

COURSE NET2020: WORKSTATION TECHNOLOGY & OPERATIONS

Level: Intermediate

Prerequisite: None

Description: Students learn computer work station operations, including computer architecture, peripherals, configurations, operating system environments and platforms, utility software, diagnostic and protection software, hard drive file updating and maintenance, support resource application and troubleshooting activities.

Parameters: Access to an appropriate computer work station, a storage medium, utility software, the Internet and support materials.

Outcomes: The student will:

1. disassemble/assemble a working computer and perform basic troubleshooting procedures

- 1.1 assemble a computer from given computer parts including:
 - 1.1.1 set the system configuration switches
 - 1.1.2 install computer operating system
 - 1.1.3 install monitor/keyboard
 - 1.1.4 test computer
- 1.2 demonstrate basic computer troubleshooting techniques by:
 - 1.2.1 using a system board flowchart to locate a system board fault
 - 1.2.2 listing symptoms of hard drive failure
- 1.3 explain the use of debug, error check and format/reformat of a hard drive

2. identify and explain computer system components

- 2.1 research the history of computers, processors and various operating systems
- 2.2 describe the environmental, social, economic and political contribution that computers have made to our social fabric
- 2.3 define basic computer terms
- 2.4 identify and describe parts of a computer
- 2.5 explain the different sizes and types of expansion boards
- 2.6 identify and compare ports
- 2.7 identify adapter cards
- 2.8 explain memory expansion methods
- 2.9 explain the operation of various hard drive types; e.g., platter, solid state
- 2.10 name the types of displays
- 2.11 define and describe various purposes of software; e.g., system, application

3. identify the fundamentals of using operating systems

- 3.1 identify differences between operating systems, e.g., Mac, Windows, Linux, and describe operating system revision levels including graphical user interface (GUI), system requirements, application and hardware compatibility
- 3.2 identify names, purposes and characteristics of the primary operating system components including registry, virtual memory and file system
- 3.3 describe features of operating system interfaces

- 3.4 identify the names, locations, purposes and characteristics of operating system files
- 3.5 identify concepts and procedures for creating, viewing and managing disks, directories and files in operating systems
- 4. install, configure, optimize and upgrade operating systems**
 - 4.1 determine what permission level is required for performing the task
 - 4.2 analyze system requirements for upgrading operating systems
 - 4.3 install and/or add a device driver for appropriate peripheral (signed or unsigned) including:
 - 4.3.1 verify installation of the driver; e.g., device manager, functionality
 - 4.4 identify procedures and utilities used to optimize operating systems; e.g., virtual memory, hard drives, temporary files, service, startup, applications
- 5. identify tools, diagnostic procedures and troubleshooting techniques for operating systems**
 - 5.1 identify basic boot sequences, methods and utilities for recovering operating systems
 - 5.2 identify and apply diagnostic procedures and troubleshooting techniques including:
 - 5.2.1 identify the problem
 - 5.2.2 analyze the problem; e.g., potential causes and initial determination of software and/or hardware problem
 - 5.2.3 test related components including connections, hardware/software configurations, device manager, and consult vendor documentation
 - 5.2.4 evaluate results and take additional steps, if needed; e.g., consultation, alternate resources, manuals
 - 5.2.5 document activities and outcomes
 - 5.3 recognize and resolve common operational issues; e.g., bluescreen (PC), force quit (Mac), system lockup
 - 5.4 recognize common error messages, codes and their function
 - 5.5 identify the names, locations, purposes and characteristics of operating system utilities
- 6. perform preventive maintenance on operating systems using common utilities; e.g., software updates, service packs, scheduled backups, restore and restore points**
- 7. apply consistent and appropriate work station routines**
 - 7.1 describe grounding methods when working on computers and use personal grounding systems; e.g., ankle and wrist straps
 - 7.2 describe the aspects and importance of safety and environmental issues
 - 7.3 identify potential safety hazards and take preventive action
 - 7.4 use material safety data sheets (MSDS) or equivalent documentation and appropriate equipment documentation
 - 7.5 use appropriate repair tools
 - 7.6 describe methods to handle environmental and human accidents including incident reporting; e.g. electrical, chemical, physical
 - 7.7 identify potential hazards and implement proper safety procedures including electrostatic sensitive device (ESD) precautions and procedures, a safe work environment and equipment handling
 - 7.8 identify proper disposal procedures for batteries, display devices and chemical solvents and containers
- 8. demonstrate basic competencies**
 - 8.1 demonstrate fundamental skills to:
 - 8.1.1 communicate
 - 8.1.2 manage information
 - 8.1.3 use numbers
 - 8.1.4 think and solve problems

- 8.2 demonstrate personal management skills to:
 - 8.2.1 demonstrate positive attitudes and behaviours
 - 8.2.2 be responsible
 - 8.2.3 be adaptable
 - 8.2.4 learn continuously
 - 8.2.5 work safely
- 8.3 demonstrate teamwork skills to:
 - 8.3.1 work with others
 - 8.3.2 participate in projects and tasks
- 9. identify possible life roles related to the skills and content of this cluster**
 - 9.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 9.2 identify potential resources to minimize barriers and maximize opportunities