NETWORK CONTROL OPERATOR (240 Hours)

Course No.: 79-45-60

COMPETENCY CHECKLIST

Student Name _____

Teacher Name _____ School Site _____

Start Date _____ Completion Date _____ Certificate Date_____

Teacher Signature _____ Student Signature _____

(Signatures verify completion of course competencies)

A. ORIENTATION AND SAFETY (3 hrs)

_____ 1. Qualifications/prerequisites for trade
_____ 2. Working conditions/employee duties
_____ 3. Internet search for list of employers
_____ 4. Class/workplace emergency procedures
_____ 5. Causes of/preventing short circuits
_____ 6. Causes of/preventing static electricity
_____ 7. Safety test

B. INTRODUCTION TO MICROCOMPUTERS (5 hrs)

_____ 1. Components of comp. architectural model
_____ 2. Major hardware computer components
_____ 3. Binary and hexadecimal numbering system
_____ 4. Measurement for computer data
_____ 5. ASCII code
_____ 6. Current/recent development in components
_____ 7. Exam identifying components and code

C. REVIEW OF MICROPROCESSORS (2 hrs)

_____ 1. Function of microprocessor (CPU)
_____ 2. Popular microprocessors and makers
_____ 3. Main processor's architecture
_____ 4. Operation of microprocessor
_____ 5. Factors affecting CPU performance
_____ 6. Memory limitations of various CPUs
_____ 7. CPUs access of memory
_____ 8. Items affecting processor's performance
_____ 9. Microprocessors used in Macintosh systems
____ 10. Macintosh versus IBM microprocessors
____ 11. Outstanding features of Mac sand IBMs
____ 12. Processor performance comparisons
____ 13. Exam on various types of microprocessors

D. DATA BUS (2 hrs)

_____ 1. Function: A data bus
_____ 2. Architecture: A Data bus
_____ 3. Bus standards
_____ 4. ISA bus, MCA bus, and EISA bus
_____ 5. NuBus bus and Macintosh PDS
_____ 6. VL-Bus and PCI bus
_____ 7. Diff. bus characteristics: Better performers
_____ 8. Limitations & incompatibilities: Interface cards
_____ 9. Pass an examination

E. MEMORY (5 hrs)

_____ 1. Basic functions: Microcomputer memory
_____ 2. Microcomputer memory vs storage
_____ 3. RAM vs ROM and various of types of each
_____ 4. Memory SIMM and qualities
_____ 5. Memory for various configurations and apps.
_____ 6. Virtual and RAM memory
_____ 7. Different memory modules
_____ 8. Explain expanded memory
_____ 9. Expanded memory vs extended memory
____ 10. Examination

F. NETWORK STORAGE DEVICES (4 hrs)

_____ 1. Disk and data drives: Microcomputers
_____ 2. Various terms used with data drives
_____ 3. Purpose of disks
_____ 4. Types of disk storage methods
_____ 5. Use of floppy disks
_____ 6. 3.5in and 5.25in floppy disks
_____ 7. Write protection options and floppy disk
_____ 8. Advantages of a hard disk over a floppy disk
_____ 9. Differentiate between hard drive interfaces
____ 10. Hard drive formatting works
____ 11. Data is written to the hard drive
____ 12. Hard disk must be partitioned
____ 13. SCSI interface is different from IDE

____ 14. CD-DROM stores and retrieves data
____ 15. 6 types of removable media
____ 16. Examination

G. COMMUNICATION PORTS (2 hrs)
_____ 1. Parallel port transmit data
_____ 2. Crosstalk and what can be done to avoid
_____ 3. Serial port transmit data
_____ 4. Bits in an asynchronous data frame
_____ 5. Examination

H. INPUT AND OUPUT DEVICES (2 hrs)
_____ 1. 3 pointing devices and how they work
_____ 2. 3 of 4 data input devices and how they work
_____ 3. 4 output devices
_____ 4. Various types of printers
_____ 5. Purpose of a page description language
_____ 6. Examination

