



West Virginia State Community and Technical College



West Virginia State Community and Technical College is regionally accredited with the North Central Association and is a Servicemembers Opportunity College.

Local Area Networking Technologies

CATALOG DESCRIPTION:

In this 60 hour course students will learn the operation and maintenance of all computer components, including troubleshooting faulty components/systems/networks. Networking skills in relation to troubleshooting hardware problems will be covered. Students will also be taught procedures for installing and configuring operating systems and component drivers.

COURSE OBJECTIVE:

To introduce students to Local Area Networking (LAN) technologies, computer hardware, software, and cabling will be explored. Installation and configuration of operating systems, operation and configuration of network interface cards, and system hardware integration will be taught. Networking and network protocols will be explained, and common topologies explored. Students should be prepared to pass the ETA (Electronics Technicians Association) Certified Network Computer Technician examination.

COURSE LEARNING OUTCOMES:

Upon completion of the course the students should be able to understand the theory and operation of:

- OS Function, Structure, Operation, and File Management
- MS-DOS
- MS-DOS Overview
- Primary Functions of DOS
- Installing DOS
- Files
- Required System Files
- Optional System Files
- Boot Order
- Clean Boot
- Internal and External Commands
- Using Dos Commands
- Entering Commands
- Setting the system date and time.
- Displaying the DOS version
- Controlling the Display
- Getting System Information
- Getting Help
- Redirectors
- Working with Directories
- Understanding the Directory Tree
- The Root Directory and Subdirectories
- Changing to another Directory
- Making a New Directory
- Removing a Directory
- Deleting a Directory Tree
- Naming Directories
 - Using Filename Extensions
 - Using Wildcard Characters
- Listing a Directory
- Using Directory Paths
- Setting the Search Path
- Using File Commands
- Creating/Naming Files
- Displaying the Contents of Files
- Copying Files
- Copying Directories
- Duplicating an Entire Disk
- Renaming a File
- Moving Files
- Renaming a Directory
- Deleting/Recovering Files
- File Attributes
- Managing Disks
- Formatting Disks
- Making a Formatted Disk Bootable
- File Management Software
- Automating DOS Commands
- Terminate and Stay Resident programs (TSRs)
- Recalling Previous Commands
- DOSKEY's
- Batch Files
- Editing the AUTOEXEC.BAT File
- Editing the CONFIG.SYS File
- Windows 95/98
- Introduction
- Windows Overview
- System Requirements.

- Starting Windows
- Boot Process
- Logging on to Windows
- The Start Button and Taskbar
- Shutting Down Your Computer
- Recycle Bin
- My Computer
- Explorer
- Shortcuts
- Briefcase
- Canceling a Print Job
- Installation, Configuration/Upgrading, Memory Management
- DOS
- Managing Memory
- Main Memory Overview
- Optimizing Memory
- Memory Management Software (MEMMAKER)
- Upgrading Software
- Windows 95/98
- Installation
- Pre-Installation Procedures
- Installation Procedures
- Installing New Applications.
- Memory Management
- System Resources
- Virtual Memory
- Optimizing Your System
- Configuring & Customizing
- Changing System Settings
- The Registry
- Hide Control Panel Icons
- Hide the Taskbar
- Recreate Standard Group Folders
- Setting up a Printer
- Changing or Re-installing a Printer Driver
- Installing Software
- New Startup Disk
- Hardware Drivers
- Change and Configuring Video
- Diagnosing and Troubleshooting
- DOS
- Data Recovery Software
- Backup Utilities / Software
- Anti-Virus Software
- Troubleshooting DOS Boot Configuration
- Troubleshooting Windows 95/98
- Windows Installation Troubleshooting
- Error Messages
- Generic Troubleshooting
- Improving overall performance:
- Troubleshooting Specific Startup Errors
- Bypassing Startup Files
- Booting with Diagnostic Switches
- System Properties Troubleshooting
- Using Help Troubleshooters
 - EXTRACT
 - Printing Problems
 - Video Problems
 - Device Manager
- Checking Specific Driver Problems
- Closing Failed Programs
- Networks
- Concept of Networking
- Fundamental Requirements of Networking:
- Major Types of Networks
- DOS for Networking
- Why DOS is important in network environments
- DOS commands used in the network environment
- Windows 95/98
- Network Requirements
- Network Neighborhood
- Sharing Drives and Printers
- Workstation Installation and Configuration
- Windows 95/98 peer-to-peer workstation.
- Windows 95/98 workstation.
- Windows NT workstation.
- Installing applications from the server.
- 0Internet
- Internet overview
- Internet Terms
- Making an Internet Connection
- Windows 95/98 workstation.
- Searching the Internet.
- Locating Internet Resources
- Troubleshooting Internet Connections
- Installation, Configuration, and Upgrading
- Basic Hardware Components
- Types of Computers
- How Computers Work
- Identify PC Features
- Chip Package Types
- RAM vs ROM
- Floppy Disk Drives
- Hard Disk Drives
- Power Supply
- Keyboard
- Mouse
- Monitor
- Basic Tools
- Hand Tools
- Spare Parts
- Documentation
- Drive Setup Software
- Disk Maintenance Software
- General PC Disassembly
- General PC Reassembly
- Common Reassembly Mistakes
- Installing Peripherals
- Configuring New Circuit Boards
- Resolving Device Conflicts
- Configuring Adapters with Software
- Plug and Play (PnP)
- Serial Ports
- Parallel Ports
- Universal Serial Bus (USB)
- Managing Disks

