Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Date Revised: Spring 00

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

This course is designed for computer personnel who need advanced technical knowledge about the PC, its operating system and key utilities, and PC-based local area networks. The course follows the current Computing Technology Industry Association (CompTIA) A+ Certification criteria guidelines.

Entry Level Standards:

The student MUST be familiar with the architecture and operations of standard PCs (personal computers). The student must be able to use Microsoft Windows to create directories and to copy, move, rename, and delete directories and files. Previous knowledge and understanding of DOS commands such as DIR, COPY, DEL, REN, CD, MD, RD, and EDIT is essential. The student must have math, writing, verbal and English language skills at the college entry level.

Prerequisite:

CST2455 or department approval. A pre-test WILL be administered the first class session, and students NOT meeting the pre-requisites will not be allowed to continue in this class.

Textbook(s) and Other Reference Materials Basic to the Course:

A+ Certification, New Riders Publishing (latest edition)
Basic computer service hand tool kit

I. Week/Unit/Topic Basis:

<table>
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<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1-2</td>
<td>PC Hardware Introduction; Safety; Preventive Maintenance</td>
</tr>
<tr>
<td>3-4</td>
<td>PC System Software</td>
</tr>
<tr>
<td>5</td>
<td>Diagnosing and Troubleshooting System Problems</td>
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II. Course Objectives*:

A. Develop a working understanding of the terminology, hardware devices, and system software (DOS, Windows) associated with the Personal Computer (PC). III, II, V, IX, X

B. Exhibit a knowledge of advanced features of Microsoft Windows concepts. II, III, IX

C. Exhibit a knowledge of MS-DOS operating system. II, III, IX

D. Exhibit a knowledge of diagnosing and troubleshooting PCs. II, III, V

E. Exhibit a knowledge of installing, configuring, and upgrading PC components and software. II, IX

F. Exhibit proficiency in written and oral communications about computers. I, IX

*Roman numerals after course objectives reference goals of the Business and Computer Technologies department.

III. Instructional Processes*:

Students will:

1. Use Windows 95/98/NT and DOS operating systems commands and utilities to perform practical tasks for personal computing. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome

2. Solve problems by diagnosing and troubleshooting Windows NT problems. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

3. Solve problems encountered in the installation, configuration, and upgrading of Windows NT components and system software. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome


5. Handle and examine modern computing devices. Technological Literacy Outcome
6. Prepare documents for management explaining network system problems and the need for new systems, upgrades, networks, etc. Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

7. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. Personal Development Outcome

*Strategies and outcomes listed after instructional processes reference Pellissippi State’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*

Upon successful completion of this course, the student should be able to:

1. Use terminology associated with computer science and data processing fields. A,B,C,D,E
2. Use keyboard, diskette, CPU hardware. A,B,C,D
3. Use internal and external DOS commands. A,C
4. Prove DOS proficiency in the creation of prompts, sub-directories, formatted disks, batch files and the utilization of pipes and redirection. C
5. Identify basic terms, concepts, and functions of system modules, including how each module should work during normal operation. A,B,C,D,E
6. Identify basic procedures for adding and removing field replaceable modules. A,D,E
7. Identify available IRQs, DMAs, and I/O addresses and procedures for configuring them for device installation. A,B,C,D,E
8. Identify common peripheral ports, associated cabling, and their connectors. A,E
9. Identify proper procedures for installing and configuring IDE/EIDE devices. A,E
10. Illustrate an understanding of system architecture, I/O devices, and PC networking. A
11. Identify proper procedures for installing and configuring audio/video devices. A,E
12. Identify proper procedures for installing and configuring SCSI devices. A,E
13. Identify proper procedures for installing and configuring peripheral devices. A,E
14. Identify concepts and procedures relating to BIOS. A,E
15. Identify hardware methods of system optimization and when to use them. A,D,E
16. Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. A,D
17. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers. A,D
18. Identify the purpose of various types of preventive maintenance products and procedures and when to use/perform them. A,D,E
19. Identify procedures and devices for protecting against environmental hazards. A,D,E
20. Identify the potential hazards and proper safety procedures relating to lasers and high-voltage equipment. A,D,E
21. Identify items that require special disposal procedures that comply with environmental guidelines. A
22. Identify ESD (Electrostatic Discharge) precautions and procedures, including the use of ESD protection devices. A,D,E
23. Distinguish between the popular CPU chips in terms of their basic characteristics. A
24. Identify the categories of RAM (Random Access Memory) terminology, their locations, and physical characteristics. A
25. Identify the most popular type of motherboards, their components, and their architecture (for example, bus structures and power supplies). A
26. Identify the purpose of CMOS (Complementary Metal-Oxide Semiconductor), what it contains and how to change its basic parameters. A
27. Identify basic concepts, printer operations and printer components. A
28. Identify care and service techniques and common problems with primary printer types. A
29. Identify the types of printer connections and configurations. A
30. Identify the unique components of portable systems and their unique problems. A
31. Identify basic networking concepts, including how a network works. A
32. Identify procedures for swapping and configuring network interface cards. A,E
33. Identify the ramifications of repairs on the network. A,D,E
34. Differentiate effective from ineffective behaviors as these contribute to the maintenance or achievement of customer satisfaction. F
35. Identify operating system functions, structure, and major system files. A,B,D
36. Identify ways to navigate the operating system and how to get to needed technical information. A,B,C
37. Identify basic concepts and procedures for creating, viewing and managing files and directories, including procedures for changing file attributes and the ramifications of those changes (for example, security issues). A,B,C
38. Identify the procedures for basic disk management. A,B,C
39. Differentiate between types of memory.
40. Identify typical memory conflict problems and how to optimize memory use. A
41. Identify the procedures for installing DOS and Windows 95/98, and for bringing the software to a basic operational level. B,C,E
42. Identify steps to perform an operating system upgrade. A,B,C,E
43. Identify the basic system boot sequences, and alternative ways to boot the system software, including the steps to create an emergency boot disk with utilities installed. A,B,C
44. Identify procedures for loading/adding device drivers and the necessary software for certain devices. A,B,C,E
45. Identify the procedures for changing options, configuring, and using the Windows printing subsystem. A,B,E
46. Identify the procedures for installing and launching typical Windows and non-Windows applications. A,B,C,E
47. Recognize and interpret the meaning of common error codes and startup messages from the boot sequence, and identify steps to correct the problems. A,B,C,D
48. Recognize Windows-specific printing problems and identify the procedures for correcting them. B
49. Recognize common system problems and determine how to resolve them. A,B,C,D
50. Identify concepts relating to viruses and virus types their danger, their symptoms, sources of viruses, how they infect, how to protect against them, and how to identify and remove them. A,D
51. Identify the networking capabilities of DOS and Windows including procedures for connecting to the network. A,B,C,E
52. Identify concepts and capabilities relating to the Internet and basic procedures for setting up a system for Internet access. A,B,E

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

There will be three tests which count 200 points each (or 600 points total). There will be no make-up tests unless prior arrangements are made with the instructor.

B. Laboratory Expectations:

Lab attendance is required. Assignments worth 300 points must be completed and submitted before the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as scheduled.

C. Other Evaluation Methods:

Pop-Quizzes and "Outside-Class" take-home assignments will be given, which will total 100 points.

D. Grading Scale:

Grades will be assigned in accordance with the following scale:
VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Students are expected to promptly attend all lecture and lab classes as assigned.

B. Academic Dishonesty:

Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited.