Orange Public Schools
Comp TIA A+

OBE Approval Date: **October 13, 2015**

CompTIA A+

Content Area:	CTE		Grade(s)	10-12
Unit Plan Title:	Chapter 1 – 12			

Common Core Anchor Standard

Reading

• CCRA.R.7 Integrated and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

• CCRA.R.10 Read and comprehend complex literacy and informational texts independently and proficiently.

Writing

•CCRA.W.2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis content.

•Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Overview/Rationale

I. OVERVIEW

This course covers the fundamentals of computer hardware and software and advanced concepts such as security, networking, and the responsibilities of an IT professional. Students who complete this course will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software. Students will also be able to connect to the Internet and share resources in a networked environment. New topics in this version include mobile devices such as tablets and smartphones and client side virtualization. Expanded topics include the Microsoft Windows 7 operating system, security, networking, and troubleshooting.

Hands-on lab activities are an essential element of the course. The Virtual Laptop and Virtual Desktop are standalone tools designed to supplement classroom learning and provide an interactive "hands-on" experience in learning environments with limited physical equipment.

Cisco Packet Tracer activities are designed for use with Packet Tracer 5.3. The use of Packet Tracer will support alignment with the new CompTIA A+ certification objectives.

In addition, students gain confidence with the components of desktop and laptop computers by learning the proper procedures for hardware and software installations, upgrades, and troubleshooting.

By the end of the course, students will be able to complete the following objectives:

● Define information technology (IT) and describe the components of a personal computer.

● Describe how to protect people, equipment, and environments from accidents, damage, and contamination.

● Perform a step-by-step assembly of a desktop computer.

● Explain the purpose of preventive maintenance and identify the elements of the troubleshooting process.

● Install and navigate an operating system.

● Configure computers to connect to an existing network.

● Upgrade or replace components of a laptop based on customer needs.

● Describe the features and characteristics of mobile devices.

● Install and share a printer.

● Implement basic physical and software security principles.

● Apply good communications skills and professional behavior while working with customers.

● Perform preventive maintenance and advanced troubleshooting.

● Assess customer needs, analyze possible configurations, and provide solutions or recommendations for hardware, operating systems, networking, and security.

II. RATIONALE

We live in an increasingly connected world, creating a global economy and a growing need for technical skills. Computer Repair and Design provides a comprehensive overview of computer fundamentals. It is intended for students who may want to pursue a career in IT and gain practical knowledge of how a computer works. Computer Repair and Design will help students prepare for entry-level IT positions in various environments. It will also help students develop greater skills and confidence in working with desktop and laptop computers.

This course provides an excellent introduction to the IT industry and interactive exposure to personal computers, hardware, and operating systems. Students participate in hands-on activities and lab-based learning to become familiar with various hardware and software components and discover best practices in maintenance and safety.

Standard(s)

Lesson 1

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.

- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual,

Society, and the environment.

- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century

- 9.3. IT.5 Explain the implications of IT on business development.
- 9.3. IT .12 Demonstrate knowledge of the hardware components associated with information systems.
- 9.3. IT-SUP .1 Provide technology support to maintain service.

<u>**Lesson 2**</u>

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.

- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.

- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

<u>**Lesson 3**</u>

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.

- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.

- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill

- 9.3.IT .12 Demonstrate knowledge of the hardware components associated with information systems.

- 9.3.IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3.IT-SUP Perform installation, configuration and maintenance operation systems.

9.3.IT .12 Demonstrate knowledge of the hardware components associated with information systems.

Lesson 4

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3.IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3.IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3.IT-SUP Perform installation, configuration and maintenance operation systems.
- 9.3.IT .12 Demonstrate knowledge of the hardware components associated with information systems.

Lesson 5

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill

- 9.3.IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3.IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3.IT-SUP.4 Perform installation, configuration and maintenance operation systems.
- 9.3.IT-SUP.6 Evaluate the effectiveness of an information system.
- 9.3.IT-SUP.8 Employ system installation and maintenance skills to setup and maintain an information system.
- 9.3.IT-PRG .1 Analyze customer software needs and requirements.
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Lesson 6

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3.IT-SUP .5 Demonstrate the use of networking concepts to develop a network.
- 9.3.IT-NET .1 Analyze customer or organizational network system needs and requirements.
- 9.3.IT-NET.2 Analyze wired and wireless networks systems to determine if they meet specifications (e.g., IEEE. Power and security).
- 9.3.IT-NET .3 Design a network system using technologies, tools and standards.
- 9.3.IT-NET .4 Perform a network system installation and configuration.

Lesson 7

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology

- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill

- 9.3.IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3.IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3.IT-SUP.4 Perform installation, configuration and maintenance operation systems.
- 9.3.IT-SUP.6 Evaluate the effectiveness of an information system.
- 9.3.IT-SUP.8 Employ system installation and maintenance skills to setup and maintain an information system.
- 9.3.IT-PRG .1 Analyze customer software needs and requirements.

Lesson 8

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.

- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.

- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill

- 9.3.IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3.IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3.IT-SUP.4 Perform installation, configuration and maintenance operation systems.
- 9.3.IT-SUP.6 Evaluate the effectiveness of an information system.
- 9.3.IT-SUP.8 Employ system installation and maintenance skills to setup and maintain an information system.
- 9.3.IT-SUP .5 Demonstrate the use of networking concepts to develop a network.

Lesson 9

8.1 Computer and Information literacy: All students will use computer applications to gather and

organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3. IT-SUP .2 Manage operating systems and software application, including maintenance of upgrades patches and service packs.
- 9.3. IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3. IT-SUP.4 Perform installation, configuration and maintenance operation systems.
- 9.3. IT-SUP.6 Evaluate the effectiveness of an information system.
- 9.3. IT-SUP.8 Employ system installation and maintenance skills to setup and maintain an information system.

Lesson 10

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3. IT- .4 Demonstrate positive cyber citizenry by applying industry accepted practices and behaviors.
- 9.3. IT- .8 Recognize and analyze potential IT security treat to develop and maintain security requirements.
- Manage operating systems and software application, including maintenance of upgrades patches and service packs.

- 9.3. IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
- 9.3.IT-SUP.4 Perform installation, configuration and maintenance operation systems.
- 9.3.IT-SUP.8 Employ system installation and maintenance skills to setup and maintain an information system.

Lesson 11

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3.IT- .1 Demonstrate effective professional communication skills and practices that enable positive customer relationships.
- 9.3.IT- .2 Use product or service design process and guidelines to produce a quality information (IT) product or service.

Lesson 12

8.1 Computer and Information literacy: All students will use computer applications to gather and organize information and to solve problems.
- 8.1.12. A. Basic Computer Skills and Tools
- 8.1.12. B. Application of Productivity Tools

8.2 Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world as they relate to the individual, Society, and the environment.
- 8.2.12 A. Nature and Impact of Technology
- 8.2.12 B. Design Process and Impact assessment
- 8.2.12 C Systems in the Designed World

21st Century Skill
- 9.3. IT-SUP .2 Manage operating systems and software application, including maintenance of

upgrades patches and service packs.

- 9.3.IT-SUP .3 Apply appropriate troubleshooting techniques in resolving computer hardware,

- 9.3. IT-SUP .5 Demonstrate the use of networking concepts to develop a network.
- 9.3. IT-NET .1 Analyze customer or organizational network system needs and requirements.

Technology Standard(s)	Interdisciplinary Standard(s)
8.1.12.A.3 Participate in online courses, learning communities, social networks or a virtual world as resources for lifelong learning. 8.1.4D.3 Explain the purpose of an Acceptable Use policy (AUP) and the consequences of inappropriate use of technology. 8.1.12.F.2 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address education, career, personal, and social needs.	7.1.AL.C.03 Creatively in writing for personal career or academic purposes. 7.1.IH.A.05 Synthesize information from oral and written discourse dealing with a variety of topics. 7.1.NH.A.05 Demonstrate comprehension of short conversations and brief written messages on familiar topics. 6.1.12.C.03.A Analyze how technological developments transformed the economy created international markets and affected the environment in New Jersey and the nation. 6.1.12.C.08.B Relate social cultural and technological changes in the interwar period to the rise of a consumer economy and the changing role and status of women. - A.REI.1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. - N.Q.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

Chapter 1: INTRODUCTION TO THE PERSONAL COMPUTER

Chapter 1 identifies the various hardware components that are required to build a desktop computer and explains the unique purpose of each component, including how all components work together as a unit. This chapter also provides students with the knowledge needed to select computer components based on hardware compatibility requirements and the needs of a customer.

This chapter is important because it provides the foundational information that is required to build, upgrade, design and repair personal computers.

Essential Questions
- What are the IT industry certifications?
- Why is it important to know the different names and functions of the components inside a personal computer?
- How will these skills benefit me in future**?**

Chapter 2: SAFE LAB PROCEDURES AND TOOL USE

This chapter covers basic safety practices for the workplace, hardware and software tools, and the disposal of hazardous materials. The chapter also introduces students to a wide variety of tools that can be used in IT. This chapter is important because it provides the foundational information for lab and workplace safety.

Essential Questions
- What is the purpose of safe working conditions and procedures?
- How will knowing safe work procedures benefit me in future?
- What are the tools and software necessary for proper use with personal computer components and what is their purpose?

Chapter 3: COMPUTER ASSEMBLY STEP BY STEP

Chapter 3 provides step-by-step instructions for assembling a desktop computer. Hands-on labs allow the student to assemble a computer with an emphasis on safe practices. The chapter also provides students with foundational knowledge of BIOS settings, as well as the knowledge required to successfully upgrade PC components.

This chapter is important because it gives students the opportunity to apply their knowledge of computer components to computer assembly, as well as develop important skills.

For students who do not have access to a physical desktop computer in the lab, Chapter 3 also provides a Virtual Desktop. The Virtual Desktop labs demonstrate desktop assembly through animation and student interaction.

Essential Questions
- What are the steps to successfully assembling a desktop computer?
- Why are these skills important to know?
- How will these skills benefit me in future?

Chapter 4: BASICS OF PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

This chapter discusses preventive maintenance and a methodology for troubleshooting computer problems. It explains the benefits of having a preventive maintenance program, including hardware and software. This chapter also outlines a process for troubleshooting computer hardware and software problems.

This chapter is important because many IT technicians are responsible for the upkeep of all of the computers at a company. Having and adhering to a preventive maintenance plan saves the company money by avoiding many types of computer problems. When a problem does occur, a technician who uses the troubleshooting methodology that is described in this chapter can, in most instances, identify and fix the problem quickly. Preventive maintenance and troubleshooting skills are so important that they are included in every chapter that follows this one.

Essential Questions
- What is the purpose of preventive maintenance?
- Why is it important to work in a step by step of the troubleshooting process?
- How will these skills benefit me in future?

CHAPTER 5: FUNDAMENTAL OPERATING SYSTEMS

This chapter discusses operating systems (OS). It covers the functions and terminology of operating systems, specifically Windows 7, Windows Vista, and Windows XP. Because operating system functionality varies, this chapter explains how to determine the appropriate OS based on customer needs. The student will install an OS, navigate the GUI, perform preventive maintenance, and troubleshoot computer problems that are related to the OS.

Chapter 5 is important because operating systems control most of the functions of a computer. Most software, such as Microsoft Office, requires an OS to operate. Many of the common computer problems that technicians must solve are related to the OS and can be solved with the knowledge and skills developed in Chapter 5.

Essential Questions
- What is the purpose of an operating system?
- Based on a customer's needs, how does one decide on which operating system to use?
- Why is it important to have GUI operating systems?
- What are the procedures for installing an operating system?
- How will these skills benefit me in future?

Chapter 6: Networks

The chapter introduces networking and the basic concepts that are associated with networking. Networks are everywhere; with voice, video, and data converging on the same network, it is important for students to be able to install devices on a network. Even students who are not planning on entering the networking field must be able to add devices to the network, understand basic networking concepts as they relate to such installations, and be able to configure basic network settings.

Included in this introduction are the different types of networks, IP addressing including using DHCP and ICMP to check for connectivity, network components and cabling, Ethernet standards, Internet connectivity, and basic network troubleshooting.

Essential Questions
- What is a computer network?
- What are the benefits of a computer network?
- What are the different types of computer networks?
- What are important networking concepts, standards and technologies
- What are the physical components of a network?
- What are the LAN topologies and architectures?
- What are important maintenance and troubleshooting techniques for a network?
- When is it necessary to upgrade a network?
- Why are these skills important to know?
- How will these skills benefit me in future?

CHAPTER 7: FUNDAMENTAL LAPTOPS

Chapter 7 reviews the components that comprise a basic laptop, including external and internal structure, display types, power settings, and wireless communication technologies. The chapter also provides step-by-step instructions for how to replace customer replaceable units (CRUs) and field-replaceable units (FRUs) in a laptop. Laptop preventive maintenance and troubleshooting are covered as well.

This chapter is important because more people are using laptops in addition to, or instead of, desktop computers. There are differences across all makes and models of laptops, but certain technologies are common to all. For this reason, IT technicians are likely to spend much of their time maintaining and troubleshooting laptops.

Essential Questions
- Why it is important to known the common uses and components of a laptop?
- How are laptops and other portable devices used in the commercial industry?
- How does one maintain and troubleshoot laptops and portable devices?
- How will these skills benefit me in future?

