

## North Carolina VoCATS Course Blueprints

### 7991 COMPUTER ENGINEERING TECHNOLOGY 1

#### A. Leadership (Level 1)

##### X101. Demonstrate basic business meeting skills and goal setting.

- Recognizes what your values and goals are.
- Recognizes the correct procedures for conducting a meeting.
- Recognizes management structures used in businesses.
- Identifies what would be included in a company's Policy and Rules document.
- Assesses policy and rules used by different organizations.
- Recognizes how personality, values and goals can affect choice of career.
- Recognizes the qualities of leaders and how a formal meeting is structured.
- Recognizes the organization, policy and rules of a business.
- Recognizes how to work effectively with others in a company.
- Identifies the fundamentals of a quality service organization.
- Designs a Customer Satisfaction Survey for a service based organization.
- Recognizes how goals and objectives are used in a business situation.

#### B. Computer Hardware (A+ Core)

##### X102. Install, configure, and upgrade microcomputer modules and peripherals. (Core 1.0)

- Recognizes applications of computers in the home and workplace.
- Identifies the components of a computer system.
- Identifies careers in the computer field.
- States computer operations.
- Identifies individual elements of a computer system.
- Identifies types of personal computer systems.
- Calculates storage and rotational speed for a computer disk drive.
- Indicates knowledge of the operation of computer screens.
- Uses the computer as a device to control external equipment via the parallel port.
- Identifies the requirement for support circuitry and expansion slots in computers.
- Identifies applications in everyday life where computers are used.
- Identifies the output capabilities of a personal computer.
- Identifies individual elements of a computer system.
- Identifies disk drive operations.
- Outlines variety in display techniques.
- Identifies use of computers in control of external devices.
- Deduces communication possibilities in computer to computer communication.
- Writes a report on Computer Applications.
- Makes a presentation to a group on Computer Applications.
- Identifies the difference between a computer input device and a computer output device.
- Identifies common faults in computer hardware.
- Identifies properties of a graphics card from a table showing computer specifications.
- Identifies software, cleaning and technical tools used in computer troubleshooting and maintenance.
- Identifies common faults in computer hardware.
- Explores computer error codes used at POST.
- Explores different types of pointing devices.
- Explores tape storage devices.
- Identifies interfaces between computers and other devices.
- Identifies external computer components.
- Investigates devices used for image capturing.
- Recognizes operations of Input/Output devices.
- Identifies and describes software and hardware requirements of computer applications.

Develops sets of instructions to control hardware and software devices.  
Tests and modifies sets of instructions to control hardware and software devices.  
Demonstrates a knowledge of hardware devices used in Computer Aided Publishing.  
Calculates the accuracy of a drawing input device to a computer.  
Demonstrates a knowledge of graphic input devices used in Computer Aided Publishing.

**X103. Diagnose and troubleshoot common module problems and system malfunctions. (Core 2.0)**

Recognizes possible problems in communication.  
Recognizes how to relate to a customers problems.  
Presents a solution to a communication problem.  
Examines the procedure for troubleshooting a problem caused by a loose network connection.  
Identifies certification schemes appropriate for network support personnel.  
Evaluates potential solutions to network problems.  
Describes troubleshooting and preventive maintenance systems for networks.  
Describes the role of network support.  
Explains clearly why a solution to a network administration problem would be inappropriate.  
Identifies the concept of symptom, cause and solution.  
Explores the simulated computer problems and identifies the symptom, cause and solution.  
Identifies symptoms, causes, solutions and implements tests on faulty computers in a simulation.  
Identifies the cause of a computer problem and its solution from a simulation.  
Identifies software, cleaning and technical tools used in computer troubleshooting and maintenance.  
Locates information about problems caused by computer viruses in a textbook.  
Explores computer error codes used at POST.  
Identifies common faults in computer hardware.  
Examines skills need to perform customer support.  
Identifies procedures for escalating a computer problem.  
Examines methods of technical support.  
Uses a knowledge base and expert system in a simulation to assist with problem solving.  
Uses a computer simulation to investigate computer problem telephone support.  
Provides computer telephone support in a simulation.  
Explains clearly a course of action that is required to deal with a computer problem.  
Investigates stages in a computer troubleshooting method.  
Explores the tools a support technician may use.  
Describes how to approach given computer problems.  
Identifies steps in computer troubleshooting and maintenance procedures.  
Investigates methods of performing customer support.  
Examines systems for storing information about computer problems.  
Writes a report on Computer Troubleshooting.  
Makes a presentation to a group on Computer Troubleshooting.