I. COMMUNICATION WITH OTHER COMPUTERS (5 hrs)
_____ 1. A modem is used to communicate
_____ 2. Different standards and speeds of modems
_____ 3. Baud rate and how differs from bits per sec.
_____ 4. Computers are attached to form network
_____ 5. Characteristics of a peer-to-peer network
_____ 6. Characteristics of a client/server network
_____ 7. Peer-to-peer network vs. Client/server week
_____ 8. Examination

J. PORTABLE COMPUTERS (2 hrs)
_____ 1. Functions/capabilities of notebook computers
_____ 2. Functions and uses of palmtop computers
_____ 3. Examination

K. HARDWARE CONFIGURATION (4 hrs)
_____ 1. Set jumper of DIP switches on hardware device
_____ 2. Common computer configuration options
_____ 3. Hardware devices: terminated & addressed
_____ 4. Run the SETUP utility to configure a PC
_____ 5. Software device driver
_____ 6. Examination

L. OPERATING SYSTEM (5 hrs)
_____ 1. Role of an operating system
_____ 2. Basic common functions of systems
_____ 3. Popular desktop operating systems
_____ 4. Define terms related to operating system
_____ 5. Examination

M. MS WINDOWS OPERATING SYSTEM (10 hrs)
_____ 1. Identify components in typical window
_____ 2. Files/utilities that make-up Windows
_____ 3. Standard and 386 operating modes
_____ 4. Functions: 2 of 4 Windows configuration files
_____ 5. Func: File Manager/Control Panel/Print Mngr.
_____ 6. Windows File Manager: Directory/File mgnt.
_____ 7. Control Panel: Customize MS Windows env.
_____ 8. Memory is allocating using MS Windows
_____ 9. Windows vs DOS 6.22 commands
____ 10. Installation of Windows
____ 11. Setup and configuration of Windows
____ 12. Use of Hardware Wizard
____ 13. Demo installation of software
____ 14. Networking capabilities using Windows
____ 15. Setup/Configure direct terminal connections
____ 16. Troubleshoot hardware/software problems
____ 17. Steps needed to optimize Windows
____ 18. Utilities and diagnostics with Windows
____ 19. Network software: Windows and its limitations
____ 20. Windows and Windows NT technologies
____ 21. Windows: Various versions of Novell
____ 22. Examination

N. INTRODUCTION TO COMPUTER NETWORKING (40 hrs)
_____ 1. Define a network
_____ 2. Purpose of a network
_____ 3. Network components
_____ 4. Evolution of networking
_____ 5. Centralized versus distributed processing
_____ 6. Mainframe computing to local area networks
_____ 7. Compare listed network types
_____ 8. Basic components: Data communications
_____ 9. Relationship among nodes on the networks
____ 10. Classifications of networks
____ 11. Components of a network
____ 12. Proprietary and nonproprietary networks
____ 13. Various types of servers on the network
____ 14. Components that contribute to efficiency
____ 15. Various types of servers
____ 16. Concepts of interpretability
____ 17. Network operating system
____ 18. Define listed parts of network
____ 19. Network interconnecting devices
____ 20. Cable access scheme
____ 21. Compare listed software
____ 22. Components of data communications
____ 23. Architecture of various networks
____ 24. Network standards
____ 25. Cable access methods
____ 26. Topologies
____ 27. Software used
____ 28. Network vs. Local Operating system

____ 29. Examination

O. OSI MODEL (20 hrs)
_____ 1. Layers in OSI model and relationship
_____ 2. Application Layer
_____ 3. Presentation Layer
_____ 4. Session Layer
_____ 5. Transport Layer
_____ 6. Network Layer
_____ 7. Data Link Layer
_____ 8. Physical Layer
_____ 9. Quiz

P. IEEE NETWORKING SPECIFICATIONS (10 hrs)
_____ 1. IEEE 802.2: Logical Link Control
_____ 2. IEEE 802.3: CSMA/CD (Ethernet)
_____ 3. IEEE 802.4: Token Bus
_____ 4. IEEE 802.5: Token Ring
_____ 5. IEEE 802.6: Metropolitan Area Network (MAN)
_____ 6. IEEE 802.11: Wireless Networks
_____ 7. Examination

