PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

A+ COMPUTER HARDWARE
CSIT 1710

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Revised: Fall 2015

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 able to:

- Understand the basic operations of standard personal computers and safety directives.
- Lift and carry items up to a maximum of 20 pounds.
- Safely install and troubleshoot PC components (memory, hard drive, power supply, etc.).
- Read, write and perform math at the college entry level.
- Identify color-coded components and wiring; read electrical measuring tools meters
- Use simple hand-tools (pliers, screwdrivers, cutters, electrical tools) safely

Prerequisites/Corequisites:

None

Textbook(s) and Other Course Materials:


Optional:

- Upgrading and Repairing PCs, (latest edition), Scott Mueller
- Various PC service guides and other product manuals as required.
- LabSim Bundle for CompTIA 220-801 and 220-802 Exams, TestOut Corporation. Academic Discount is available with a code available from your instructor.

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

I. Week/Unit/Topic Basis:
Week | Topic
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1-2 | PC Hardware Introduction; Safety; Preventive Maintenance
2-3 | Satisfying Customer Needs
2-4 | Basic computer mathematics; electricity; electronics; PC power supplies; “form factors”
5-6 | PC busses (internal, expansion); Motherboards
6-7 | Microprocessors
7-8 | Memory technologies and systems (RAM, ROM, etc.)
8-9 | Magnetic Storage Devices (Disks, etc.); SCSI devices
9-10 | I/O devices (sound, video, USB, IEEE 1394, parallel, PS/2, etc.)
 | Using Windows “Device Manager”
10-11 | Multimedia devices; optical storage devices (CD, DVD, BD etc.); tape drives; digital cameras; MIDI devices
12-13 | Portable PCs (laptops, notebooks, etc., PCMCIA devices, Bluetooth, cellular and WiFi; special memory for portable devices
13-14 | Supporting printers
 | Networking PCs
14 | Diagnosing and Troubleshooting System Problems
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

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

III. Expected Student Learning Outcomes*:

The student will 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. Read and work from diagrams and service manuals. A,B,C
14. Safely and appropriately operate tools, equipment and technology. A,B,C
15. Read meters. A,B,C
16. Identify hardware methods of system optimization and when to use them. A,B,C
17. Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. A,B,C
18. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers. A,B,C,D
19. Identify the purpose of various types of preventive maintenance products and procedures and when to use/perform them. A,B,C
20. Identify procedures and devices for protecting against environmental hazards. A,B,C
21. Identify the potential hazards and proper safety procedures relating to lasers and high-voltage equipment. A,B,C
22. Identify items that require special disposal procedures that comply with environmental guidelines. A,B,C
23. Identify ESD (Electrostatic Discharge) precautions and procedures, including the use of ESD protection devices. A,B,C
24. Distinguish between the popular CPU chips in terms of their basic characteristics. A,B,C
25. Identify the categories of RAM (Random Access Memory) terminology, their locations, and physical characteristics. A,B,C
26. Identify the most popular type of motherboards, their components, and their architecture (for example, bus structures and power supplies). A,B,C
27. Identify the purpose of CMOS (Complementary Metal-Oxide Semiconductor), what it contains and how to change its basic parameters. A,B,C
28. Identify basic concepts, printer operations and printer components. A,B,C
29. Identify care and service techniques and common problems with primary printer types. A,B,C
30. Identify the types of printer connections and configurations. A,B,C
31. Identify the unique components of portable systems and their unique problems. A,B,C
32. Identify basic networking concepts, including how a network works. A,B,C
33. Identify procedures for swapping and configuring network interface cards. A,B,C
34. Identify the ramifications of repairs on the network. A,B,C,D
35. Differentiate effective from ineffective behaviors as these contribute to the maintenance or achievement of customer satisfaction. A,B,C,D
36. Identify operating system functions, structure, and major system files. A,B,C,D
37. Identify ways to navigate the operating system and how to get to needed technical information. A, B, C, D
38. 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
39. Identify the procedures for basic disk management. A,B,C
40. Differentiate between types of memory. A,B,C
41. Identify typical memory conflict problems and how to optimize memory use. A,B,C
42. Identify procedures for loading/adding device drivers and the necessary software for certain devices. A,B,C,D
43. 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
44. Recognize common system problems and determine how to resolve them. A,B,C,D

*Capital letters after “Expected Student Learning Outcomes” reference the course goals listed above.

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: 45% of Grade

Lab attendance is required. Assignments must be completed and submitted before the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as scheduled. Laboratory will be a combination of Homework, due at the beginning of the class, and Lab assignments, due at the end of the lab.

C. Team Project: 5% of Grade

Students will be required to work together in teams of four, no more than five, and must present on a choice of one of 6 different projects. The purpose of these projects is to familiarize the students in working together as a team, to increase their communications skills, technical writing skills, presentation skills, and over all technical research knowledge. Each team will have 6 minutes to present their project. The project is 5% of the overall grade. All presentations can use “techno-speak” i.e. you may use technical terms in your presentation. HOWEVER, you must be able to define your words or ideas in layman’s terms. The Project deliverables are a research paper of your project using MLA 7th Edition style documentation, MINIMUM of 8 pages, double spaced, a Power Presentation to present the team’s findings lasting no longer than 6 minutes no shorter than 4 minutes in which ALL MEMBERS OF THE TEAM MUST PRESENT SOME PART OF THE SLIDE PRESENTATION, and finally, the team must be prepared to answer questions from the audience for 2 minutes after the presentation.

D. Field Work:

N/A

E. Other Evaluation Methods:

N/A

F. Grading Scale:

(based on the maximum number of points possible in a semester)

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93 – 100</td>
<td>A</td>
</tr>
<tr>
<td>88 – 92</td>
<td>B+</td>
</tr>
<tr>
<td>83 – 87</td>
<td>B</td>
</tr>
<tr>
<td>78 – 82</td>
<td>C+</td>
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<tr>
<td>73 – 77</td>
<td>C</td>
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<tr>
<td>65 – 72</td>
<td>D</td>
</tr>
<tr>
<td>Below 65</td>
<td>F</td>
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</tbody>
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V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which
the course was taken. If further action is warranted, the appeal may be addressed to the vice
president of Academic Affairs.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is
subject to disciplinary action. Prohibited activities include but are not limited to the following
practices:

- Cheating, including but not limited to unauthorized assistance from material, people,
  or devices when taking a test, quiz, or examination; writing papers or reports; solving
  problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly
  quoting published or unpublished work of another person, including online or
  computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials
  prepared by another person or agency that sells term papers or other academic
  materials to be presented as one’s own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes,
  homework or other classroom assignments unless explicitly authorized by the
  instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00
Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical
information to share, or need special arrangements in case the building must be evacuated
should inform the instructor immediately, privately after class or in her or his office. Students
must present a current accommodation plan from a staff member in Disability Services (DS) in
order to receive accommodations in this course. Disability Services may be contacted by
sending email to disabilityservices@pstcc.edu, or by visiting Alexander 130. More
information is available at http://www.pstcc.edu/sswd/.

D. Other Policies:

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.