- Hard Disk (and Floppy Disk) Preventive Maintenance
- Caring for Floppy Disks
- Caring for CD-ROM Discs
- Floppy Disk Drives
- Hard Disk Drive Overview
- Hard Disk Terms
- IDE / EIDE Drive Interfaces
- SCSI
- Hard Drive Installation
- IDE / EIDE Hard Disk Installation
- Installing a Second IDE Drive
- SCSI Drive Installation
- Hard Disk Software Installation
- CD-ROM Installation
- How a CD-ROM Drive Works
- How a DVD-ROM Drive Works
- Installing a CD-ROM or (DVD-ROM) Drive
- Modems
- Terminology
- How modems work
- Installing a modem
- Specifications
- Power Management System
- LCD Displays
- Power Supplies / Power Protection
- Form Factor (AT vs ATX, etc.)
- Uninterruptible Power Supplies (UPS)
- Surge Suppressors
- Batteries
- Diagnosing and Troubleshooting
- Basic Tools
- Diagnostic Tools
- Digital Multi-Meter (DMM)
- Diagnostic Software
- Troubleshooting Basics
- General Troubleshooting Rules
- The Boot Process
- POST Error Codes
- Clean Boot
- The Troubleshooting Process
- Common problems
- Troubleshooting Image Problems
- Troubleshooting Floppy Drive Problems
- Troubleshooting Hard Drive Installation Problems
- Troubleshooting CD-ROM Installation Problems
- Troubleshooting Modems
- Troubleshooting Power Supplies
- Safety and Preventive Maintenance
- General Safety
- Electrical Safety
- Electrostatic Discharge (ESD)
- Electromagnetic Interference (EMI)
- Fire Safety
- Physical Safety
- Fiber Optic Cable
- Magnets
 - CD-ROM Safety and Maintenance Issues
 - Motherboard/Processors/Memory
 - Identify function of Motherboard Components:
- Central Processing Unit (CPU)
- Numeric Processing Unit (NPU)
- Basic Input/Output System (BIOS)
- CMOS
- Main Memory (RAM)
- System Timer (System Clock)
- Real Time Clock / Calendar
- Expansion Bus
- Expansion Cards
- I/O Ports
- CPUs and BUSES
- Types of CPUs
- Clock Speed
- CPU Speed
- Data Path
- CPU Performance
- Math Coprocessor
- CPU Cache
- CPU voltages
- Sockets and Slots
- Expansion BUS Architecture
- BUS Performance
- BUS Mastering
- Semiconductor Memory
- RAM / ROM
- Memory Chips
- Memory Organization
- Parity
- Access Time
- Memory Installation Rules
- SIMM/DIMM Capacities
- Cache
- Types of RAM
- Printers
- Dot Matrix Operation, Troubleshooting and Preventative Maintenance
- INKJET Operation, Troubleshooting and Preventative Maintenance
- LASER Operation, Troubleshooting and Preventative Maintenance
- Portable Systems
- Identify Laptop Components
- Basic Networking
- Network Design and Architecture
- Standard Topologies
- Access Methods
- Communication
- Connecting Network Components
- Transmission Media
- Common Characteristics
- Signal Transmission
- Primary Cable Types
- Common Network Problems
- Hardware Considerations
- Buses
- RAM
- Network Interface Card (NIC)
- Hubs
- Hard drives
- Antivirus Protection

Courses in the WVSTC Military Education Program are presented in partnership with ITECH Global Communications Training.

- Bottlenecks