

Syllabus*

Ridge View High School
Columbia, South Carolina

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COURSE TITLE: Computer Service Technology 2

Course Description:

The Computer Service Technology course is designed to prepare the student to perform entry-level tasks under the supervision of an experienced technician. Students receive instruction in safety, communication skills, leadership skills, human relations and employability skills, effective work practices, and in the installation, operation, maintenance, and repair of personal computers. Associated peripheral equipment, and data cabling construction and installation are also included. Laboratory activities provide instruction in installation, component replacement, operating systems, and upgrades in accordance with CompTIA industry standards.

PREREQUISITE:

Successful completion of Computer Service Technology 1

CREDIT: 1 Carnegie unit

COURSE COMPETENCIES:

1.0 Personal Computer Components

1.1 Install, configure, optimize and upgrade personal computer components

Add, remove and configure personal computer components including selection and installation of appropriate components for example:

- Storage devices
- Motherboards
- Power supplies
- Processors / CPUs
- Memory
- Display devices
- Input devices (e.g. basic, specialty and multimedia)
- Adapter cards
- Cooling systems

1.2 Identify tools, diagnostic procedures and troubleshooting techniques for personal computer components

Identify and apply basic diagnostic procedures and troubleshooting techniques

Isolate and identify the problem using visual and audible inspection of components and minimum configuration

Recognize and isolate issues with peripherals, multimedia, and specialty input devices, internal and external storage and CPUs

Identify the steps used to troubleshoot components (e.g. check proper seating, installation, appropriate components, settings and current driver) for example:

- Power supply
- Processor / CPUs and motherboards
- Memory
- Adapter cards
- Display and input devices

Recognize names, purposes, characteristics and appropriate application of tools for example:

- Multi-meter
- Anti-static pad and wrist strap
- Specialty hardware / tools
- Loop back plugs
- Cleaning products (e.g. vacuum, cleaning pads)

1.3 Perform preventive maintenance of personal computer components

Identify and apply common preventive maintenance techniques for personal computer components for example:

- Display devices (e.g. cleaning, ventilation)
- Power devices (e.g. appropriate source such as power strip, surge protector, ventilation and cooling)
- Input devices (e.g. covers)
- Storage devices (e.g. software tools such as Disk Defragmenter and cleaning of optics and tape heads)
- Thermally sensitive devices such as motherboards, CPU, adapter cards memory (e.g. cleaning, air flow)

2.0 Laptops and Portable Devices

2.1 Identify fundamental principles of using laptops and portable devices

Identify appropriate applications for laptop-specific communication connections such as Bluetooth, infrared, cellular WAN and Ethernet

Identify appropriate laptop-specific power and electrical input devices and determine how amperage and voltage can affect performance

Identify the major components of the LCD including inverter, screen and video card

2.2 Install, configure, optimize and upgrade laptops and portable devices

Removal of laptop-specific hardware such as peripherals, hot-swappable and non-hot-swappable devices

Describe how video sharing affects memory upgrades

2.3 Use tools, diagnostic procedures and troubleshooting techniques for laptops and portable devices

Use procedures and techniques to diagnose power conditions, video, keyboard, pointer and wireless card issues for example:

- Verify AC power (e.g. LEDs, swap AC adapter)
- Verify DC power
- Remove unneeded peripherals
- Plug in external monitor
- Toggle Fn keys
- Check LCD cutoff switch
- Verify backlight functionality and pixilation
- Stylus issues (e.g. digitizer problems)
- Unique laptop keypad issues
- Antenna wires

3.0 Operating Systems – unless otherwise noted, operating systems referred with within include Microsoft Windows 2000, XP Professional, XP Home and Media Center.

3.1 Identify the fundamental principles of operating systems

Use command-line functions and utilities to manage operating systems, including proper syntax and switches for example:

- CMD
- HELP
- DIR
- ATTRIB
- EDIT
- COPY
- XCOPY
- FORMAT
- IPCONFIG
- PING
- MD / CD / RD

Identify concepts and procedures for creating, viewing and managing disks, directories and files on operating systems

- Disks (e.g. active, primary, extended and logical partitions and file systems including FAT32 and NTFS)

- Directory structures (e.g. create folders, navigate directory structures)
- Files (e.g. creation, attributes, permissions)

Locate and use operating system utilities and available switches for example:

- Disk management tools (e.g. DEFRAG, NTBACKUP, CHKDSK, Format)
- System management tools
- Device and Task Manager
- MSCONFIG.EXE
- REGEDIT.EXE
- REGEDT32.EXE
- CMD
- Event Viewer
- System Restore
- Remote Desktop
- File management tools (e.g. Windows EXPLORER, ATTRIB.EXE)

3.2 Install, configure, optimize and upgrade operating systems – references to upgrading from Windows 95 and NT may be made

Identify procedures and utilities used to optimize operating systems for example:

