PC HARDWARE (A+ CERT)  
NETW 1010

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Revised: Spring 07

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 PC hardware and PC-based local area networks. The course follows the current Computing Technology Industry Association (CompTIA) A+ (Core-Hardware Exam) Certification criteria guidelines. The course also covers basic computer-related mathematics, electricity, electronics, fiber-optics, etc. required for personal computer technologists.

Entry Level Standards:

The student MUST be familiar with basic operations of standard PCs (personal computers). The student must have math, writing, verbal and English language skills at the college entry level.

Prerequisites:

None

Corequisites:

NETW1020 or consent of instructor

Textbook(s) and Other Course Materials:

Upgrading and Repairing PCs, (latest edition), Scott Mueller  
Various PC service guides and other product manuals as required  

Basic computer service hand tool kit including a personal static wrist strap.

I. Week/Unit/Topic Basis:

<table>
<thead>
<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>
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<tr>
<td>2-4</td>
<td>Basic computer mathematics; electricity; electronics</td>
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II. Course Objectives*:

A. Develop a working understanding of the terminology, hardware devices, and system software (device drivers, etc.) associated with Personal Computers (PC). III, II, V, IX, X

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

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

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

*Roman numerals after course objectives reference goals of the NETW program.

III. Instructional Processes*:

Students will:

1. Solve problems by diagnosing and troubleshooting PC problems. Technological Literacy, Transitional Strategy, Active Learning

2. Solve problems encountered in the installation, configuration, and upgrading of PC components and system set-ups. Technological Literacy, Transitional Strategy, Active Learning


4. Handle and examine modern computing devices. Technological Literacy, Transitional Strategy, Active Learning

5. Prepare documents for management explaining PC system problems and the need for new systems, upgrades, networks, etc. Communication, Technological Literacy
Literacy, Transitional Strategy, Active Learning

6. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Social/Behavioral Sciences Outcome*

Strategies and outcomes listed after instructional processes reference TBR’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, data processing, and networking/communications systems fields. A,B,C,D,E
2. Use computer keyboards, diskette, and CPU hardware. A,B,C,D,E
3. Identify basic terms, concepts, and functions of system modules, including how each module should work during normal operation. A,B,C,D,E
4. Identify basic procedures for adding and removing field replaceable modules. A,D,E
5. Identify available IRQs, DMAs, and I/O addresses and procedures for configuring them for device installation. A,B,C,D,E
6. Identify common peripheral ports, associated cabling, and their connectors. A,E
7. Identify proper procedures for installing and configuring IDE/EIDE devices. A,E
8. Illustrate an understanding of system architecture, I/O devices, and PC networking A
9. Identify proper procedures for installing and configuring audio/video devices. A,E
10. Identify proper procedures for installing and configuring SCSI devices. A,E
11. Identify proper procedures for installing and configuring peripheral devices. A,E
12. Identify concepts and procedures relating to BIOS. A,E
13. Identify hardware methods of system optimization and when to use them. A,D,E
14. Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. A,D
15. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers. A,D
16. Identify the purpose of various types of preventive maintenance products and procedures and when to use/perform them. A,D,E
17. Identify procedures and devices for protecting against environmental hazards. A,D,E
18. Identify the potential hazards and proper safety procedures relating to lasers and high-voltage equipment. A,D,E

19. Identify items that require special disposal procedures that comply with environmental guidelines. A

20. Identify ESD (Electrostatic Discharge) precautions and procedures, including the use of ESD protection devices. A,D,E

21. Distinguish between the popular CPU chips in terms of their basic characteristics. A

22. Identify the categories of RAM (Random Access Memory) terminology, their locations, and physical characteristics. A

23. Identify the most popular type of motherboards, their components, and their architecture (for example, bus structures and power supplies). A

24. Identify the purpose of CMOS (Complementary Metal-Oxide Semiconductor), what it contains and how to change its basic parameters. A

25. Identify basic concepts, printer operations and printer components. A

26. Identify care and service techniques and common problems with primary printer types. A

27. Identify the types of printer connections and configurations. A

28. Identify the unique components of portable systems and their unique problems. A

29. Identify basic networking concepts, including how a network works. A

30. Identify procedures for swapping and configuring network interface cards. A,E

31. Identify the ramifications of repairs on the network. A,D,E

32. Differentiate effective from ineffective behaviors as these contribute to the maintenance or achievement of customer satisfaction. F

33. Identify operating system functions, structure, and major system files. A,B,D

34. Identify ways to navigate the operating system and how to get to needed technical information. A,B,C

35. 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

36. Identify the procedures for basic disk management. A,B,C

37. Differentiate between types of memory. A

38. Identify typical memory conflict problems and how to optimize memory use. A

39. Identify procedures for loading/adding device drivers and the necessary software for certain devices. A,B,C,E
40. 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

41. Recognize common system problems and determine how to resolve them. A,B,C,D

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

V. Evaluation:

A. Testing Procedures:

There will be two tests which count 300 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. Field Work:

N/A

D. Other Evaluation Methods:

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

E. Grading Scale:

900 - 1000 pts. A
800 - 899 pts. B
700 - 799 pts. C
625 - 699 pts. D
0 - 624 pts. F

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. (Pellissippi State Catalog)

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.

C. Accommodations for disabilities:
If you need accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Please see the instructor privately after class or in his/her office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127 or 131 or by phone: 694-6751 (Voice/TTY) or 539-7153.