Chapter 8: Mobile Devices

This chapter provides an introduction to Android and IOS mobile devices. The chapter focuses on the many features of mobile devices and their capabilities, including configuration, synchronization, and data backup

and troubleshooting.

This chapter is important because the foundational information for mobile devices.

All the material in this chapter is new to the IT Essentials curriculum.

Essential Questions
- What are the common uses and components of a mobile device?
- How does one configure a mobile device?
- How does one maintain and troubleshoot portable device?
- How will these skills benefit me in future?

CHAPTER 9: FUNDAMENTAL PRINTERS

Chapter 9 introduces students to the characteristics, capabilities, and maintenance of commonly used printers. The chapter provides students with the opportunity to install and share a local inkjet printer in a variety of Windows Operating Systems.

This chapter is important because it provides the foundational information that is required to install and maintain printers.

Essential Questions
- What are the types of printers currently available on the market?
- How does one install and configure a printer?
- What techniques are used to maintain and troubleshoot printers?
- How would a shared printer benefit a home or office?
- When is it necessary to upgrade a printer?
- How is a printer to be disposed of properly and according to local and state regulations?
- How will these skills benefit me in future?

CHAPTER 10: SECURITY

Chapter 10 details security concepts including security threats, security policy components, security implementation, preventive procedures, and common security problems.

Security is a vital part of computing and networking, because of the amount and type of information that is shared over networks. Every person involved with a computer must be made aware of security threats and measures that can be used to protect data and computerized equipment. For this reason, students must develop the skills necessary to address potential threats to data.

Essential Questions
- Why is security important?
- What are security threats?
- What are procedures to deal with security threats?
- What are common preventive maintenance and troubleshooting techniques for security?
- What technologies and devices would be needed to a secure not only digital assets but the physical facility itself?
- How do network components of the same type differ from each other?

- Why are these skills important to know?
- How will these skills benefit me in future?

CHAPTER 11: The IT Professional

Chapter 11 provides an overview of the communication skills needed by an IT professional and details the concept of professionalism. The chapter also explains the fundaments of dealing with prohibited content as well as discussing legal and ethical issues associated with a career in IT.

This chapter is important because it focuses on communication skills. For many of those drawn to the technical world, communication is their weakest skill. Communication skills can be practiced and improved upon. These skills are also critical for obtaining a job. Although many technical teachers would rather teach technical subjects than soft skills such as communication, it is imperative for the instructor to realize the importance of communication skills and spend appropriate class time on this topic

Essential Questions
- What is the relationship between communication and troubleshooting?
- What are good communication skills and professional behavior?
- What are legal and ethical aspects of working with computer technology?
- What constitutes the call center environment and technician responsibilities?
- How will these skills benefit me in future?

CHAPTER 12: Advanced Troubleshooting

Chapter 12 provides students an opportunity to troubleshoot advanced problems.
This chapter is important because it focuses the development of advanced troubleshooting skills. These skills are critical for obtaining and performing a job.

Essential Question
- If you had to choose between field, remote, and bench technician, which would best suite your personality traits in your opinion?
- How to diagnose and resolve advanced hardware and software problems?
- Why is it important to troubleshoot computer components and peripherals?
- How to apply the six steps of the troubleshooting process to operating systems?
- When is it not cost effective to upgrade a computer (hardware/software)?
- How will these skills benefit me in future?

Enduring Understandings
Chapter 1: Introduction to the Personal Computer

Enduring Understandings

- Identify the parts of a personal computer
- Understand why the computer components are essential for a personal computer to function
- Determine how the Cisco IT Essentials program is able to help at home, in a business, and/or their future careers in the IT industry

Chapter 2: Lab Procedures and Tool Use
Enduring Understandings

- Explain the purpose of safe working conditions and procedures.
- Identify tools and software used with personal computer component and their purposes
- Explain the purpose of safe working conditions and procedures.
- Implement proper tool use.

Chapter 3: Computer Assembly
Enduring Understandings

- Disassemble and assemble a computer.
- Install the power supply, attach the components to the motherboard and install the motherboard.
- Install drives in external bays and install adapter cards.
- Connect all internal cables and re-attach the side panels and connect external cables to the computer.
- Boot computer for the first time.

Chapter 4: Preventative Maintenance and Troubleshooting
Enduring Understandings

- Explain the purpose of preventive maintenance.
- Identify the steps of the troubleshooting process.
- Implement proper tool use.

Chapter 5: Operating Systems
Enduring Understandings

- Explain the purpose of an operating system.
- Install, troubleshoot, and repair operating systems.
- Explain the purpose of operating systems and GUI
- Environments.
- Identify and apply common preventive maintenance techniques for operating systems.
- Troubleshoot operating systems.

Chapter 6: Networks
Enduring Understandings

- Explain the principles of networking.
- Describe types of networks
- Describe basic networking concepts and technologies
- Describe the physical components of a network
- Describe LAN topologies
- Identify Ethernet standards
- Explain OSI and TCP/IP data models

Chapter 7: Laptops
Enduring Understandings

- Describe the use and advantages of laptops.
- Identify and describe the display components of a laptop.
- Identify and describe how to manage laptop power settings and options.
- Identify and configure laptop wireless adapters and settings.
- Identify and describe laptop hardware component installation and configuration.
- Identify common preventive maintenance techniques used for laptops.
- Describe how to troubleshoot laptops.

Chapter 8: Mobile Devices
Enduring Understandings

- Describe mobile devices.
- Identify mobile device hardware and that most parts are not field replaceable
- Compare and contrast Android and IOS mobile operating systems
- Explain how to configure network and email connectivity on mobile devices.
- Identify methods for securing mobile devices
- Describe how to troubleshoot mobile devices

Chapter 9: Printers
Enduring Understandings

- Describe the common features of printers
- Describe the various types of printers
- Describe how to install and configure printers
- Describe and implement printer sharing
- Identify and apply common preventive maintenance techniques for printers
- Apply the troubleshooting process to troubleshoot printers

Chapter 10: Security
Enduring Understandings

- Explain why security is important.
- Describe security threats.
- Identify security procedures.
- Identify common preventive maintenance techniques for security.
- Troubleshoot security.

Chapter 11: The IT Professional
Enduring Understandings

- Explain the relationship between communication and troubleshooting.
- Describe good communication skills and professional behavior
- Explain the ethics and legal aspects of working with computer technology including computer forensics and cyber law
- Describe call center environment and technician responsibilities

Chapter 12: Advanced Troubleshooting
Enduring Understandings

- Identify and practice advanced skills in troubleshooting techniques and diagnostic methods.
- Identify and apply the steps of the troubleshooting process to solve Computer Components and Peripherals issues.
- Identify and apply the steps of the troubleshooting process to solve Operating System issues.
- Identify and apply the steps of the troubleshooting process to solve Network issues.

