

Computer Operating Systems
Course Code 5322

COURSE DESCRIPTION:

The **Computer Operating Systems** course is a continuation of the Advanced Computer Repair and Service. It is designed to prepare the student to perform advanced, detailed tasks related to computer operating system configuration (Windows). Students receive instruction in operating systems, security, mobile devices, and troubleshooting. Laboratory activities provide instruction in installation, configuration, operation, maintenance, security, troubleshooting, and repair of industry-standard operating systems in accordance with industry certification standards. This course is designed for experienced IT students who have knowledge and experience administering Windows PCs and devices in a domain environment with managed access to the Internet. Experienced IT students will learn the skills you need to administer Windows 7-8.1 in a Windows Server domain environment and also provide secure, managed access to users from their non-domain joined Windows devices. Students will learn how to install and customize Windows 7-8.1 operating systems and apps, integrate and control access to domains and cloud services, and migrate and synchronize settings across multiple devices. In addition, you will learn how to implement mobile security and customize configurations using Windows management tools including Group Policy and Windows PowerShell cmdlets. You will also learn how to configure user settings and profiles, local and remote network connectivity, Client Hyper-V, virtual apps, and Internet Explorer 11. Finally, you will learn how to optimize security and provide controlled access from Windows 7-8.1 PCs and devices to specified resources through Workplace Join services and Work Folders. This course is also intended to provide foundation configuration skills for Enterprise Desktop/Device Support Technicians (EDSTs) who provide Tier 2 support to users who run Windows desktops and devices within a Windows domain environment in medium to large enterprise organizations.

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The most current listing of standards for this course/program can be found at industry sites such as the Microsoft Web site at Exam MS 70-680 & 70-687 Certifications

<https://www.microsoft.com/learning/en-us/mcsa-windows-7-certification.aspx>

<https://www.microsoft.com/learning/en-us/mcsa-windows-8-certification.aspx>

OBJECTIVE:

Given the necessary equipment, materials, and instruction, the student, on completion of the prescribed course of study, will be able to successfully accomplish the following standards.

COURSE CREDITS: 1 or 2 units

PREREQUISITE(S): Computer Repair and Service and/or passing score on applicable industry certification such as CompTIA A+ 220-801, 220-802

RECOMMENDED GRADE LEVEL: 11-12

A. SAFETY AND ETHICS

1. Identify major causes of work-related accidents in offices.

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2. Describe the threats to a computer network, methods of avoiding attacks, and options in dealing with virus attacks.
3. Identify potential abuse and unethical uses of computers and networks.
4. Explain the consequences of illegal, social, and unethical uses of information technologies, e.g., piracy; illegal downloading; licensing infringement; and inappropriate uses of software, hardware, and mobile devices.
5. Differentiate between freeware, shareware, and public domain software copyrights.
6. Discuss computer crimes, terms of use, and legal issues such as copyright laws, fair use laws, and ethics pertaining to scanned and downloaded clip art images, photographs, documents, video, recorded sounds and music, trademarks, and other elements for use in Web publications.
7. Identify netiquette including the use of email, social networking, blogs, texting, and chatting.
8. Describe ethical and legal practices in business professions such as safeguarding the confidentiality of business-related information.

B. EMPLOYABILITY SKILLS

1. Identify positive work practices, e.g., appropriate dress code for the workplace, personal grooming, punctuality, time management, and organization.
2. Demonstrate positive interpersonal skills, e.g., communication, respect, and teamwork.

C. STUDENT ORGANIZATIONS

1. Explain how related student organizations are integral parts of career and technology education courses.
2. Explain the goals and objectives of related student organizations.
3. List opportunities available to students through participation in related student organization conferences/competitions, community service, philanthropy, and other activities.
4. Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.

D. Install and upgrade to Windows 7 to 8.1 (10–15%)

1. Evaluate hardware readiness and compatibility
 - a) Choose between an upgrade and a clean installation; determine which SKU to use, including Windows RT; determine requirements for particular features, including Hyper-V, Miracast display, pervasive device encryption, virtual smart cards, and Secure Boot
2. Install Windows 7 to 8.1
 - a) Install as Windows To Go, migrate from previous versions of Windows to Windows 8.1, upgrade from Windows 7 or Windows 8 to Windows 8.1, install to VHD, install additional Windows features, configure Windows for additional languages

3. Migrate and configure user data
 - a) Migrate user profiles; configure folder location; configure profiles, including profile version, local, roaming, and mandatory

