

# Information Technology (IT)

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## Courses

### IT 120 CompTIA A+ Practical Applications (3 Hours)

Students will gain knowledge required to install, configure and maintain software for end users. This course will also cover the basics of networking as well as networking security/forensics. Students will apply troubleshooting skills to properly and safely diagnose, resolve and document common software issues. Students will also apply appropriate customer support and soft skills, understand the basics of virtualization and examine desktop imaging and deployment. 2 hrs. lecture/wk, 2 hrs. lab/wk, 1 hr. open lab/wk.

### IT 140 Networking Fundamentals (4 Hours)

Networking Fundamentals is the first of four courses in the Cisco Certified Network Associate (CCNA) curriculum. This course introduces the architecture, structure, functions, components, and models of the internet and other computer networks. The principles and structure of Internet Protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple Local Area Network (LANs), perform basic configurations for routers and switches, and implement IP addressing schemes.

### IT 145 Routing and Switching Essentials\* (3 Hours)

**Prerequisites :** IT 140.

This course is designed to provide students with a fundamental understanding of network routing and switching. Students successfully completing this course will be able to configure and troubleshoot routers and switches and resolve common issues with Routing Information Protocol (RIP), Access Control Lists (ACLs), Dynamic Host Configuration Protocol (DHCP), Network Address Translation (NAT), Virtual Local Area Networks (VLANs) and inter-VLAN routing in Internet Protocol version 4 and 6 (IPv4 and IPv6) networks. Laboratory exercises will accompany lectures.

### IT 175 Cybersecurity Fundamentals\* (3 Hours)

**Prerequisites :** (IT 120 or IT 205) and IT 140.

This course is designed to provide students with the knowledge and skills required to install and configure systems to secure applications, networks and devices; perform threat analysis and respond with appropriate mitigation techniques; participate in risk mitigation activities; and operate with an awareness of applicable policies, laws and regulations. Students will perform these tasks to support the principles of confidentiality, integrity and availability.

### IT 201 Network Security Fundamentals\* (4 Hours)

**Prerequisites :** IT 145.

This course is designed to provide an introduction to the core security concepts and skills needed for the installation, troubleshooting and monitoring of network devices to maintain the integrity, confidentiality and availability of data and devices. Topics covered include network threats, mitigation techniques, securing network devices, implementing firewall technologies, implementing intrusion prevention, securing local area networks (LANs), implementing virtual private networks (VPNs), and managing a secure network. Hands-on exercises will be used to reinforce the concepts.

### IT 205 Implementing Windows Client (3 Hours)

The focus of this course is the use of Microsoft Windows as an operating system in a business environment. Planning a simple network system, installation and configuration of the software and hardware, resource management, connectivity, running application software under Windows, monitoring and optimizing system hardware and troubleshooting all lead the student to a deeper understanding of local area network use and administration.

### IT 209 Scaling Networks\* (4 Hours)

**Prerequisites :** IT 145.

This course is designed to provide students with the necessary knowledge and skills to interconnect and configure routers and switches in large networks. Students successfully completing this course should be able to perform switch and router administration tasks including installing, configuring and troubleshooting. Students will build networks based on the hierarchical design model supported by Virtual Local Area Networks (VLANs), VLAN Trunking Protocol (VTP), Spanning Tree Protocol (STP), Etherchannel, Hot Standby Redundancy Protocol (HSRP), Open Shortest Path First (OSPF) and Enhanced Interior Gateway Routing Protocol (EIGRP) in Internet Protocol version 4 and 6 (IPv4 and IPv6) networks.

### IT 221 Windows Server\* (3 Hours)

**Prerequisites or corequisites:** IT 120 or IT 205.

This course is designed to provide students with the knowledge and skills required to install, manage, and maintain Windows Server. Students will perform general installation tasks, as well as create and manage images for deployment. Students will configure disk and volumes, data deduplication, high availability, disaster recovery, Storage Spaces Direct and failover clustering solutions. Students will learn to manage Hyper-V and containers, as well as maintain and monitor servers in physical and compute environments.

### IT 225 Windows Active Directory Services\* (3 Hours)

**Prerequisites :** IT 221.

This course is designed to provide students with a fundamental understanding of Active Directory (AD) in Windows Server. Students will learn how to install, configure, manage and maintain Active Directory Domain Services (AD DS) as well as implement Group Policy Objects (GPOs). Students will implement and manage Active Directory Certificate Services (AD CS), Active Directory Federations Services (AD FS), Active Directory Rights Management Services (AD RMS) and Web Application Proxy (WAP).

**IT 228 Exchange Server\* (3 Hours)**

**Prerequisites :** IT 225.

This course is designed to provide network administrators with information that enhances their ability to manage an Exchange server network. Included are topics related to server and client mail management and server performance, e-mail concepts and advanced Internet networking.