In this unit plan, the following 21st Century themes and skills are addressed.

Check all that apply. **21st Century Themes**		*Indicate whether these skills are E-Encouraged, T-Taught, or A-Assessed in this unit by marking E, T, A on the line before the appropriate skill.* **21st Century Skills**	
E	Global Awareness	T/E	Creativity and Innovation
E	Environmental Literacy	T/A	Critical Thinking and Problem Solving
E	Health Literacy	T/A	Communication
E	Civic Literacy	T/A	Collaboration
T/E	Financial, Economic, Business, and Entrepreneurial Literacy		

Student Learning Targets/Objectives

Chapter 1: Introduction to the Personal Computer
- Explain IT industry certifications and technician jobs
- Describe personal computer systems.
- Identify the names, purposes, and characteristics of:

- Cases and power supplies
- Internal components
- Ports and cables
- Input and output devices
- Describe situations requiring replacement of computer components.
- Select a case and power supply based on customer needs.
- Select the PC components based on customer needs.
- Describe hardware configurations for task-specific computers.
- Evaluate and select hardware for specialized computer systems.

Chapter 2: Lab Procedures and Tool Use
- Explain the purpose of safe working conditions and procedures.
- Identify safety procedures and potential hazards for users and technicians.
- Identify tools and software used with personal computer components and their purposes.
- Identify hardware tools and their purpose.
- Identify software tools and their purpose.
- Identify organizational tools and their purpose.
- Demonstrate proper use of an antistatic wrist strap and an antistatic mat.

Chapter 3: Computer Assembly
- Assemble a desktop computer.
- Open the case and install the power supply.
- Install all of the drives in the computer case.
- Install all of the adapter cards on the motherboard.
- Connect all of the power cables, data cables, front panel cables, and external cables in the computer, and reassemble the case.
- Boot the computer for the first time.
- Identify beep codes and enter the BIOS setup program.
- Describe BIOS setup screens and items.
- Upgrade and configure components in a computer system to meet a customer's requirements.
- Upgrade and configure a motherboard, CPU, RAM, and BIOS.
- Upgrade and configure storage devices.
- Upgrade and configure input and output devices

Chapter 4: BASICS OF PREVENTIVE MAINTENANCE AND TROUBLESHOOTING
- Describe the purpose and benefits of preventive maintenance for personal computers.
- Explain the purpose of PC preventive maintenance.
- Identify the steps of the troubleshooting process and perform basic PC troubleshooting.
- List and explain the purpose of each of the troubleshooting process steps.
- Identify common problems and solutions for PCs.

Chapter 5: Operating Systems
- Explain the purpose of an operating system.
- Describe characteristics of modern operating systems.
- Describe desktop and network operating systems.
- Determine applications, environments, and minimum hardware that are compatible with an OS and the customers' needs.
- Describe upgrading an operating system.
- Perform an operating system installation.
- Identify hard drive setup procedures.
- Prepare a hard drive for the installation of an operating system.
- Perform an operating system installation using default settings,
- Create computer user accounts.
- Complete the operating system installation.
- Describe custom installation options.
- Identify the boot sequence and registry files.
- Explore common tools and utilities of the Windows GUI.
- Manipulate items on a desktop.
- Use Windows tools to install, navigate, and uninstall an application
- Identify and describe administrative tools
- Explain control panel utilities common to all Microsoft operating systems.
- Explain control panel utilities unique to Windows 7, unique to Vista, and unique to XP.
- Use Command Line tools to install an OS.
- Explain client-side virtualization.
- Describe the purpose and requirements of virtual machines
- Describe the resource requirements of virtual machines.
- Describe the emulator requirements of virtual machines.
- Describe the hypervisor of virtual machines.
- Identify and apply common preventive maintenance techniques for operating systems
- Create a preventive maintenance plan
- Create a task that is performed automatically according to a schedule
- Create a back up of the hard drive
- Troubleshoot operating systems.
- Apply the six steps of the troubleshooting process to operating systems.
- Identify common problems and solutions for operating systems

Chapter 6: Networks
- Explain the principles of networking
- Describe types of networks
- Describe basic networking concepts and technologies
- Describe the physical components of a network
- Describe LAN topologies

- Identify Ethernet standards
- Explain OSI and TCP/IP data models
- Describe how to configure a NIC and connect to a network
- Identify names, purposes, and characteristics of other technologies used to establish connectivity to the Internet
- Identify and apply common preventive maintenance techniques used for networks
- Troubleshoot a network

Chapter 7: Laptops
- Describe the use and advantages of laptops.
- Identify and describe the display components of a laptop.
- Identify and describe how to manage laptop power settings and options.
- Identify and configure laptop wireless adapters and settings.
- Identify and describe laptop hardware component installation and configuration.
- Identify common preventive maintenance techniques used for laptops.
- Describe how to troubleshoot laptops.

Chapter 8: Mobile Devices
- Describe mobile devices
- Identify mobile device hardware and that most parts are not field replaceable
- Compare and contrast Android and IOS mobile operating systems
- Explain how to configure network and email connectivity on mobile devices.
- Identify methods for securing mobile devices
- Describe how to troubleshoot mobile devices

Chapter 9: Printers
- Describe the common features of printers
- Describe the various types of printers
- Describe how to install and configure printers
- Describe and implement printer sharing
- Identify and apply common preventive maintenance techniques for printers
- Apply the troubleshooting process to troubleshoot printers

Chapter 10: Security
- Explain why security is important
- Describe security threats
- Identify security procedures
- Identify common preventive maintenance techniques for security
- Troubleshoot security

Chapter 11: The IT Professional
- Explain the relationship between communication and troubleshooting

- Describe good communication skills and professional behavior
- Explain the ethics and legal aspects of working with computer technology including computer forensics and cyber law
- Describe call center environment and technician responsibilities

Chapter 12: Advanced Troubleshooting

- Identify and practice advanced skills in troubleshooting techniques and diagnostic methods.
- Identify and apply the steps of the troubleshooting process to solve Computer Components and Peripherals issues.
- Identify and apply the steps of the troubleshooting process to solve Operating System issues.
- Identify and apply the steps of the troubleshooting process to solve Network issues.
- Identify and apply the steps of the troubleshooting process to solve Laptop issues.
- Identify and apply the steps of the troubleshooting process to solve Printer issues.
- Identify and apply the steps of the troubleshooting process to solve Security issues.

Assessments

Chapter 1

Formative Assessments

1. Open Discussion: How can a CompTIA A+ Certification help you with job opportunities?
2. Practice Quiz
3. Worksheet: Job Opportunities
4. Worksheet: Research Computer Components

- Students should complete the Chapter 1 Assessment after they have completed Chapter 1.
- Worksheets and labs can be used to informally/authentic assess student progress.
- Skills Based Assessments can be used to assess student skill development at the end of a chapter and/or at the end of the course.
    - SBA - PC Hardware cannot be performed until Chapter 3 has been completed.
    - The skills required to complete SBA – PC Hardware are acquired throughout Chapters 1 to 3.

