EUCIP IT Administrator - Module 2 Operating Systems

Syllabus Version 3.0

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EUCIP IT Administrator – Operating Systems

This document details the syllabus for *EUCIP IT Administrator – Operating Systems*. The syllabus describes, through learning outcomes, the knowledge and skills that a candidate for *EUCIP IT Administrator – Operating Systems* should possess. The syllabus also provides the basis for the theory and practice-based test in this module.

Module Goals

EUCIP IT Administrator – Operating Systems requires the candidate to have a broad appreciation of operating system concepts and be able to configure and manage an operating system.

The candidate shall be able to:

- Know operating systems fundamentals and be able to install an OS.
- Configure and upgrade an OS and install hardware and software.
- Install network interface cards, web browsers and e-mail.
- Manage OS performance and events and manage user and group accounts.
- Create and manage shared resources and account permissions and manage network printers.
- Carry out back ups, use administrative tools and network services and install and manage internet services.
- Diagnose and troubleshoot operating system issues and be able to install a DBMS.

CATEGORY	SKILL SET	REF.	TASK ITEM
2.1 Operating System Fundamentals	*2.1.1 Basic Function*	2.1.1.1	Understand the function and uses of an operating system (OS).
		2.1.1.2	Identify the main types of OS like: Batch, Time sharing, Real Time.
		2.1.1.3	Define the main OS concepts like: multitasking, multiuser, processes, threads, context, context switch and protection.
		2.1.1.4	Distinguish between the most common operating systems for the PC family.
		2.1.1.5	Outline the main OS characteristics like: multitasking, multiuser, realtime, GUI interface.
	2.1.2 Installation Process	2.1.2.1	Install an operating system from: CD-ROM, network.
	2.1.3 Dual Operating System	2.1.3.1	Install multiple operating systems on a PC.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.1.3.2	Identify the steps in the startup process when dual operating systems are installed. Identify files used during startup and their functions.
		2.1.3.3	Define the term Boot Menu and understand when it is used. View and change boot menu settings.
2.2 Operating System Organisation	*2.2.1 Boot Process*	2.2.1.1	Identify files used during the boot up process and their function.
		2.2.1.2	Identify the directory from which boot files are loaded.
		2.2.1.3	Identify boot files required on a start up disk and their functions.
		2.2.1.4	Create a startup disk.
2.3 Operating System Use, Configuration and Upgrades	*2.3.1 Operating System Interface*	2.3.1.1	Describe the operating systems interface. Define the term application program interface (API).
		2.3.1.2	Use the operating systems interface to add, remove, modify shortcuts, icons.
	2.3.2 Configure the Environment	2.3.2.1	Configure and change monitor settings: colours, resolution, refresh rate, enhanced graphic drivers.
		2.3.2.2	Configure and change desktop settings like: background, themes, taskbars.
		2.3.2.3	Configure and change mouse and keyboard settings.
		2.3.2.4	Configure and change regional settings.
		2.3.2.5	Add, modify and remove a printer. Set a printer as default, check a printer status, and update drivers.
		2.3.2.6	Describe how the operating system organises its folders, directories. Identify the location of files like: system files, application files, temporary files, internet files.
	2.3.3 Configuration Files	2.3.3.1	Identify files containing configuration information like: registry, startup defaults. Identify their location.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.3.3.2	Check and modify configuration files using a utility.
		2.3.3.3	Protect, back up, and restore configuration files.
	2.3.4 Upgrading	2.3.4.1	Upgrade the operating system to a new version.
		2.3.4.2	Understand the importance of keeping a system up to date. Install OS patches and updates.
		2.3.4.3	Configure the system to automatically install patches and updates.
	2.3.5 Documentation	2.3.5.1	Check the current server configuration and create associated documentation.
		2.3.5.2	Check the current client configuration and create associated documentation.
	2.3.6 File System	2.3.6.1	Recognise the common file systems your operating system can use, like FAT, NTFS, EXT2, EXT4.
		2.3.6.2	Identify the main features and capabilities of different file systems.
		2.3.6.3	Identify the appropriate file system for each operating system.
		2.3.6.4	Identify reasons for converting from one file system to another. Convert from one file system to another if and when it is useful.
		2.3.6.5	Identify the function of file and directory attributes.
	2.3.7 Optimise Disk Performance	2.3.7.1	Test disks and repair problems using an available utility.
		2.3.7.2	Define the term fragmentation and outline why it occurs.
		2.3.7.3	Define the term defragmentation. Use a utility to perform defragmentation.
		2.3.7.4	Identify unwanted files on a disk. Remove unwanted files using an available utility.
	2.3.8 Disk Administration Utility	2.3.8.1	Use the available disk administration utility to create, format and activate a partition.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.3.8.2	Configure and monitor file systems.
		2.3.8.3	Understand the term RAID and its benefits. Identify the most common used RAID types like: RAID0, RAID1 and RAID5.
		2.3.8.4	Install and manage a RAID system.
2.4 Install Hardware and Software	*2.4.1 Hardware Installation*	2.4.1.1	Check the available installed hardware and its configuration. Create the necessary documentation.
		2.4.1.2	Define the terms device and driver and describe their role in installing and managing hardware.
		2.4.1.3	Check used resources like: I/O addresses, IRQs, DMAs.
		2.4.1.4	Check for and resolve resource conflict.
		2.4.1.5	Install, remove and update hardware device drivers, using different sources.
	2.4.2 Software Installation	2.4.2.1	Install, upgrade and uninstall application software.
2.5 External Communication	*2.5.1 Network*	2.5.1.1	Install a Network Interface Card (NIC). Update NIC drivers.
		2.5.1.2	Configure a NIC.
		2.5.1.3	Install and configure the TCP/IP protocol.
		2.5.1.4	Understand the term personal firewall. Configure a personal firewall.
	2.5.2 Internet Browser	2.5.2.1	Install, configure and use Internet browser software.
		2.5.2.2	Change internet browser settings like: delete temporary internet files, clear history.
		2.5.2.3	Check for and change the default browser.
	2.5.3 e-Mail Software	2.5.3.1	Install and use e-mail software.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.5.3.2	Configure e-mail software protocols like: POP3, IMAP, SMTP, News server.
2.6 Performance and Events	*2.6.1 Performance*	2.6.1.1	Identify an available utility to monitor the hardware and software performance.
		2.6.1.2	Identify an available utility that monitors memory, and its functions.
		2.6.1.3	Monitor the performance of a single device or task.
		2.6.1.4	Monitor the available performance status like: total and free memory, virtual memory in use, available resources.
		2.6.1.5	Monitor active tasks and processes.
	2.6.2 Events	2.6.2.1	Monitor events, system log.
2.7 Manage Users and Groups Accounts	*2.7.1 Add, Remove Users and Groups*	2.7.1.1	Distinguish between the different roles of users and groups.
		2.7.1.2	Add, remove a user or group.
		2.7.1.3	Add, remove a user to a group.
	2.7.2 Set Properties	2.7.2.1	View user properties like: logon time, profile.
		2.7.2.2	Change user properties like: password, logon time, profile.
		2.7.2.3	View group properties like: group members.
	2.7.3 Administrative Tools	2.7.3.1	Use an available utility to manage users and groups.
2.8 Shared Resources and Account Permissions	*2.8.1 Create Shared Resources*	2.8.1.1	Understand the term shared resources, their benefits, and their security and privacy risks.
		2.8.1.2	Create shared resources like: file resources, printer resources, modem resources.
		2.8.1.3	Check available shared resources on a network. Check which users are using shared resources at any time and control the permissions to shared resources.

