Course Description

Students will examine microcomputer hardware and peripheral installation, maintenance, and troubleshooting, including networking and security considerations. Material covered prepares students for additional study in networking and information security or support technician positions. This course requires a PC with Windows as it assists with preparing students to sit for the A+ exam.

Course Textbook


Course Learning Outcomes

Upon completion of this course, students should be able to:

1. Identify the hardware for personal computers.
2. Discuss the functions and interactions of personal-computer subsystems.
3. Identify and troubleshoot common problems among the hardware and an operating system for personal computers.
4. Select quality personal computers and constituent components based on performance and cost.
5. Inspect, install, and upgrade personal-computer hardware components.
7. Explain how to secure a personal computer and a local area network.

Credits

Upon completion of this course, the students will earn three (3) hours of college credit.

Course Structure

1. **Unit Learning Outcomes:** Each unit contains Learning Outcomes that specify the measurable skills and knowledge students should gain upon completion of the unit.
2. **Unit Lesson:** Each unit contains a Unit Lesson, which discusses unit material.
3. **Reading Assignments:** Each unit contains Reading Assignments from one or more chapters from the textbook. Suggested Readings are listed in each unit study guide. The readings themselves are not provided in the course, but students are encouraged to read the resources listed if the opportunity arises as they have valuable information that expands upon the lesson material.
4. **Learning Activities (Non-Graded):** These non-graded Learning Activities are provided in each unit to aid students in their course of study.
5. **Key Terms:** Key Terms are intended to guide students in their course of study. Students should pay particular attention to Key Terms as they represent important concepts within the unit material and reading.
6. **Unit Assignments:** Students are required to submit for grading Unit Assignments in Units II-VI. Specific information and instructions regarding these assignments are provided below. Grading rubrics are included with the Unit II-VI Assignments. Specific information about accessing these rubrics is provided below.
7. **Lab Assignments:** Students are required to submit for grading Lab Assignments in each unit. Specific information and instructions regarding these assignments are provided below. Grading rubrics are included with each Lab Assignment. Specific information about accessing these rubrics is provided below.

8. **Ask the Professor:** This communication forum provides you with an opportunity to ask your professor general or course content related questions.

9. **Student Break Room:** This communication forum allows for casual conversation with your classmates.

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**CSU Online Library**

There is a virtual library with resources, including both journals and ebooks, to support your program and your course at Columbia Southern University. eResources are accessible 24 hours a day/7 days a week from the CSU Online Library gateway page. To access the library, log into myCSU, and then click on CSU Online Library. Resources are organized in the library by title, but if you click on Research Guides, you will find eResources arranged by subject.

The Library Reference service is available 7 days a week; you can reach CSU’s virtual librarians by e-mailing thevirtuallibrarian@columbiasouthern.edu. These professional librarians will be glad to help you develop your research plan or to assist you in any way in finding relevant, appropriate, and timely information.

Librarian responses may occur within minutes or hours, but it will never take more than 24 hours for a librarian to send a response to the e-mail address you have provided. Replies to reference requests may include customized keyword search strategies, links to videos, research guides, screen captures, attachments, a phone call, live screen sharing, meeting room appointments, and other forms of instruction.

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**Unit Assignments**

**Unit II Assignment**

The Windows Experience Index: Measure the Capability of Your Computer’s Hardware and Software Configuration.

The Windows Experience Index measures the capability of your computer's hardware and software. In this exercise, students will measure their machines hardware and software capability and capture a screenshot of the results.

Go to Start > Help and Support

1. In the search box type: Windows experience index. Click on the first result. On the next page, read the information provided and then click on the link entitled > Click to open Performance Information and Tools.

2. View the Windows Experience Index base score and subscores for your computer. If you recently upgraded your hardware and want to find out if your score has changed, click Re-run the assessment. If you are prompted for an administrator password or confirmation, type the password or provide confirmation. If you do not see subscores and a base score, click Rate this computer. If you are prompted for an administrator password or confirmation, type the password or provide confirmation.

3. When you are finished viewing your results, click on the link entitled “view and print detailed performance and system information.”

4. Save the results and upload the file to your Unit II Assignment as either a Word document or a PDF.

Answer the following questions:

1. Were you surprised by the overall results? Explain.
2. View your subscores. In what areas would you like to improve your machine’s capability? Why?
3. How might you use these results to improve your machine’s performance?