Summative Assessments

1. Chapter 1 Test: Online exam - multiple choice

Chapter 2
Formative Assessments

1. Open Discussion: How do you address safety in the workplace as an employee?
2. Practice Quiz
3. Worksheet: Diagnostic Software

Authentic assessments

Hands-on Lab: Computer Disassembly

Summative Assessments
1. Unit Test: Online exam - multiple choice

- Students should complete the Chapter 2 Assessment after they have completed Chapter 2.
- Worksheets and labs can be used to informally/authentic assess student progress.

Chapter 3
Formative Assessments
1. Open Discussion: How do you address safety in the workplace as an employee?
2. Practice Quiz

Authentic assessments

3. Hands-on Lab: Install the Power Supply
4. Optional Virtual Desktop Activity
5. Hands-on Lab: Install the Motherboard
6. Optional Virtual Desktop Activity
7. Optional Virtual Desktop Activity
8. Hands-on Lab: Install the Drives
9. Optional Virtual Desktop Activity
10. Hands-on Lab: Install Adapter Cards
11. Optional Virtual Desktop Activity
12. Hands-on Lab: Install Internal Cables
13. Optional Virtual Desktop Activity
14. Hands-on Lab: Complete the Computer Assembly
15. Optional Virtual Desktop Activity
16. Hands-on Lab: Boot the Computer

- Students should complete the Chapter 3 Assessment after they have completed Chapter 3.
- Worksheets and labs can be used to informally/authentic assess student progress.
- SBA - PC Hardware can be used to assess student skill development at the end of Chapter 3 and/or at the end of the course.
  - SBA – PC Hardware should be performed after Chapter 3 has been completed.
  - The skills required to complete SBA – PC Hardware are acquired throughout Chapters 1 to 3.

Summative Assessments
1. Unit 3 Test: Online exam - multiple choice

Chapter 4
Formative Assessments
1. Open Discussion: How do you address safety in the workplace as an employee?
2. Practice Quiz

Summative Assessments
3. N/A

Chapter 5
Formative Assessments/Authentic assessments

1. Open Discussion: How do you address safety in the workplace as an employee?
4. Practice Quiz
2. Worksheet: NOS Certifications and Jobs
3. Worksheet: Upgrade Hardware Components
4. Lab: Install Windows XP
5. Optional Lab: Install Windows Vista
6. Lab: Create Accounts and Check For Updates in Windows XP
7. Optional Lab: Create Accounts and Check For Updates in Windows Vista
8. Lab: Managing System Files with Built-in Utilities in Windows XP
9. Optional Lab: Managing System Files with Built-in Utilities in Windows Vista
10. Worksheet: Answer NTFS and FAT32 Questions
11. Lab: Run Commands in Windows XP
12. Optional Lab: Run Commands in Windows Vista
13. Lab: Managing Administrative Settings and Snap-ins in Windows XP
14. Optional Lab: Managing Administrative Settings and Snap-ins in Windows
5. Vista
15. Lab: Install Third-Party Software in Windows XP
16. Optional Lab: Install Third-Party Software in Windows Vista
17. Lab: Restore Points in Windows XP
18. Lab: Restore Points in Windows Vista
19. Lab: Registry Backup and Recovery in Windows XP
20. Lab: Managing Device Drivers with Device Manager in Windows XP
21. Optional Lab: Managing Device Drivers with Device Manager in Windows Vista

Summative Assessments
1. Unit 5 Test: Online exam - multiple choice

- Students should complete the Chapter 5 Assessment after they have completed Chapter 5.
- Worksheets and labs can be used to informally/authentic assess student progress.
- SBA – Configure Windows and SBA – Install Windows can be used to assess student skill development at the end of a chapter and/or at the end of the course.
  - SBA – Configure Windows and SBA – Install Windows should be performed upon completion of Chapter 5.
  - SBA – Preventive Maintenance can also be performed upon completion of Chapter 5. It should not be performed after the completion of Chapter 4, because students have not learned the OS concepts used in the lab.

Chapter 6
Formative Assessments
1. Worksheet: Research Laptops, Smartphones, and PDAs
2. Worksheet: Complete Docking Stations True or False Questions
3. Worksheet: Answer Laptop Expansion Questions
4. Worksheet: Match ACPI Standards

5. Worksheet: Research Laptop Problems
6. Chapter 6 Quiz

Summative Assessments
1. Chapter 6 Test: Online exam - multiple choice

- Students should complete the Chapter 6 Assessment after they have completed Chapter 6.
- Worksheets and labs can be used to informally/authentic assess student progress.
- SBA - Networks can be used to assess student skill development at the end of chapter 6 and/or at the end of the course.

Chapter 7
Formative Assessments/Authentic assessments

1. Open Discussion: How do you address safety in the workplace as an employee?
2. Quiz
3. Lab: Install All-in-One Device and Software

Summative Assessments
1. Unit 7 Test: Online exam - multiple choice

- Students should complete the Chapter 7 Assessment after they have completed Chapter 7.
- Worksheets and labs can be used to informally/authentic assess student progress.
- Skills Based Assessments can be used to assess student skill development at the end of a chapter and/or at the end of the course.
  - SBA – Laptops can be performed after the completion of Chapter 7.

Chapter 8
Formative Assessments/Authentic assessments

- Open Discussion: How do you address safety in the workplace as an employee?
- Practice Quiz
- Worksheet: Identify IP Address Classes
- Packet Tracer Activity: Cabling a Simple Network
- Worksheet: Internet Search for NIC Drivers
- Lab: Configure an Ethernet NIC to use DHCP in Windows XP
- Optional Lab: Configure an Ethernet NIC to use DHCP in Windows Vista
- Packet Tracer Activity: Adding Computers to an Existing Network
- Worksheet: Answer Broadband Questions
- Worksheet: Diagnose a Network Problem

Summative Assessments
Unit 8 Test: Online exam - multiple choice

- Students should complete the Chapter 8 Assessment after they have completed Chapter 8.
- Worksheets and labs can be used to informally assess student progress.

Chapter 9
Formative Assessments/Authentic assessments

- Chapter 9 Quiz
- Worksheet: Security Attacks
- Worksheet: Third-Party Anti-Virus Software
- Packet Tracer Activity: Connecting Wireless PCs to a Linksys WRT300N
- Worksheet: Operating System Updates
- Worksheet: Gather Information from the Customer

Summative Assessments

Unit 9 Test: Online exam - multiple choice

- Students should complete the Chapter 9 Assessment after they have completed Chapter 9.
- Worksheets and labs can be used to informally assess student progress.
- SBA - Printers can be used to assess student skill development at the end of chapter 9 and/or at the end of the course.