**X104. Demonstrate safety and preventive maintenance procedures. (Core 3.0)**

Recognizes maintenance procedures to repair, compact and backup database files.  
Describes troubleshooting and preventive maintenance systems for networks.  
Identifies backup systems as a form of preventative maintenance.  
Identifies the need for company IT policies as a preventative maintenance tool.  
Identifies software, cleaning and technical tools used in computer troubleshooting and maintenance.  
Explores preventive maintenance systems and procedures.  
Identifies steps in computer troubleshooting and maintenance procedures.  
Writes a report on Computer Maintenance and Upgrade.  
Makes a presentation to a group on Computer Maintenance and Upgrade.  
Recognizes some social, economic and environmental advantages and disadvantages of electronic communication systems.

**X105. Analyze classifications, categories, and principles of motherboards, processors, and memory in microcomputer systems. (Core 4.0)**

Uses an oscilloscope to measure voltage across a variable power supply.  
Identifies characteristics and functions of CPUs.  
Explores characteristics and functions of motherboards.  
Describes characteristics and functions of RAM.  
Selects the most inefficient type of RAM from information in a textbook.  
Investigates characteristics and operation of CPU, motherboard and memory.  
Investigates the way in which an operating system uses physical and virtual memory.  
Explores Windows memory management.  
States memory retention figures for various methods of information delivery.  
Calculates the number of transistors in a memory chip.

**X106. Discuss basic types of printers; their concepts, and components. (core 5.0)**

Uses a printer to print a document and envelope.  
Identifies the process used by printers to create text and graphics.  
Calculates areas of squares and rectangles used by printers.  
Researches information on printers.  
Identifies the installation method used for sharing printers.  
Investigates approaches to printer fault finding.  
Investigates features and operation of dot-matrix printers.  
Investigates features and operation of ink-jet printers.  
Investigates features and operation of laser printers.  
Examines printer installation.  
Examines printer features and installation methods.  
Identifies the main functions and components of a dot matrix printer.  
Compares a selection of printers used for Computer Aided Publishing.

**X107. Demonstrate basic networking concepts. (core 6.0)**

Demonstrates the operation of a token ring network.  
Identifies procedures used in the major LAN topologies.  
Researches computer networks using software and book resources.  
States reasons for installing a network.  
Identifies LAN connectivity issues for a simple peer-to-peer network.  
Examines characteristics of the peer-to-peer network model.  
Identifies characteristics of network resources.  
Locates a reason for expanding a network.  
Identifies simple network hardware.  
Identifies LAN transmission media.  
States the bandwidth capability of category 5 network cable.  
Identifies the characteristics of a network hub.  
Investigates cable fault troubleshooting for different network topologies.  
Identifies the characteristics of a network server.  
Indicates the main purpose of installing a backup device in a network.  
Describes features of a token ring network architecture.  
Describes features of an ARCnet network architecture.  
Describes features of an AppleTalk network architecture.  
Describes features of an Ethernet network architecture.  
Uses simulation to compare features of Ethernet cables.  
Locates information about 1000baseX network cables in a table.  
Investigates advantages of using fiber optic cable over conventional network cable types.  
Describes features of radio, infrared, and microwave network media.  
Compares LAN, MAN and WAN network types.  
Investigates remote network access using a modem.  
Investigates remote network access using an ISDN connection.  
Investigates remote network access using a leased line.