Write what you find in a Word document. The writing you submit must meet the following requirements:

- be at least two pages in length,
- cover all necessary points for PC hardware and software configuration and performance, and
- identify the main topic/question.
Unit III Assignment

Part 1: Selecting a Processor

Research from the CSU Online Library and the other sources for the current desktop processors available from both AMD and Intel. Next, provide the requirements for several PC builds (a low cost computer, a mid-range, and a high-performance computer), with the requirement that you choose the best fitting processor from either brand for the task.

Low cost computer:
General day-to-day office work, data processing, email, and Internet browsing

- 4 GB ram
- Windows 7 32-bit
- onboard video
- onboard sound
- 2 onboard SATA ports

Mid-range Computer:
Multitasking of applications, dual monitor capability

- 8 GB ram
- Windows 7 64-bit
- AGP video
- PCI sound
- 4 onboard SATA ports

High Performance Computer:
Network monitoring and scanning, virtualization, data storage, and file server

- 16 GB ram
- Windows 7 64-bit
- AGP video
- PCI sound
- 4 onboard SATA ports
- RAID 0, 1, 5 capability

Write what you find in a Word document. The writing you submit must meet the following requirements:

- be at least two pages in length,
- cover all necessary points for building a PC, and
- identify the main topic/question.

Format your document using APA style. Use your own words, and include citations and references as needed to avoid plagiarism.

Part 2: RAID

Explain the different types of RAID, and elaborate on how each type differs.

a. Spanning (JBOD)
b. RAID0
c. RAID1
d. RAID5
e. RAID10 or RAID1+0
Unit IV Assignment

Managing Device Drivers in Windows

In this assignment, students will use the Windows Device Manager to gather information about different drivers and learn how Device Manager manages drivers. Students will answer questions about the features of the Device Manager.

The following equipment is required for this exercise:

- A computer running Windows XP, 7, or 8.

Step 1

- Ensure that you logged on to the computer as an administrator.
- Navigate to the “Control Panel” by clicking Start > Control Panel > System and Security. Click the System link.

Step 2

- The “System Properties” window appears. Open “Driver Signing Options” by clicking Hardware tab > Driver Signing button. Accept the default setting and click OK.
- What are the advantages and disadvantages of having Driver Signing enabled?
- In the left pane, click Advanced System Settings. The “System Properties” window appears. Open “Device Installation Settings” by clicking the Hardware tab > Device Installation Settings button. Accept the default setting and click Cancel.

Step 3

- Click the Device Manager Button.

Step 4

- Click the arrow next to Display adapters. Right-click the adapter name and select Properties.

Step 5

- The “Display adapters Properties” window appears. What information is displayed under the General tab?

Step 6

- Click the Driver tab.
- What functions can you accomplish from this page?
- What is the Drivers Rollback feature and how would you use it?
- What other information can you gather from this tab?

Step 7

- Click the Detail tab. This tab provides more details about the hardware.
Step 8
- Click the Resource tab.
- What information is displayed under the Resource tab? Answers may vary. Close the “Display adapters Properties” windows, click Cancel.

Step 9
- Navigate to the “Network adapter Properties” window by clicking the arrow next to Network adapters > right-click the adapter name > select Properties.
- Which tabs are available?
- Are there any extra tabs?
- What is the purpose of the extra tabs?
- Close the “Network adapters Properties” windows, click Cancel.

Step 10
Describe at least two more ways to access the Device Manager.

How can the Device Manager help in troubleshooting issues with I/O device? Write what you find in a Word document. The writing you submit must meet the following requirements:
- be at least two pages in length,
- cover all necessary points for PC device management, and
- identify the main topic/question.

Format your document using APA style. Use your own words, and include citations and references as needed to avoid plagiarism.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit V Assignment
Satisfying Customer Needs

There may be times when you are asked to develop a computer system tailored to the customer's needs. An example would be the graphics and publications department of a company. Using this or another example, write an essay describing the customization required by the customer and then discuss how you would customize the computer for the customer. The writing you submit must meet the following requirements:
- be at least 200 words in length;
- include an Introduction, Summary, and a Reference Page;
- use at least your textbook as source material for your responses; outside sources from the CSU Online Library are encouraged; and
- all sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations.

Format the writing in your own words using APA style and include citations and references as needed to avoid instances of plagiarism.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit VI Assignment
Suppose a customer contacted you saying that some applications refuse to load and that the computer is also running very slow.

