

This program provides comprehensive training, including theoretical concepts and hands-on practice, to provide students with the expertise and skills to work as a Network Administrator/Engineer or Computer/Network Support Specialist. The graduate will have working familiarity with network hardware and software including Microsoft Windows Desktop and Server operating systems, and will be able to design, install, troubleshoot and support Microsoft and Cisco networks and implement Network Security.

PC AGE program is designed to prepare students to become CompTIA Certified A+, Network+, Security+ Technicians, Microsoft Certified Information Technology Professional (MCITP) Server Administrator and Enterprise Administrator, and Cisco Certified Network Associates (CCNA.) Students will also learn how to create an effective resume, methods for job search, and how to get ready for a job interview. Job Placement assistance is also provided.

Courses	Hours/Credits
IE 100: Introduction to Computers and Internet Fundamentals	50/3.0
IE 100T: Certification Test Preparation	22/1.0
IE 110: Computer Hardware Installation and Troubleshooting	50/3.0
IE 110T: Certification Test Preparation	22/1.0
IE 115: Networking Fundamentals	50/3.0
IE 115T: Certification Test Preparation	22/1.0
IE 121: Supporting Microsoft Windows Desktop Operating System	50/3.0
IE 121T: Certification Test Preparation	22/1.0
IE 122: Supporting Microsoft Windows Server Operating System	50/3.0
IE 122T: Certification Test Preparation	22/1.0
IE 130: Supporting Microsoft Windows Network Infrastructure	50/3.0
IE 130T: Certification Test Preparation	22/1.0
IE 140: Planning, Implementing and Administering Microsoft Windows Directory Service	50/3.0
IE 140T: Certification Test Preparation	22/1.0
IE 150: Designing a Microsoft Windows Directory Services Infrastructure	50/3.0
IE 150T: Certification Test Preparation	22/1.0
IE 160: Planning and Maintaining a Microsoft Windows Network Infrastructure	50/3.0
IE 160T: Certification Test Preparation	22/1.0
IE 170: Technical Career Preparation Workshop	30/2.0
IE 180: Implementing and Managing Security in a Microsoft Windows Network	50/3.0
IE 180T: Certification Test Preparation	22/1.0
IE 190: Introduction to Cisco Router Configuration	50/3.0
IE 190T: Certification Test Preparation	22/1.0
IE 200: Designing, Implementing & Troubleshooting Project	21/1.0
IE 210: Certification Tests Preparation	45/3.0
UN 100: Unix System Administration	50/3.0
UN 100T: Certification Test Preparation	22/1.0

Note: Taking any industry certification exam is optional. The school does not award any industry certification.

**Total Hours:**

**960 Clock Hours / 54 Credits**

## Course Information

### IE 100: Introduction to Computers & Internet Fundamentals

**Objective:** Gives students an overview of the personal computer, operating systems, Internet technologies, Network Security and Professional Ethics. This course, together with IE 110, prepares students for CompTIA A+ Exams 220-701 and 220-702.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Understand Microsoft Operating System fundamentals
- Install, configure, and upgrade Microsoft Operating Systems.
- Perform diagnosing and troubleshooting of Microsoft Operating Systems.
- Understand basic wired/wireless networking.
- Understand and configure Internet web browsers.

**Instruction:** Major topics covered in the course are: Windows XP, Windows Vista, Windows 7, OS Troubleshooting, Local Area Networking, Internet, Security and IT Professionalism .

### IE 110: Computer Hardware Installation and Troubleshooting

**Objective:** Gives students the essential operating competencies for an entry-level IT professional or PC service technician. This course, together with IE 100, prepares students for CompTIA A+ Exams 220-701 and 220-702.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Install, configure and upgrade computers
- Diagnose and troubleshoot computer related problems
- Configure the motherboard, processor, and memory
- Troubleshoot printers
- Understand Basic Networking

**Instruction:** Major topics covered in the course are: use of mouse, keyboard, USB devices, ports, motherboards, monitors, processors, memory, hard drives, CD/DVD-ROM drives, modems, and printers.

### IE 115: Networking Fundamentals

**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 prepares students for CompTIA Network+ Exam N10-004.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Understand Media and Topologies
- Understand Protocols and Standards
- Understand the Terminology of Network Implementation
- Understand Network Support
- Understand Wired/Wireless technologies

**Instruction:** Major topics covered in the course are: topologies, cable types, connectors, protocols, OSI model, WAN and LAN/WLAN, network security, network services, and network operating systems.