Examines appropriate systems for connecting LANs to other networks.  
Examines the procedure for troubleshooting a problem caused by a loose network connection.  
Identifies certification schemes appropriate for network support personnel.  
Evaluates potential solutions to network problems.  
Describes basic network concepts.  
Identifies the role of repeaters in a network.  
Describes hardware components used with coaxial cable networks.  
Identifies basic network topologies.  
Describes troubleshooting and preventive maintenance systems for networks.  
Interprets instructions for networking computers with coaxial cable.  
Identifies characteristics of network architectures.  
Examines types of network transmission media.  
Describes types of computer networks.  
Describes the role of network support.  
Examines methods for setting up remote access to computer networks.  
Identifies technical information about a type of network cable from a table.  
Writes a report on Network Configuration.  
Makes a presentation to a group on Network Configuration.  
Analyzes a business requirement for a network.  
Investigates functions of computer networks.

## 7992 COMPUTER ENGINEERING TECHNOLOGY 2

### A. Leadership (Level 2)

#### X201. Demonstrate communication, problem solving, and team building skills.

Recognizes how to listen effectively.  
Recognizes how to plan and present a spoken presentation.  
Recognizes effective communication skills for listening, speaking and writing.  
Identifies methods of communication.  
Recognizes possible problems in communication.  
Recognizes the reasons for communicating.  
Identifies aspects of effective communication.  
Recognizes how we communicate with expressions, posture, orientation and gesture.  
Identifies how feelings are perceived from our non-verbal communication.  
Recognizes how paralanguage is an important aspect of non-verbal communication.  
Identifies aspects of Listening.  
Recognizes methods of effective Communication.  
Identifies aspects of Non Verbal Communication.  
Recognizes how Listening can influence Customer Relations.  
Identifies aspects of communication, marketing strategy and pricing.  
Explores the benefits that new technology has brought to communication systems.  
Presents a solution to a communication problem.  
Explores basic principles of communication using sound.  
Recognizes how to relate to a customers problems.  
Identifies attitudes and qualities that influence Customer Relations.

### B. Operating System Technologies (A+ OS)

#### X202. Apply procedures related to operating systems in terms of function, structure, operation and file management. (OS 1.0)

Recognizes ways of merging two files and printing address labels.  
Recognizes how to protect files and edit text using Word 2000.  
Recognizes how to use passwords, search for files using Criteria and edit data.  
Recognizes maintenance procedures to repair, compact and backup database files.  
Evaluates storage space required for a recorded sound file.

Follows instructions to edit recorded files.  
Calculates storage space of wave file.  
Uses input devices to alter information in a graphics file.  
Opens a computer file using menu options on a menu bar.  
Recognizes the filename convention for saving animations.  
Creates a user directory to store graphic files by following written instructions.  
Locates and selects movie files.  
Recognizes an audio filename extension.  
Recognizes filename extensions.  
Describes basic Windows features for creating and editing files.  
Identifies and names files by following written instructions.  
Identifies graphic file names.  
Adds a control to a media player program to restrict the file types users can open.  
Investigates the use of image files in a web page.  
Investigates the relationship between download speeds and file size.  
Examines procedures for setting up file sharing on a computer using Windows 95/98.  
Examine methods for accessing shared files in a Windows 95/98 network.  
Identifies security issues relating to file sharing in a Windows 95/98 network.  
Identifies properties of the Linux operating systems.  
Identifies 16-bit, 32-bit and 64-bit operating system.  
Compares features of network operating systems.  
States procedures for sharing files in a peer-to-peer network.  
Compares features of network operating systems.  
Locates the cost of an operating system in a table.