**IT 230 Linux Fundamentals (3 Hours)**

This course is designed to provide students with a fundamental understanding of the Linux operating system environment. Students successfully completing this course will be able to perform Linux installation and package management; execute common Linux commands and utilities; and accomplish different system tasks such as navigating the filesystem and utilizing the resources of a basic Linux system.

**IT 231 Linux Administration\* (3 Hours)**

**Prerequisites :** IT 230.

This course is designed to provide students with the necessary knowledge and skills to perform competently as a Linux system administrator. Students successfully completing this course should be able to perform basic system administration tasks including configuring the graphical user interface, managing user accounts, managing system logging, configuring basic networking, writing shell scripts and maintaining system security.

**IT 232 Linux Networking\* (4 Hours)**

**Prerequisites :** IT 231.

This course is designed to provide students with skills that enhance their ability to manage Linux systems in a networked environment. Topics covered in this course include configuring and managing a Domain Name Server (DNS), web servers, file sharing servers, network client services, email services and network services.

**IT 233 Linux Advanced Administration\* (4 Hours)**

**Prerequisites :** IT 231.

This course is designed to provide students with the skills and techniques to perform advanced administration tasks in a networked Linux environment. Topics will include compiling the Linux kernel, configuring advanced storage solutions, customizing system startup processes, and managing advanced network connections.

**IT 238 Digital Forensics\* (3 Hours)**

**Prerequisites :** (IT 120 or IT 205) and IT 230.

This course will cover the fundamentals of computer and cyber forensics. Students will learn different aspects of digital evidence and methods to uncover illegal activities left on storage media. Various forensics tools, techniques and procedures will be used in a lab environment to perform forensic investigations.

**IT 239 Ethical Hacking\* (3 Hours)**

**Prerequisites :** IT 145 and IT 230.

This course introduces students to common computer vulnerabilities as well as exploits and techniques used by hackers. Students will develop countermeasures to mitigate attacks and strengthen system security. Topics covered include vulnerability scanning, social engineering, denial of service attacks, intrusion detection, buffer overflow and penetration testing.

**IT 245 Network Infrastructure\* (3 Hours)**

**Prerequisites :** IT 221.

This course is designed to provide students with a fundamental understanding of the networking features and functionalities in Windows Server. Students will learn how to implement and manage Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP) and IP Address Management (IPAM), as well as deploy remote access solutions such as Virtual Private Networks (VPNs) and Remote Authentication Dial-In User Service (RADIUS). Students will learn to manage Distributed File Systems (DFS) and branch cache solutions, configure high performance network features and functionality and implement Software Defined Networking (SDN) solutions such as Hyper-V Networking Virtualization (HNV) and Network Controller.

**IT 247 Accessing Wide Area Networks\* (3 Hours)**

**Prerequisites :** IT 145 and IT 209.

The focus of this course is on the Wide Area Network (WAN) technologies and network services required by converged applications in a complex network. In this course, students will learn the selection criteria of network devices and WAN technologies to meet network requirements.

**IT 256 Windows Security\* (4 Hours)**

**Prerequisites or corequisites:** IT 225 and IT 245.

This course is designed to provide students with a fundamental understanding of security in Windows Server environments. Students will learn methods and technologies used to harden server environments and secure virtual machine infrastructures using shielded and encryption-supported virtual machines and guarded fabric. Students will learn to manage the protection of Active Directory and identity infrastructures and manage privileged identities using Just in Time (JIT) and Just Enough Administration (JEA) approaches. Students will learn to implement Privileged Access Workstations (PAWs) and secure servers using a variety of methods like Local Administrator Password Solution (LAPS). Students should also be able to use threat detection solutions, such as auditing access, implementing Advanced Threat Analytics (ATA), deploying Operations Management Suite (OMS) solutions, and identifying solutions for specific Dynamic Access Control (DAC) workloads.

**IT 271 Information Technology Internship I\* (3 Hours)**

**Prerequisites** : IT 210 or IT 221 or IT 230 and department approval.

This course affords the student the opportunity to apply classroom knowledge to an actual work environment. It will provide advanced information technology students with appropriate on-the-job experience with area employers, under instructional oversight, which will promote the student's career goals. Student will work a total of 300 hours a semester at an approved job site.

**IT 272 Information Technology Internship II\* (3 Hours)**

**Prerequisites** : IT 271 and department approval.

This course is a continuation of IT 271, Internship I. It provides the student additional opportunity to apply classroom knowledge to an actual work environment. Students will work a total of 300 hours per semester at an approved job site.

**IT 292 Special Topics:\* (1-3 Hour)**

**Prerequisites** : Department approval.

This course periodically presents specialized topics in computer networking that are not available in the regularly offered curriculum. Special Topics may be repeated for credit, but only on different topics.