### IE 121: Supporting Microsoft Windows Desktop Operating System

**Objective:** This course measures your ability to implement, administer, and troubleshoot information systems that incorporate Microsoft Windows 7. The IE 121 course prepares students for Microsoft Exam 70-680.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Install, upgrade, and migrate to Windows 7
- Configure hardware, applications, and access to resources
- Configure mobile computing
- Monitor and maintain systems that run Windows 7
- Configure backup and recovery options

**Instruction:** Major topics covered in the course are: Windows 7 Professional, Administration of Resources, Troubleshooting Hardware Devices and Drivers, System Performance and Reliability, Desktop Environment, Network Protocols and Services, Driver Signing, Policies, Automated Installation, Direct Access VPN, Branch Cache, and Troubleshooting Security.

### IE 122: Supporting Microsoft Server Operating System

**Objective:** Students will learn to operate in medium to very large computing environments that use the Windows 2008 Server operating system. The IE 122 course prepares students for Microsoft Exam 70-640.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Install Windows Server 2008
- Manage Users, Computers, and Group
- Managing Sites and Replication
- Implementing Active Directory
- Install, Configure, Manage, Monitor, and Troubleshoot Certificate Services

**Instruction:** Major topics covered in the course are: Installation, Groups & User management, OUs, Domain Controller, Permission, and Backups, Windows 2008 Server Compatibility; Access to Resources, Hardware Devices and Drivers, Network Connections, and Security.

### IE 130: Supporting Microsoft Windows Network Infrastructure

**Objective:** Students will learn how to install, manage, monitor, configure, and troubleshoot DNS, DHCP, Remote Access, Network Access, and IP Routing in a Windows Server 2008 network infrastructure. This course prepares students for Microsoft Exam 70-642.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- Install, Configure, Manage, Monitor, and Troubleshoot DNS, and DHCP in a Windows Server 2008 Network Infrastructure
- Configure, Manage, Monitor, and Troubleshoot Remote Access in a Windows Server 2008 Network Infrastructure
- Install, Configure, Manage, Monitor, and Troubleshoot Network Access in a Windows Server 2008 Network Infrastructure
- Install, Configure, Manage, Monitor, and Troubleshoot IP Routing in a Windows Server 2008 Network Infrastructure
- Install, Configure, Manage, Monitor, and Troubleshoot File and Print Services

**Instruction:** Major topics covered in the course are: network infrastructure, features supported by Windows 2008, network access and services, Updating Infrastructure using Windows Server Update Services (WSUS), TCP/IP for enterprise networks, Domain Name System (DNS), and Dynamic Host Configuration Protocol (DHCP) in Active Directory-enabled environments.

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### IE 140: Planning, Implementing and Administering Microsoft Windows Directory Service

**Objective:** Provide students with skills in Windows Server 2008 related technologies working in a network that supports distributed access to Web content, media, operating systems, and applications. This course prepares students for Microsoft Exam 70-643.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- a. Install and Configure Active Directory Servers Across a Network
- b. Configure, Manage, Monitor, and Troubleshoot Virtualization
- c. Configure Windows Media Services
- d. Configure Windows SharePoint Services
- e. Configure Windows Terminal Services

**Instruction:** Major topics covered in the course are: Advanced administration tasks in a Microsoft Windows Server 2008 network, centrally managing a Windows Server 2008 network, Windows 2008 Server controls, administration tools, Active Directory objects, Web and FTP Services, SharePoint, Hyper-V, and Clusters.

### IE 150: Designing a Microsoft Windows Directory Services Infrastructure

**Objective:** Students will learn how to gather the network requirements for a business, analyze an existing network, and design an Active Directory Services Infrastructure. This includes Network Infrastructure, Directory, Services, Identity Management, Security Policies, Business Continuity, IT Administration, and IT Best Practices. This course prepares students for Microsoft Exam 70-647.