**X203. Install, configure, and upgrade operating systems. (OS 2.0)**

Describes basic Windows features for creating and editing files.  
Adds the Windows media player component to a Visual Basic program.  
Describes features of Windows programming methods.  
Examines procedures for setting up file sharing on a computer using Windows 95/98.  
Examine methods for accessing shared files in a Windows 95/98 network.  
Identifies security issues relating to file sharing in a Windows 95/98 network.  
Identifies properties of the Linux operating systems.  
Identifies 16-bit, 32-bit and 64-bit operating system.  
Compares features of network operating systems.  
Locates the cost of an operating system in a table.  
Examines how Windows uses Dial-Up Networking to connect to the Internet.  
Compares and identifies suitability of operating systems.  
Compares basic commands of DOS and Windows operating systems.  
Locates features of operating systems in text.  
Explores Windows desktop features.  
Investigates the use of the Windows Control Panel for customization of the computer.  
Locates functions of Windows Control Panel features in text.  
Investigates the Windows desktop Start Button menu options.  
Examines the structure of the Windows filing system.  
Locates files in the Windows filing system.  
Identifies appropriate software required for given tasks.  
Examines procedures involved in installing an operating system.  
Describes how a computer starts up and loads an operating system.  
Identifies when Windows operating modes should be used.  
Investigates User Profiles.  
Investigates the way in which an operating system uses physical and virtual memory.  
Examines the way that Windows shares data between applications.  
Identifies Windows file attributes.  
Compares specifications and requirements of operating systems.  
Calculates the total cost of purchasing operating system software for an office.

- Compares and contrasts operating systems.
- Investigates installation and update of operating systems.
- Investigates the computer boot sequence.
- Identifies Windows operating modes.
- Explores Windows memory management.
- Investigates operating system file management.
- Calculates the total cost of multiple copies of operating system software.

**X204. Troubleshoot common operating system problems. (OS 3.0)**

- Applies a basic error testing method and deduces how to prevent a simple error from occurring.
- Evaluates methods for building error handling into program code.
- Describes the use of message boxes and error messages.
- Identifies software, cleaning and technical tools used in computer troubleshooting and maintenance.
- Investigates stages in a computer troubleshooting method.
- Identifies steps in computer troubleshooting and maintenance procedures.
- Writes a report on Computer Troubleshooting.
- Makes a presentation to a group on Computer Troubleshooting.

**X205. Examine network capabilities of Windows. (OS 4.0)**

- Recognizes ways in which Word 2000 can be used with the Internet.
- Explores the use of an Internet based project.
- Identifies characteristics of network resources.
- Locates a reason for expanding a network.
- Identifies the characteristics of a network hub.
- Investigates cable fault troubleshooting for different network topologies.
- Identifies the characteristics of a network server.
- Indicates the main purpose of installing a backup device in a network.
- Investigates advantages of using fiber optic cable over conventional network cable types.
- Describes features of radio, infrared, and microwave network media.
- Compares LAN, MAN and WAN network types.
- Investigates remote network access using a modem.
- Investigates remote network access using an ISDN connection.
- Investigates remote network access using a leased line.
- Examines appropriate systems for connecting LANs to other networks.
- Analyzes a business requirement for a network.
- Investigates functions of computer networks.
- Examine methods for accessing shared files in a Windows 95/98 network.
- Identifies security issues relating to file sharing in a Windows 95/98 network.
- Identifies Internet search techniques.
- Identifies methods for finding, downloading and displaying image files on the Internet.
- Identifies the use of streamed and non-streamed multimedia files on the Internet.
- Examines the development of the Internet.
- Investigates the structure of URL Internet addressing.
- Investigates security threats to a computer system that has Internet access.
- Explores methods of security for computers that have Internet access.
- Identifies methods of ensuring that Internet sites are secure, for specific situations.
- Identifies methods of navigating the Internet.
- Investigates Internet search engines, and tools and techniques.
- Interprets a description of how Internet use has changed.
- Explores characteristics of the Internet and World Wide Web.
- Describes concepts in Internet addressing systems.
- Examines Internet security issues.
- Interprets descriptions of the World Wide Web and the Internet.