- Virtual memory
- Hard drives (e.g. disk defragmentation)
- Temporary files
- Services
- Startup
- Application

3.3 Identify tools, diagnostic procedures and troubleshooting techniques for operating systems

Demonstrate the ability to recover operating systems (e.g. boot methods, recovery console, ASR, ERD)

Recognize and resolve common operational problems for example:

- Windows specific printing problems (e.g. print spool stalled, incorrect / incompatible driver form print)
- Auto-restart errors
- Blue-screen error
- System lock-up
- Device drivers failure (input / output devices)
- Application install, start or load failure

Recognize and resolve common error messages and codes for example:

- Boot (e.g. invalid boot disk, inaccessible boot drive, missing NTLDR)

- Startup (e.g. device / service failed to start, device / program in registry not found)
- Event Viewer
- Registry
- Windows reporting

Use diagnostic utilities and tools to resolve operational problems for example:

- Bootable media
- Startup modes (e.g. safe mode, safe mode with command prompt or networking, step-by-step / single step mode)
- Documentation resources (e.g. user / installation manuals, internet / web based, training materials)
- Task and Device Manager
- Event Viewer
- MSCONFIG command
- Recover CD / recovery partition
- Remote Desktop Connection and Assistance
- System File Checker (SFC)

3.4 Perform preventive maintenance for operating systems

Demonstrate the ability to perform preventive maintenance on operating systems including software and Windows updates (e.g. service packs), scheduled backups / restore, restore points

4.0 Printers and Scanners

4.1 Identify the fundamental principles of using printers and scanners

Describe processes used by printers and scanners including laser, ink dispersion, thermal, solid ink and impact printers and scanners

4.2 Install, configure, optimize and upgrade printers and scanners

Install and configure printers / scanners

- Power and connect the device using local or network port
- Install and update device driver and calibrate the device
- Configure options and default settings
- Install and configure print drivers (e.g. PCLTM, PostscriptTM, GDI)
- Validate compatibility with operating system and applications
- Educate user about basic functionality

Install and configure printer upgrades including memory and firmware

Optimize scanner performance including resolution, file format and default settings

4.3 Identify tools and diagnostic procedures to troubleshooting printers and scanners

Gather information about printer / scanner problems

Review and analyze collected data

Isolate and resolve identified printer / scanner problem including defining the cause, applying the fix and verifying functionality

Identify appropriate tools used for troubleshooting and repairing printer / scanner problems

- Multi-meter
- Screwdrivers
- Cleaning solutions
- Extension magnet
- Test patterns

4.4 Perform preventive maintenance of printers and scanners

Perform scheduled maintenance according to vendor guidelines (e.g. install maintenance kits, reset page counts)

Ensure a suitable environment

Use recommended supplies

5.0 Networks

5.1 Identify the fundamental principles or networks

Identify names, purposes and characteristics of basic network protocols and terminologies for example:

- ISP
- TCP / IP (e.g. gateway, subnet mask, DNS, WINS, static and automatic address assignment)
- IPX / SPX (NWLink)
- NETBEUI / NETBIOS
- SMTP
- IMAP
- HTML
- HTTP
- HTTPS
- SSL
- Telnet
- FTP
- DNS

Identify names, purposes and characteristics of technologies for establishing connectivity for example:

- Dial-up networking
- Broadband (e.g. DSL, cable, satellite)
- ISDN networking

- Wireless (all 802.11)
- LAN / WAN
- Infrared
- Bluetooth
- Cellular
- VoIP

5.2 Install, configure, optimize and upgrade networks

Install and configure browsers

- Enable / disable script support
- Configure proxy and security settings

Establish network connectivity

- Install and configure network cards
- Obtain a connection
- Configure client options (e.g. Microsoft, Novell) and network options (e.g. domain, workgroup, tree)
- Configure network options

Demonstrate the ability to share network resources

- Models
- Configure permissions
- Capacities / limitations for sharing for each operating system

5.3 Use tools and diagnostic procedures to troubleshoot network problems

Identify names, purposes and characteristics of tools for example:

- Command line tools (e.g. IPCONFIG.EXE, PING.EXE, TRACERT.EXE, NSLOOKUP.EXE)
- Cable testing device

Diagnose and troubleshoot basic network issue for example:

- Driver / network interface
- Protocol configuration

TCP / IP (e.g. gateway, subnet mask, DNS, WINS, static and automatic address assignment)

IPX / SPX (NWLink)

- Permissions
- Firewall configuration
- Electrical interference

5.4 Perform preventive maintenance of networks including securing and protecting network cabling

6.0 Security

6.1 Identify the fundamentals and principles of security

Identify the purposes and characteristics of access control for example:

- Access to operating system (e.g. accounts such as user, admin and guest. Groups, permission actions, types and levels), components, restricted spaces