CATEGORY	SKILL SET	REF.	TASK ITEM
	2.8.2 Remove Shared Resources	2.8.2.1	Remove shared resources like: file resources, print resources, modem resources.
		2.8.2.2	Disconnect users from a shared resource.
	2.8.3 Logical Network Drives	2.8.3.1	Define the term network logical drive.
		2.8.3.2	Identify the steps involved in connecting a logical network drive to a shared resource.
		2.8.3.3	Identify the steps involved in connecting a client to a shared print resource, using a logical print port.
		2.8.3.4	Connect a client to a shared resource on a server or other clients.
	2.8.4 Manage Account Permissions	2.8.4.1	Understand permissions options for shared resources that the network operating system can use.
		2.8.4.2	Set, remove, and modify permissions for a user or a group.
		2.8.4.3	Check users that are logged in. Log them out from the network.
2.9 Manage Network Printers	2.9.1 Install and Manage Printers	2.9.1.1	Install a local, network printer.
		2.9.1.2	Connect and use a shared printer and control its permissions.
		2.9.1.3	Check the printer status (print queue status).
		2.9.1.4	Cancel, pause or reorder a print job.
2.10 Security and Protection	2.10.1 Backup	2.10.1.1	Understand the importance of creating backups.
		2.10.1.2	Schedule backups, using the available utilities and an external storage device.
		2.10.1.3	Recover backed up files.
2.11 Utilities	2.11.1 Administrative Tools	2.11.1.1	Monitor server performance like: CPU usage, memory usage, disk usage, memory usage, page faults.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.11.1.2	Understand the function of shared resource manager utilities.
	2.11.2 Network Utilities	2.11.2.1	Configure a network using network utilities.
		2.11.2.2	Trace network usage using network utilities.
2.12 Sharing Internet Services	*2.12.1 Installing Services*	2.12.1.1	Install, configure and manage a simple mail server.
		2.12.1.2	Install, configure and manage a simple web service.
2.13 Diagnosing and Troubleshooting	*2.13.1 Diagnosing*	2.13.1.1	Use available diagnostic programs to analyse current hardware and software settings.
		2.13.1.2	Diagnose and repair problems during the start up process.
		2.13.1.3	Diagnose and repair configuration file problems.
		2.13.1.4	Diagnose and repair local printing problems.
	2.13.2 Troubleshooting	2.13.2.1	Start a computer in safe mode.
		2.13.2.2	Understand the function of a repair disk, emergency disk. Make and use a repair disk, emergency disk for recovery.
		2.13.2.3	Identify reasons why a user cannot gain access to the network. Locate the source of the problem like: server, cable, NIC, drivers.
		2.13.2.4	Diagnose and troubleshoot user permissions issues like: saving files, using a shared resource.
		2.13.2.5	Diagnose and troubleshoot issues relating to local and domain user accounts, if a domain is available.
		2.13.2.6	Diagnose printing problems.
2.14 Databases	*2.14.1 Data Management*	2.14.1.1	Understand the need for consistent data storage on servers.
		2.14.1.2	Install a DBMS on a server.

CATEGORY	SKILL SET	REF.	TASK ITEM
		2.14.1.3	Describe how DDL and DML are used to manage a database.
		2.14.1.4	Understand the importance of atomicity, consistency, isolation, and durability (ACID) for ensuring reliable database transactions.