In this case, you will need to find out which open software applications might be hogging your customer’s RAM and causing the problems that the customer is experiencing. Research some tips that you can use to help you troubleshoot this issue. Discuss the steps you would take to help solve the problem. Your paper should be at least one page in length.
The following is a useful resource for this problem: http://www.techsoup.org/support/articles-and-how-tos/eleven-tips-for-troubleshooting-software

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Lab Assignments**

**Unit I Lab Assignment**

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit I Blackboard Lab Assignment.

- Lab 1.1 Record Your Work and Make Deliverables, pp. 2-4.
- Lab 1.2 Gather and Record System Information, pp. 4-15.
- Lab 2.5 Measure Temperature and Adjust Fan Speed, pp. 44-46.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

**Unit II Lab Assignment**

Using your textbook, complete the following problem from “Real Problems, Real Solutions”. Upload your completed results to the Unit II Blackboard Lab Assignment.

Review “Real Problem 4.1: Labeling the Motherboard” on page 171 of the course textbook (not the Lab textbook). Provide an answer for each component (A – DD). Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

**Unit III Lab Assignment**

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit III Blackboard Lab Assignment.

- Lab 5.3 Choose a CPU Cooling Solution, pp. 103-106.
- Lab 5.4 Research a RAM Upgrade on the Web, pp.106-109.
- Lab 6.1 Test Hard Drive Performance Using HD Tune, pp.118-122.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

**Unit IV Lab Assignment**

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit IV Blackboard Lab Assignment.

- Lab 8.2 Use Diagnostics Software to Test I/O Devices, pp. 184-188.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.
Unit V Lab Assignment

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit V Blackboard Lab Assignment.

- Lab 9.4 Research High End Video Cards, pp. 224-228.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

Unit VI Lab Assignment

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit VI Blackboard Lab Assignment.

- Lab 15.1 Understand the OSI Model, pp. 376-378.
- Lab 15.2 Convert Binary and Hexadecimal Numbers, pp. 378-382.
- Lab 15.5 Setup a Wireless Router, pp. 393-399 (use the illustrated figures on pp. 747-758 to help answer the questions in this lab).

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

Unit VII Lab Assignment

Using your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit VII Blackboard Lab Assignment.

- Lab 16.2 Compare Options for a Small Office or Home Office LAN, pp. 407-411.
- Lab 17.3 Manage User Accounts Using Control Panel In Windows 7, p. 434.
- Lab 17.6 Troubleshoot With TCP/IP Utilities, pp. 447-453.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.

Unit VIII Lab Assignment

In your textbook and lab manual, complete the following labs to include the lab review questions. Upload your completed results to the Unit VIII Blackboard Lab Assignment.

- Lab 21.4: Maintain and Troubleshoot a Printer, pp. 558-561.

In the Activity, follow the steps and answer the questions including the Review Questions. Write answers in a Word document and submit it to file upload.

Information about accessing the Blackboard Grading Rubric for this lab assignment is provided below.
APA Guidelines

CSU requires that students use APA style for papers and projects. Therefore, the APA rules for formatting, quoting, paraphrasing, citing, and listing of sources are to be followed. Students can find CSU’s Citation Guide in the myCSU Student Portal by clicking on the “Citation Resources” link in the “Learning Resources” area of the myCSU Student Portal. This document includes examples and sample papers and provides information on how to contact the CSU Success Center.

Grading Rubrics

This course utilizes analytic grading rubrics as tools for your professor in assigning grades for all learning activities. Each rubric serves as a guide that communicates the expectations of the learning activity and describes the criteria for each level of achievement. In addition, a rubric is a reference tool that lists evaluation criteria and can help you organize your efforts to meet the requirements of that learning activity. It is imperative for you to familiarize yourself with these rubrics because these are the primary tools your professor uses for assessing learning activities.

Rubric categories include: (1) Assessment (Written Response) and (2) Assignment. However, it is possible that not all of the listed rubric types will be used in a single course (e.g., some courses may not have Assessments).

The Assessment (Written Response) rubric can be found embedded in a link within the directions for each Unit Assessment. However, these rubrics will only be used when written-response questions appear within the Assessment.

Each Assignment type (e.g., article critique, case study, research paper) will have its own rubric. The Assignment rubrics are built into Blackboard, allowing students to review them prior to beginning the Assignment and again once the Assignment has been scored. This rubric can be accessed via the Assignment link located within the unit where it is to be submitted. Students may also access the rubric through the course menu by selecting “Tools” and then “My Grades.”