Chapter 10
Formative Assessment

Quiz
Worksheet: Technician Resources

Summative Assessments

Unit 10 Test: Online exam - multiple choice Students should complete the Chapter 10 Assessment after they have completed Chapter 10.

- Worksheets and labs can be used to informally assess student progress.
- SBA – Security can be used to assess student skill development at the end of Chapter 10 and/or at the end of the course.

Chapter 11

- Students should complete the Chapter 11 Assessment after they have completed Chapter 11.
- Worksheets and labs can be used to informally/authentic assess student progress.
- SBA – Security can be used to assess student skill development at the end of Chapter 11 and/or at the end of the course.

Chapter 12
- Students should complete the Chapter 12 Assessment after they have completed Chapter 12.
- Worksheets and labs can be used to informally/authentic assess student progress.
- SBA – Security can be used to assess student skill development at the end of Chapter 12 and/or at the end of the course.

Assessments may include:
- **Online assessments**
- **Skills based assessments**
- **Special projects**
- **Lab reports**

- **Presentations**
- **Class work**
- **Homework**
- **Exam**

Teaching and Learning Actions

| *Instructional Strategies D* | **Strategies may include:**
Chapters [cisco.netacad.net
Instructor PowerPoint: Chapters 1-12
    ▪ Lectures
    ▪ Class discussion
    ▪ Hand outs
    ▪ Demonstrations
    ▪ Computer simulation activities
    ▪ Guest speakers
    ▪ Laboratory activities
    ▪ Videos
    ▪ Study guides
    ▪ Research
    ▪ Special projects
    ▪ PowerPoint presentations
    ▪ Cisco Packet Tracer

Chapter 1: Best Practices
    ▪ Ensure that students acquire as many hands-on experiences as possible.
        ▪ Make different types of computers and computer parts available for students to view during class.
        ▪ If parts are unavailable, use pictures of components that display different makes and models.
    ▪ When handling components, set an example for students by modeling best practices:
        ▪ Always use an anti-static wrist strap and anti-static mat
        ▪ Store the components properly
    ▪ As students learn about each of the computer components, begin assembling a computer part-by-part in order to demonstrate to students how the components fit together.
        ▪ Explain that each of the components have to be compatible with one another.
        ▪ If possible, demonstrate how components can be incompatible by showing students how form factors can prevent some components, such as RAM, from physically fitting into others, such as a socket. |

Chapter 2: Best Practices

- Disassemble a computer in teams.
- Have students rotate with each step so everyone gets hands-on time.
- Lead the students through the disassembly process. For example, the first step in the lab is to turn off the computer and disconnect power. It is very important for the students to verify that the computer works BEFORE disassembly. Then, have all the students power down and remove the power cord. No team can progress until all power cords have been removed. Then, move on to step 2. In this manner, the teacher can address issues or reinforce the lecture, and everyone is on the same step and concept.
- Because CPUs are very expensive and easy to damage, it is not recommended to allow the students to remove the CPU during the computer disassembly process. Obtain bad CPUs from outside computer repair companies to use for class discussion and demonstration.

Chapter 3: Best Practices

- Stress cleanliness in the work area by putting away tools and straightening cables.
- Allow students to troubleshoot their own computer assembly problems. Put the student name(s) on computers that do not work and have them continue troubleshooting the computer problems during the next class period.
- Students that finish quickly should help others troubleshoot issues.
- Keep broken equipment separated from components that work; have boxes for each category if possible.
- If students have to assemble computer in groups, ask those that are not working directly on the computer to document the process by taking photos or journaling.
- If assembling the computer in teams, rotate to the next team member every five minutes. The teacher might want to control the rotation to ensure hands-on time for each student.
- If time is a concern, consider performing the labs from pages 3.1.1.3, 3.1.2.4, 3.1.3.4, 3.1.4.5, 3.1.5.3, 3.1.5.5, and 3.1.5.8 together.

Chapter 4: Best Practices

- Have student's research preventative maintenance practices for equipment in the lab (desktops, laptops, printers, ECT).
- Have students' research cloud storage options and compare and contrast providers and their services.
- Troubleshooting cannot be learned from a book. Hands-on practice of

the steps outlined in this chapter and the information from the previous three chapters must be done by each student multiple times.

- Place the students in groups of two; one student leaves the room, and the other student creates one hardware problem in a computer. The instructor can provide a list of possible problems to create. The problems should be limited to things that students learned in previous chapters, such as loose or missing cabling, incorrectly inserted hardware, or incorrect BIOS settings. The other student returns and solves the problem by applying the processes that the chapter describes.
- Students should practice documenting the troubleshooting practice. They can research, develop, and refine work order documentation.

Chapter 5: Best Practices

- Note that some labs in this chapter may take longer than a standard class period to complete. The instructor should plan accordingly.
- Students tend to rush through installation labs by clicking next without reading the screen. To avoid this, have checkpoints in the lab where you can see what the student has done and can ask questions about the lab or related chapter content.
- When students reach particular checkpoints in labs, ask them to document their progress with a screen shot. Have them explain what has occurred in the screen shot.
- Review minimum hardware requirements for a Windows operating system before installing the operating system on a computer. If students question why an OS might be performing poorly, ask them to make connections between the hardware and OS performance.
- Consider using virtual machine software to allow students to perform multiple clean installations of an operating system.
- Many of the labs included in Chapter 5 require preparation. Ask struggling students to come before or after class to help prepare for the labs. This will give them exposure to concepts that they might be struggling with.
- Planning an operating system upgrade or installation should take more time than the installation. The following items should be emphasized to students:
- Ensure the hardware meets the new operating system's minimum requirements.
- Plan hardware upgrades before installing an OS.
- Ensure the hardware and software is compatible with the new operating system.
- Determine the file system before starting the operating system upgrade or installation.
- Students need to become proficient at installing and configuring operating systems. They should complete the labs multiple times

and practice until the skills needed to complete the labs can be done with no instruction.

Chapter 6: Best Practices

- Chapter 6 has a large amount of new vocabulary words and acronyms. Utilize reading strategies, word walls, and concept maps to reinforce readings. Ensure that students use the proper terminology when communicating in the lab.
- Students should be given opportunities to identifying class, subnet mask, and network/host portions of classful IP addresses.
- After completing necessary labs, have students explore the relationship between IP addresses and subnet masks using real equipment or Packet Tracer. Give the students multiple pairs of IP addresses to assign to computers. Students will check connectivity for each of the pairings and describe how the classes behaved differently.
- Use simulation mode in Packet Tracer to emphasize the difference between hubs and switch behavior.
- Students should be able to identify cables by sight. Create a poster or other visual exhibit of actual cables.
- Consider making a poster of the port numbers to display in class. This will make it easy to refer to them during class.
- Take a tour of the IT infrastructure at your facility. Have students identify components and create a physical topology.
- Have students use a variety of methods (such as mnemonic devices or songs) to remember important information such as wireless standards or the OSI model.
- Students will need many opportunities with the equipment to become proficient with the labs in this chapter. Give time to practice.
- After students are proficient with a Linksys device, have students attempt configuring a device from a different vendor if available.
- As a class project or homework assignment, the students should research the technologies that are available in the area to connect to a network, such as cellular, VoIP, satellite, etc.
-

Chapter 7: Best Practices

- Plan for a lot of interaction and discussion in this chapter because many schools may not have laptops to use in the classroom.
- Provide a non-functioning laptop for students to practice assembling and to use for part identification. Obtain old laptops from the school or through donation when possible. Obtain manuals for the laptops and disassemble one in front of the class.
- Use egg cartons or small plastic bags to organize the small screws and pieces found in laptops.
- Ask students to take notes the first time the laptop is disassembled, because laptops are more compact and each brand is unique with their re-assembly steps.

- As students disassemble a laptop, ask them to document the process using a camera or mobile device. This will make it easier for them to identify the location of important plastics and screws.
- For those students who do not have access to a physical laptop computer in the lab, Chapter 7 also provides a Virtual Laptop. The Virtual Laptop labs demonstrate laptop component installation and removal through animation and student interaction.

Chapter 8: Best Practices
- Prior to teaching Chapter 8, complete an inventory of students' mobile device platform. This information can be useful in grouping students for labs.
- If an instructor is going to bring in a tablet or phone, find a cable that allows for projection of the screen onto an overhead.
- If you have a classroom set of mobile devices available, create a roster that pairs devices with individual students for ease of organization and distribution.
- If available, use the actual devices for the lab activities.
- Have students research and complete a debate on which mobile platform is better.

Chapter 9: Best Practices
- Although printer problems are hard to simulate, have students troubleshoot simple problems (out of paper, wrong printer selected as default, printer offline, incorrect share name). Ensure that students document their troubleshooting.
- Use broken printers to demonstrate problems to the students. Disable the printer or load the wrong device driver to create printer problems in the classroom.
- Show students a maintenance kit for a laser printer to demonstrate preventive maintenance printer needs.
- Have students' research preventative maintenance for the different types of printers. If the internet is available, have students research and watch "How to videos" for common printer maintenance (such as replacing the ribbon on an impact printer).
- Have students detail local recycling opportunities for printer consumables.

Chapter 10: Best Practices
- After researching third party anti-virus programs, have students download, install, and run programs if possible.
- Have the students determine how many wireless networks are present in their neighborhood.
- Use the Internet to research legislation and fines that are related to

computer hacking with the words: **lawsuits fines computer hacking**.

- Wireless is a great way to teach security. Authentication and encryption can be applied one at a time, and then have students access the wireless network by applying the appropriate credentials.
- Access Microsoft TechNet Security bulletins to see specific problems and vulnerabilities in any particular operating system.
- Students can wipe old hard drives with lower capacities to prepare them for donation. Some hard drive companies have data wiping software that can be demonstrated during this section.

Chapter 11: Best Practices

- Have on student be the computer user with a problem and another student be the technician. If possible, record the student role play for future class discussion. The student computer users should simulate users with the following attitudes and knowledge.
    - Angry
    - Confused and inexperienced with a computer
    - Knowledgeable and experienced with a computer
    - Evasive about the actions that caused the problem
- Have students research, detail, and demonstrate stress management techniques.
- For US Academies, have students research, detail, and present on the implications of the Wiretap Act, the Pen/Trap and Trace Statute, and the Stored Electronic Communication Act.
- Visit a call center of any type to observe best practices of customer service technicians.
- Search the Internet for technical support calls. Ensure the call uses proper language and is appropriate for the classroom.
- Have the students shadow a technician for a day and report to the class on how communications skills were important for the person they shadowed.
- Have the students examine their own learning styles to see how that might relate to the ability of a technician to communicate better. Do an Internet search on the following key words: Abiator Learning Style Inventory.
- Have the students explain a computer problem appropriately to someone who learns better from visuals, to someone who learns better via audio, and to someone who learns better via hands on interaction.

Chapter 12: Best Practices

- Struggling students will require a lot of assistance during the labs. Consider pairing them with advanced students for the chapter to

		ensure that they obtain adequate support.
		▪ Many of the labs included in Chapter 12 require preparation. Ask struggling students to come before or after class to help prepare for the labs. This will give them exposure to concepts that they might be struggling with.
		▪ If time permits, have students complete the labs multiple times with different issues for each attempt.
D	*Activities*	Chapter 1: Activities

Chapter 1: Activities
- ▪ What activities are associated with this chapter*?*
  - ▪ **1.1.1.4 Worksheet – Ohm's Law**
    - ▪ Worksheet is new to the curriculum.
    - ▪ Review the Ohm's law example provided in page 1.1.1.3 with students to check for understanding before assigning Worksheet – Ohm's Law.
    - ▪ Consider assigning the worksheet as homework.
  - ▪ **1.2.1.11 Worksheet – Research Computer Components**
    - ▪ Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - ▪ Prior to completing the assignment, ask students to create a graphic organizer that helps them recognize what makes components compatible.
  - ▪ **1.3.1.6 Worksheet – Build a Specialized Computer System**
    - ▪ Worksheet is new to the curriculum.
    - ▪ Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - ▪ Ask students to complete the worksheets in groups and present their findings to class.

Chapter 2: Activities
- ▪ What activities are associated with this chapter?
  - ▪ **2.2.2.3 - Worksheet - Diagnostic Software**
  - ▪ **2.2.4.4 – Lab- Using a Multimeter and a Power Supply Tester**
    - ▪ Lab is new to the curriculum.
    - ▪ Emphasize safety when measuring electrical quantities.
  - ▪ **2.2.4.5 – Lab – Testing UTP Cables Using a Loopback Plug and a Cable Meter**
    - ▪ Lab is new to the curriculum.
  - ▪ **2.2.4.7 – Lab- Computer Disassembly**
    - ▪ Emphasize the importance of taking notes and being organized during disassembly. Have all students document the disassembly process. Allow students to take pictures during disassembly.