Q. NETWORKING ARCHITECTURE (15 hrs)
_____ 1. Ethernet network
_____ 2. Token Ring network
_____ 3. Apple Talk & ARCnet network
_____ 4. FDDI network
_____ 5. Broadband Technologies network
_____ 6. Broadcast Technologies network structure
_____ 7. Gigabit Technologies network
_____ 8. Examination

R. DESIGN A NETWORK LAYOUT (10 hrs)
_____ 1. Networking topologies
_____ 2. Local Area Network (LAN); Develop one
_____ 3. Wide Area Network (WAN); Develop one
_____ 4.identify and develop a MAN
_____ 5. Peer-to-Peer network
_____ 6. Server-Based network
_____ 7. Hybrid network
_____ 8. Server hardware requirements
_____ 9. Specialized servers and use in network
____ 10. Samples of a network topology

S. NETWORKING MEDIA (8 hrs)
_____ 1. Networking cables
_____ 2. Advantages/Disadvantages of cables
_____ 3. Various cable connectors
_____ 4. Prepare different kinds of cables
_____ 5. Test cables using cable testing equipment
_____ 6. When to use a particular kind of cable
_____ 7. Various network cable samples for review

T. NETWORKING INTERFACE CARDS (5 hrs)
_____ 1. Network interface card (NIC) and how to install it
_____ 2. Special purpose NICs
_____ 3. Correct NIC for type of network being setup
_____ 4. Install software drivers for a NIC
_____ 5. Examination

U. NETWORK PROTOCOLS (10 hrs)
_____ 1. Network operating systems work
_____ 2. Function of packets in a network
_____ 3. Implement/remove network protocols
_____ 4. Choosing the correct protocols for a network
_____ 5. Concept of IP default gateways
_____ 6. Routable vs. Non-routable protocols
_____ 7. TCP/IP addressing classes A, B, and C
_____ 8. Default subnet mask numbers
_____ 9. Examination

V. NETWORK OPERATING SYSTEMS (25 hrs)
_____ 1. Network operating systems work
_____ 2. Various networking software components
_____ 3. Install a network operation system
_____ 4. Define/Implement network system
_____ 5. Install/Configure network applications
_____ 6. Examination

W. MULTI-VENDOR NETWORKS (5 hrs)
_____ 1. Multi-vendor system vs. single network
_____ 2. Centralized and client/server computing
_____ 3. Client/server networking environment
_____ 4. Examination

X. NETWORK TRANSMISSION (6 hrs)
_____ 1. WAN transmission/connections/components
_____ 2. Base concepts associated with WANs
_____ 3. Differences in listed switching technologies
_____ 4. Uses/Benefits/Drawbacks of advanced WAN
_____ 5. Digital Data Services
_____ 6. T1, T2, and T3 lines
_____ 7. Examination

Y. NETWORK MANAGEMENT (15 hrs)
_____ 1. Benefits: network management/planning
_____ 2. Network standards, policies/procedures
_____ 3. Troubleshoot network problems
_____ 4. Establishing upgrade guidelines
_____ 5. Prepared network item list
_____ 6. Performance monitor
_____ 7. Test with time-domain reflectormeter
_____ 8. Defects, network collisions/congestion
_____ 9. Examination

Z. NETWORK FAULT TOLERANCE (10 hrs)

_____ 1. Advantages/Disadvantages: Disk mirroring
_____ 2. Disk duplexing
_____ 3. Disk striping with and without parity
_____ 4. Tape back up and disk volume set
_____ 5. Examination

AA. THE INTERNET (10 hrs)

_____ 1. Resources available to administrator
_____ 2. Access resources on the Internet
_____ 3. Internet addressing methods
_____ 4. Make/Use Internet connection
_____ 5. Uniform Resource Locator (URL)
_____ 6. Domain Name System (DNS)
_____ 7. Internet Service Provider (ISP)
_____ 8. Hyper Text Markup Language (html)
_____ 9. Hyper Text Transfer Protocol (http)
____ 10. Search engine
____ 11. Proxy server