Again, it is vitally important for you to become familiar with these rubrics because their application to your Assessments and Assignments is the method by which your instructor assigns all grades.

Communication Forums

These are non-graded discussion forums that allow you to communicate with your professor and other students. Participation in these discussion forums is encouraged, but not required. You can access these forums with the buttons in the Course Menu. Instructions for subscribing/unsubscribing to these forums are provided below.

Once you have completed Unit VIII, you MUST unsubscribe from the forum; otherwise, you will continue to receive e-mail updates from the forum. You will not be able to unsubscribe after your course end date.

Click here for instructions on how to subscribe/unsubscribe and post to the Communication Forums.

Ask the Professor

This communication forum provides you with an opportunity to ask your professor general or course content questions. Questions may focus on Blackboard locations of online course components, textbook or course content elaboration, additional guidance on assessment requirements, or general advice from other students.

Questions that are specific in nature, such as inquiries regarding assessment/assignment grades or personal accommodation requests, are NOT to be posted on this forum. If you have questions, comments, or concerns of a non-public nature, please feel free to e-mail your professor. Responses to your post will be addressed or e-mailed by the professor within 48 hours.

Before posting, please ensure that you have read all relevant course documentation, including the syllabus, assessment/assignment instructions, faculty feedback, and other important information.
Student Break Room

This communication forum allows for casual conversation with your classmates. Communication on this forum should always maintain a standard of appropriateness and respect for your fellow classmates. This forum should NOT be used to share assessment answers.

Grading

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<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Unit Assignments (5 @ 12%)</td>
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<td>Lab Assignments (8 @ 5%)</td>
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<td>Total</td>
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Course Schedule/Checklist (PLEASE PRINT)

The following pages contain a printable Course Schedule to assist you through this course. By following this schedule, you will be assured that you will complete the course within the time allotted.
By following this schedule, you will be assured that you will complete the course within the time allotted. Please keep this schedule for reference as you progress through your course.

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<tr>
<th>Unit I</th>
<th>First Look at Computer Parts and Tools</th>
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| Review: | ☐ Unit Study Guide  
☐ **Learning Activities (Non-Graded):** See Study Guide |
| Read: | ☐ Chapter 1: First Look at Computer Parts and Tools  
☐ Chapter 2: Working Inside a Computer  
☐ **Suggested Reading:** See Study Guide |
| Submit: | ☐ Lab Assignment |
| Notes/Goals: |

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<th>Unit II</th>
<th>The Motherboard</th>
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| Review: | ☐ Unit Study Guide  
☐ **Learning Activities (Non-Graded):** See Study Guide |
| Read: | ☐ Chapter 4: All About Motherboards |
| Submit: | ☐ Assignment  
☐ Lab Assignment |
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<th>Unit III</th>
<th>Supporting Processors and Upgrading Memory</th>
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| Review: | ☐ Unit Study Guide  
☐ **Learning Activities (Non-Graded):** See Study Guide |
| Read: | ☐ Chapter 5: Supporting Processors and Upgrading Memory  
☐ Chapter 6: Supporting Hard Drives |
| Submit: | ☐ Assignment  
☐ Lab Assignment |
| Notes/Goals: |
## Unit IV: Supporting Devices

- **Review:**
  - Unit Study Guide
  - Learning Activities (Non-Graded): See Study Guide
- **Read:**
  - Chapter 8: Supporting I/O and Storage Devices
- **Submit:**
  - Assignment
  - Lab Assignment

## Unit V: Customer Needs

- **Review:**
  - Unit Study Guide
  - Learning Activities (Non-Graded): See Study Guide
- **Read:**
  - Chapter 9: Satisfying Customer Needs
- **Submit:**
  - Assignment
  - Lab Assignment

## Unit VI: Troubleshooting

- **Review:**
  - Unit Study Guide
  - Learning Activities (Non-Graded): See Study Guide
- **Read:**
  - Chapter 13: Troubleshooting Hardware at Startup
  - Chapter 15: Connecting to and Setting Up a Network
- **Submit:**
  - Assignment
  - Lab Assignment

## Unit VII: Networking, Permissions, and Troubleshooting

- **Review:**
  - Unit Study Guide
  - Learning Activities (Non-Graded): See Study Guide
- **Read:**
  - Chapter 16: Networking Types, Devices, and Cabling
  - Chapter 17: Windows Resources on a Network
- **Submit:**
  - Lab Assignment

Notes/Goals:
## Unit VIII

### Supporting Laptops and Printers

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