

Pellissippi State Community College  
Master Syllabus

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**A+ COMPUTER HARDWARE  
CSIT 1710**

Class Hours: 3.0  
Laboratory Hours: 3.0  
Credit Hours: 4.0  
Revised: 11/14/2011

Instructor:  
Office:  
Phone:  
Email:

This course is not intended for transfer credit.

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**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+ (Essentials (220-701) and Practical Applications (220-702) exams certification criteria guidelines for PC hardware subjects. The course also covers basic computer-related mathematics, electricity, electronics, fiber-optics, etc. required for personal computer technologists in an enterprise environment.

**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:** None

**Textbook(s) and Other Course Materials:**

**Required:** *A+ Guide to Managing and Maintaining Your PC*, 7<sup>th</sup> Edition (or latest) by Jean Andrews, Course Technology/Cengage Learning Incorporated, 2010, ISBN-13: 978-1-435-49778-8 (7<sup>th</sup> ed.)

**Optional:**

- *A+ Certification Exam Guide*, (latest edition), Michael Myers
- *Lab Manual for A+ Guide to Hardware*, Jean Andrews, (latest edition), Course Technology.
- *Upgrading and Repairing PCs*, (latest edition), Scott Mueller
- Various PC service guides and other product manuals as required.
- *A+ Certification Exam Guide*, New Riders Publishing (latest edition).

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

**I. WEEK/UNIT/TOPIC BASIS:**

<b>Week</b>	<b>Topic</b>	<b>Book Chapter(s)</b>
1-2	PC Hardware Introduction; Safety; Preventive Maintenance	1; 3
2-4	Basic computer mathematics; electricity; electronics; PC power supplies; “form factors”	4
5-6	PC busses (internal, expansion); Motherboards	5
6-7	Microprocessors	6

7-8	Memory technologies and systems (RAM, ROM, etc.)	7
8-9	Magnetic Storage Devices (Disks, etc.); SCSI devices	8
9-10	I/O devices (sound, video, USB, IEEE 1394, parallel, PS/2, etc) Using Windows "Device Manager"	9
11-12	Multimedia devices; optical storage devices (CD, DVD, BD etc.); tape drives; digital cameras; MIDI devices	10
12-13	Portable PCs (laptops, notebooks, etc., PCMCIA devices, Bluetooth, cellular and WiFi; special memory for portable devices	21
13-14	Supporting printers	22
13-14	Networking PCs	17; 18
14	Diagnosing and Troubleshooting System Problems	11
15	Final Projects/Exam	

## **II. COURSE GOALS:**

The course will

- A. Guide students to develop a working understanding of the terminology, hardware devices, and system software (device drivers, etc.) associated with Personal Computers.(PCs). II, III, VIII, IX, X
- B. Expand student knowledge and skills of diagnosing and troubleshooting PCs. II,III,V, VIII, IX, X
- C. Enhance student knowledge and skills of installing, configuring, and upgrading PC components and software. II, III, IV, V, VIII, X
- D. Develop/enhance student proficiency in written and oral communications about computers. I,II, XII

## **III. EXPECTED STUDENT LEARNING OUTCOMES:\***

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

1. Effectively use terminology associated with computer science, data processing, and networking/communications systems fields. A,B,C,D
2. Effectively use PC hardware. A,B,C
3. Identify basic terms, concepts, and functions of system modules, including how each module should work during normal operation. A,B,C,D
4. Identify basic procedures for adding and removing field replaceable modules. A,B,C
5. Identify available IRQs, DMAs, and I/O addresses and procedures for configuring them for device installation. A,B,C
6. Identify common peripheral ports, associated cabling, and their connectors. A,B,C
7. Identify proper procedures for installing and configuring IDE/EIDE devices. A,B,C
8. Demonstrate an understanding of system architecture, I/O devices, and PC networking A
9. Identify proper procedures for installing and configuring audio/video devices. A,B,C
10. Identify proper procedures for installing and configuring SCSI devices. A,B,C
11. Identify proper procedures for installing and configuring peripheral devices. A,B,C
12. Identify concepts and procedures relating to BIOS. A,B,C
13. Identify hardware methods of system optimization and when to use them. A,B,C
14. Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. A,B,C
15. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers. A,B,C,D
16. Identify the purpose of various types of preventive maintenance products and procedures and when to use/perform them. A,B,C

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\* Capital letters after "Expected Student Learning Outcomes" reference the course goals listed above.

17. Identify procedures and devices for protecting against environmental hazards. A,B,C
18. Identify the potential hazards and proper safety procedures relating to lasers and high-voltage equipment. A,B,C
19. Identify items that require special disposal procedures that comply with environmental guidelines. A,B,C
20. Identify ESD (Electrostatic Discharge) precautions and procedures, including the use of ESD protection devices. A,B,C
21. Distinguish between the popular CPU chips in terms of their basic characteristics. A,B,C
22. Identify the categories of RAM (Random Access Memory) terminology, their locations, and physical characteristics. A,B,C
23. Identify the most popular type of motherboards, their components, and their architecture (for example, bus structures and power supplies). A,B,C
24. Identify the purpose of CMOS (Complementary Metal-Oxide Semiconductor), what it contains and how to change its basic parameters. A,B,C
25. Identify basic concepts, printer operations and printer components. A,B,C
26. Identify care and service techniques and common problems with primary printer types. A,B,C
27. Identify the types of printer connections and configurations. A,B,C
28. Identify the unique components of portable systems and their unique problems. A,B,C
29. Identify basic networking concepts, including how a network works. A,B,C
30. Identify procedures for swapping and configuring network interface cards. A,B,C
31. Identify the ramifications of repairs on the network. A,B,C,D
32. Differentiate effective from ineffective behaviors as these contribute to the maintenance or achievement of customer satisfaction. A,B,C,D
33. Identify operating system functions, structure, and major system files. A,B,C,D
34. Identify ways to navigate the operating system and how to get to needed technical information. A,B,C,D
35. Identify, for PC hardware devices, 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,B,C
38. Identify typical memory conflict problems and how to optimize memory use. A,B,C
39. Identify procedures for loading/adding device drivers and the necessary software for certain devices. A,B,C,D
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

#### **IV. EVALUATION:**

##### **A. Testing Procedures: 50% of Grade**

There will be a minimum of four (4) tests. An alternative is to have examinations after each chapter /subject has been completed. There will be no make-up tests unless prior arrangements are made with the instructor.

##### **B. Laboratory Expectations: 50% of Grade**

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

##### **C. Field Work: N/A**

**D. Other Evaluation Methods:**

**E. Grading Scale:** (based on the maximum number of points possible in a semester)

93 – 100	A
88 – 92	B+
83 – 87	B
78 – 82	C+
73 – 77	C
65 – 72	D
Below 65	F

**V. POLICIES:**

**A. Attendance Policy:**

Students are expected to attend Students are expected to promptly attend all lecture and lab classes as assigned. 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. [NOTE: No differentiation is noted for excused/unexcused absences. These will be treated as an absence.]

**B. Academic Dishonesty:**

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions which may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course.

Maintaining continuous attendance in your classes is very important. If you are considering dropping or withdrawing from a course, please check with the Financial Aid Office before doing so. Dropping or withdrawing from a class can adversely affect your financial aid and/or lottery eligibility.

**C. Computer Usage Guidelines:**

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State’s computing resources in an effective, efficient, ethical and lawful manner.

**D. Accommodation 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, 132, 134, 135 or by phone: 694-6429(TTY) or 539-7153 (Voice). More information is available at [www.pstcc.edu/departments/swd/](http://www.pstcc.edu/departments/swd/).