Identify the purposes and characteristics of auditing and event logging

6.2 Install, configure, upgrade and optimize security

Install and configure software, wireless and data security for example:

- Authentication technologies
- Software firewalls
- Auditing and event logging (enable / disable only)
- Wireless client configuration
- Unused wireless connections
- Data access (e.g. permissions, basic local security policy)
- File systems (converting from FAT32 to NTFS only)

6.3 Identify tool, diagnostic procedures and troubleshooting techniques for security

Diagnose and troubleshoot software and data security issues for example:

- Software firewall issues
- Wireless client configuration issues
- Data access issues (e.g. permissions, security policies)
- Encryption and encryption technology issues

6.4 Perform preventive maintenance for security

Recognize social engineering and address social engineering situations

7.0 Safety and Environmental Issues

7.1 Identify potential hazards and proper safety procedures including power supply, display devices and environment (e.g. trip, liquid, situational, atmospheric hazards and high-voltage and moving equipment)

8.0 Communication and Professionalism

8.1 Use good communication skills including listening and tact / discretion, when communicating with customers and colleagues

Use clear, concise and direct statements

Allow the customer to complete statements – avoid interrupting

Clarify customer statements – ask pertinent questions

Avoid using jargon, abbreviations and acronyms

Listen to customers

8.2 Use job-related professional behavior including notation of privacy, confidentiality and respect for the customer and customers' property

Behavior

- Maintain a positive attitude and tone of voice
- Avoid arguing with customers and / or becoming defensive
- Do not minimize customers' problems
- Avoid being judgmental and / or insulting or calling the customer names
- Avoid distractions and / or interruptions when talking with customers

Property

- Telephone, laptop, desktop computer, printer, monitor, etc.

Note* The instructor reserves the right to change or alter this document as needed.

INSTRUCTIONAL MATERIALS, SUPPLIES, AND EQUIPMENT:

All books and equipment are provided by the instructor. Students are required to provide paper, pencil, pen, 3-Ring Binder, and 5 floppy disks (or Flash Drive).

OPTIONAL TEXTBOOKS / INSTRUCTIONAL MATERIAL:

Andrews, Jean. A+ Guide to Managing and Maintaining Your PC. Comprehensive
6th Ed. Course Technology, Boston, Massachusetts 2007

Andrews, Jean. A+ Guide to Managing and Maintaining Your PC. Lab Manual
6th Ed. Course Technology, Boston, Massachusetts 2007

Andrews, Jean. A+ Computer Based Training for Managing and Maintaining Your PC.
3rd Ed. Course Technology, Boston, Massachusetts

EVALUATION SYSTEM: Students will be given five (5) minutes to calculate and record his/her class average and attendance each Friday and will be graded using the following criteria each grading period:

“Students will be held to the Academic Integrity policy of Richland District II.”

Homework = 10% (includes Students' Notebook and Review Questions.)

Daily Grade = 15% to include:

Attendance
Participation
Safety
Leadership
Self-control

Quizzes = 20%

Tests = 25%

Hands-On Projects = 30%. Each hands-on activity is graded on the following criteria:

Safety
Preparation
Logical Sequence
Workmanship

Semester Examination = 20% of Semester Grade

ALL WRITTEN TESTS MUST BE PASSED WITH 70% ACCURACY.

Students who score below 70% will be allowed one (1) re-test after a 24 hour waiting period. All re-tests will be taken on the student's time (i.e. lunch time, before school, or at a time set up by the instructor).

GRADING CRITERIA:

A = 100 – 93

B = 92 – 85

C = 84 – 77

D = 76 – 70

F = 69 or below

CLASSROOM RULES:

Enter the classroom quietly before the tardy bell rings.

Begin working on class assignments.

Do not sit on top of tables, desks, or AC Unit.

Bring all required class materials (i.e., paper, pencil) to class everyday.

Only one student may leave the classroom at any time during class.

No Food or Drinks are allowed.

No horse-playing is allowed.

Do not energize any equipment without permission.

You are responsible for cleaning up after yourself.

10. Listen to the teacher and follow his instructions.

PENALTIES FOR VIOLATING CLASS RULES :

Rule 1

- First Offense: Oral Warning
- Second Offense: Tardy Issued
- Third Offense: Tardy Issued / Conference with Parents

Rules 2, 3, 4, & 9

- First Offense: Oral Warning
- Second Offense: Conference with Parents

- Third Offense: Discipline Referral

Rule 5

Students may only leave the classroom in case of an emergency. If the student leaves the classroom without permission or goes anywhere except to the destination where permission was granted, the student will be referred to an Administrator.

Rules 6, 7, & 8

First Offense: Conference with Parents and Administration Notified

Second Offense: Discipline Referral

Third Offense: Discipline Referral

Rule 10 - Covers all rules not previously listed.

First Offense: Conference with student

Second Offense: Conference with Parents and Administration

Third Offense: Discipline Referral