**Learning Outcomes:** Upon completion of this course, the student will be able to:

- a. Analyze Business Requirements
- b. Analyze Technical Requirements
- c. Design an Active Directory Architecture
- d. Design Service Location
- e. Design and Support Identity Services

**Instruction:** Major topics covered in the course are: Analyzing Business and Technical Requirements, Designing an Active Directory structure, Securing and delegating administrative authority over Active Directory objects, Creating an Active Directory design based on administrative Group policy requirements defined by business needs, Designing a site topology for managing Active Directory replication.

### IE 160: Planning and Maintaining a Microsoft Windows Network Infrastructure

**Objective:** The student will learn to analyze the business requirements for a network infrastructure, design and implement a network infrastructure that meets business requirements. Supporting network services such as messaging, database servers, file and print servers, firewalls, and Internet/Intranet connectivity. This course prepares students for Microsoft Exam 70-646.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- a. Analyze Business and Technical Requirements
- b. Plan Windows 2008 Routing and Remote Access
- c. Plan Internet Connectivity
- d. Plan Wide Area Network Infrastructure
- e. Design, Implement and Maintain Windows Server 2008 Network Infrastructure

**Instruction:** Major topics covered in the course are: Attributes of a Windows Server 2008 networking services infrastructure design, DHCP, name resolution with DNS, private network connectivity designs with Routing and Remote Access, RADIUS, management strategies for networking services, business requirements.

### IE 170: 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.

### IE 180: Implementing and Managing Security in a Microsoft Windows Network

**Objective:** Give students the knowledge and skills to design, implement, administer, and troubleshoot network security. This course prepares students for CompTIA Security+ exam SY0-201.

**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

**Instruction:** Major topics covered in the course are: systems security, network infrastructure components, access control and cryptography.

### IE 190: Introduction to Cisco Router Configuration (CCNA)

**Objective:** The student will learn knowledge and skills necessary to select, connect, configure, and troubleshoot the various Cisco networking devices. This course prepares students for Cisco Exam 640-802: Cisco Certified Network Associate (CCNA).

**Learning Outcomes:** Upon successful completion of this course, the student will be able to:

- a. Plan & Design a Cisco network
- b. Implement & Operate a Cisco routers and Switches
- c. Troubleshoot a Cisco routers and Switches
- d. Understand the technology related to a Cisco routers and Switches
- e. Configure and troubleshoot VLANs

**Instruction:** Major topics covered in the course are: Cisco routers, IOS commands, internetworking, LLC and MAC sub-layers, WAN technologies, routing and routed protocols, Extending Switched Networks with VLANs, Determining IP Routes, Managing IP traffic with Access Lists, Establishing Point-to-Point connections, and Establishing Frame Relay Connections

### IE 200: Designing, Implementing & Troubleshooting Project

**Objective:** Enable a 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.

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- b. Install and configure all the components of 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

**Instruction:** Major topics covered in the course are: Designing and Implementing TCP/IP networks, Implementing a domain design, Implementing application servers including webserver, Internet Security and acceleration sever, mail server, Implementing DNS server, Supporting an Upgrade Infrastructure, Configuring Cisco routers, Troubleshooting networks.

### IE 210: Certification Tests Preparation

**Objective:** Give students the knowledge to prepare for the Microsoft Windows Desktop Operating System and Server Operating System exams.

**Learning Outcomes:** Upon successful completion of this course, the student will be able to take certification exams for Microsoft Windows Desktop Operating System and Server Operating System.

**Instruction:** This course is a distance learning course. The students will be provided a list of modules to complete online.

### UN 100: Unix System Administration

**Objective:** Enable a student to install, manage, and support Linux Open System environment.

**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. Install and Configure DHCP, DNS, FTP and Web Server.
- e. Use vi editor.

**Instruction:** Major topics covered in the course are: Introduction to Unix environment and Installation of Linux; Linux operating system commands and basic Operating Environment commands, including file system navigation, file permissions, the vi text editor, command shells, and basic network use.

### IE 100T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### IE 110T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### IE 115T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### IE 121T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### IE 122T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### IE 130T: Certification Test Preparation

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### IE 140T: Certification Test Preparation

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### IE 150T: Certification Test Preparation

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### IE 180T: Certification Test Preparation

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### IE 190T: Certification Test Preparation

This course provides students extra help to prepare for the related certification exam as well as the job market.

### UN 100T: Certification Test Preparation

This course provides students help for the related course and the job market.