E. Configure hardware and applications (10–15%)

1. Configure devices and device drivers
 - a) Install, update, disable, and roll back drivers; resolve driver issues; configure driver settings, including signed and unsigned drivers; manage driver packages
2. Install and configure desktop apps and Windows Store apps
 - a) Install and repair applications by using Windows Installer, configure default program settings, modify file associations, manage access to Windows Store
3. Control access to local hardware and applications
 - a) Configure application restrictions, including Software Restriction Policies and AppLocker; manage installation of and access to removable devices; configure Assigned Access
4. Configure Internet Explorer 11 and Internet Explorer for the desktop
 - a) Configure compatibility view; configure Internet Explorer 11 settings, including add-ons, downloads, security, and privacy
5. Configure Hyper-V
 - a) Create and configure virtual machines, including integration services; create and manage checkpoints; create and configure virtual switches; create and configure virtual disks; move a virtual machine's storage

F. Configure network connectivity (10–15%)

1. Configure IP settings
 - a) Configure name resolution, connect to a network, configure network locations
2. Configure networking settings
 - a) Connect to a wireless network, manage preferred wireless networks, configure network adapters, configure location-aware printing
3. Configure and maintain network security

- a) Configure Windows Firewall, configure Windows Firewall with Advanced Security, configure connection security rules (IPsec), configure authenticated exceptions, configure network discovery
4. Configure remote management
 - a) Choose the appropriate remote management tools; configure remote management settings; modify settings remotely by using MMCs or Windows PowerShell; configure Remote Assistance, including Easy Connect

G. Configure access to resources (10–15%)

1. Configure shared resources
 - a) Configure shared folder permissions, configure HomeGroup settings, configure libraries, configure shared printers, set up and configure OneDrive
2. Configure file and folder access
 - a) Encrypt files and folders by using Encrypting File System (EFS), configure NTFS permissions, configure disk quotas, configure file access auditing
3. Configure authentication and authorization
 - a) Configure user rights, manage credentials, manage certificates, configure biometrics, configure picture password, configure PIN, set up and configure Microsoft account, configure virtual smart cards, configure authentication in workgroups or domains, configure User Account Control (UAC) behavior
4. Configure remote connections
 - a) Configure remote authentication, configure Remote Desktop settings, configure virtual private network (VPN) connections and authentication, enable VPN reconnect, configure broadband tethering
5. Configure mobility options
 - a) Configure offline file policies, configure power policies, configure Windows To Go, configure sync options, configure WiFi direct
6. Configure security for mobile devices
 - a) Configure BitLocker and BitLocker To Go, configure startup key storage

H. Monitor and maintain Windows clients (10–15%)

1. Configure and manage updates
 - a) Configure update settings, configure Windows Update policies, manage update history, roll back updates, update Windows Store apps
2. Manage local storage

- a) Manage disk volumes and file systems, manage storage spaces
3. Monitor system performance
 - a) Configure and analyze event logs, configure event subscriptions, configure Task Manager, monitor system resources, optimize networking performance, configure indexing options

I. Configure system and data recovery options (10–15%)

1. Configure system recovery
 - a) Configure a recovery drive, configure system restore, perform a driver rollback, perform a refresh or recycle, configure restore points
2. Configure file recovery
 - a) Restore previous versions of files and folders, configure file history, recover files from OneDrive

Preparation resources

- [Utility spotlight: Are you compatible with Windows 8?](#)
- [Install, deploy, and migrate to Windows 8](#)
- [Windows 8 upgrade paths](#)
- [Device drivers and deployment](#)
- [Managing client access to the Windows Store](#)
- [Managing the new wireless network \(IEEE 802.11\) policies settings](#)
- [Windows Firewall with advanced security and IPsec](#)
- [Deploy remote server administration tools](#)
- [Microsoft Virtual Academy: Windows 8 security insights: Module 7—SmartScreen filtering](#)
- [Windows authentication overview](#)
- [Windows 8 VPN get connected](#)
- [Deploy Windows To Go in your organization](#)
- [BitLocker Group Policy settings](#)
- [Windows Update PowerShell module](#)
- [Windows Performance Monitor](#)
- [Windows 8: Task Manager retuned](#)
- [Repair and recovery](#)
- [How to: Set up and use file history on Windows 8](#)
- [Windows 8 Jump Start Module 6: Recovery and security](#)