- Provide students with a framework for organization during disassembly. Ensure students have antistatic bags for components and containers for screws.
- Have students work in pairs or groups dependent on equipment available.
- **Chapter 2 Quiz**

Chapter 3 Activities
- What activities are associated with this chapter*?*
    - **3.1.1.3 Lab – Install the Power Supply**
        - Review the safety procedures detailed in Chapter 2 prior to completing this lab.
        - Emphasize that students should not open the power supply under any circumstances.
    - **3.1.2.4 Lab – Install the Motherboard**
        - If you do not wish to have your students install the components in this lab, due to the expense and fragility of these components, review the steps with a classroom demonstration.
    - **3.1.3.4 Lab – Install the Drives**
        - Make sure that students install the drives right side up so that the media can be inserted into the drive with the label facing up.
- What activities are associated with this chapter*?*
    - **3.1.4.5 Lab – Install Adapter Cards**
        - Prior to performing the lab, ask students to identify the different types of expansion slots.
    - **3.1.5.3 Lab – Install Internal Cables**
        - Make sure that students are correctly aligning connectors before inserting them by modeling the process before completion of the lab.
    - **3.1.5.5 Lab – Install Front Panel Cables**
        - Lab is new to the curriculum.
        - Have students install the front panel connectors from multiple cases if possible.
        - Make sure that students are correctly aligning connectors before inserting them by modeling the process before completion of the lab.
    - **3.1.5.8 Lab – Complete the Computer Assembly**
        - Make sure that students are correctly aligning connectors before inserting them by modeling the process before completion of the lab.
- What activities are associated with this chapter*?*
    - **3.2.2.5 Lab – Boot the Computer**
        - Lab has been updated to reflect the new course structure.

- Ask students to verify that all components have been installed correctly prior to booting the computer.
    - **3.3.1.6 Lab – BIOS File Search**
        - Make sure that students know the correct key combination for entering Setup upon booting the computer.
    - **3.3.3.2 Worksheet – Upgrade Hardware**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
        - Prior to completing the assignment, ask students to create a graphic organizer that helps them recognize what makes components compatible.

- What activities are associated with this chapter*?*
    - **3.2.2.5 Lab – Boot the Computer**
        - Lab has been updated to reflect the new course structure.
        - Ask students to verify that all components have been installed correctly prior to booting the computer.
    - **3.3.1.6 Lab – BIOS File Search**
        - Make sure that students know the correct key combination for entering Setup upon booting the computer.
    - **3.3.3.2 Worksheet – Upgrade Hardware**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
        - Prior to completing the assignment, ask students to create a graphic organizer that helps them recognize what makes components compatible.

Chapter 4: Activities

- What activities are associated with this chapter*?*
    - There are no labs in this chapter.
    - **Chapter 4 Quiz**

Chapter 5: Activities
- What activities are associated with this chapter*?*
    - **5.1.2.3 Worksheet - NOS Certifications and Jobs**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
        - Be prepared to provide struggling students with multiple examples of positions that require NOS certifications.

- **5.1.4.4 Lab – Data Migration in Windows 7**
- **5.1.4.5 Lab – Data Migration in Windows Vista**
- **5.1.4.6 Lab – Data Migration in Windows XP**
  - Lab is new to the curriculum.
  - Make sure that students understand they will be transferring files to and from the same computer.
- **5.2.1.5 Lab – Install Windows 7**
- **5.2.1.6 Lab – Install Windows Vista**
- **5.2.1.7 Lab – Install Windows XP**
  - Be prepared to provide students with installation media—a USB flash drive or an installation DVD.
  - The BIOS boot sequence should be set in accordance with the correct installation media.
  - Provide students with any important information that they will need prior to completing the lab: Username and password, the product key, time zone, the computer's current location, etc.
- What activities are associated with this chapter?
  - **5.2.1.9 Lab – Check for updates in Windows 7**
  - **5.2.1.10 Lab – Check for updates in Windows Vista**
  - **5.2.1.11 Lab – Check for updates in Windows XP**
    - Prior to checking for updates, the instructor should confirm that Windows was properly installed on all lab computers.
- What activities are associated with this chapter?
  - **5.2.2.3 Lab – Advanced Installation of Windows 7**
  - **5.2.2.4 Lab – Advanced Installation of Windows Vista**
  - **5.2.2.5 Lab – Advanced Installation of Windows XP**
    - One 16GB partition on the hard drive needs to support Windows 7 (32-bit) or 20GB for Windows 7 (64-bit), Windows AIK, and install.wim. Students will also set up two other partitions (any size), and leave 1GB of unallocated hard drive space. Confirm there is enough disk space for each of the other partitions.

Plan ahead to download Windows AIK. The download may require you to validate the OS. It is also over 1.7 GB in size. It should be downloaded prior to performing the lab

- What activities are associated with this chapter?
  - **5.2.3.4 Lab – Registry Backup and Recovery in Windows XP**
    - Completion of the lab requires Windows XP.
  - **5.2.4.3 Lab – Create a Partition in Windows 7**
  - **5.2.4.4 Lab – Create a Partition in Windows Vista**
  - **5.2.4.5 Lab – Create a Partition in Windows XP**

- Confirm that students' computers have the unpartitioned space required for completing the lab.
  - **5.3.1.5 Lab – Task Manager (Managing Processes) in Windows 7**
  - **5.3.1.6 Lab – Task Manager (Managing Processes) in Windows Vista**
  - **5.3.1.7 Lab – Task Manager (Managing Processes) in Windows XP**
    - Explain to students that they can complete the lab using a browser other than Firefox.
- What activities are associated with this chapter*?*
  - **5.3.1.11 Lab – Install Third-Party Software in Windows 7**
  - **5.3.1.12 Lab – Install Third-Party Software in Windows Vista**
  - **5.3.1.13 Lab – Install Third-Party Software in Windows XP**
    - Provide students with the link for the latest version of Packet Tracer.
    - Explain to students that Packet Tracer will be used throughout later Chapters and that they should become familiar with the program. After they remove it, consider assigning the installment portion of the lab for homework and ask them to keep the program for later use.
  - **5.3.2.3 Lab – Create User Accounts in Windows 7**
  - **5.3.2.4 Lab – Create User Accounts in Windows Vista**
  - **5.3.2.5 Lab – Create User Accounts in Windows XP**
    - Provide students with a user name and password prior to performing the lab.
- What activities are associated with this chapter*?*
  - **5.3.2.7 Lab – Configure Browser Settings in Windows 7**
  - **5.3.2.8 Lab – Configure Browser Settings in Windows Vista**
  - **5.3.2.9 Lab – Configure Browser Settings in Windows XP**
    - This lab contains configuration examples from Microsoft Internet Explorer version 9. You will need to make the changes necessary if you are using a different version or browser in your classroom. If you do not allow students to access the Internet directly, perform this lab as a demonstration for the class.
  - **5.3.2.16 Lab – Managing Virtual Memory Windows 7**
  - **5.3.2.17 Lab – Managing Virtual Memory Windows Vista**
  - **5.3.2.18 Lab – Managing Virtual Memory Windows XP**
    - Confirm that students have set virtual memory for the two partitions used in the lab to be managed by the system.
- What activities are associated with this chapter*?*
  - **5.3.2.20 Lab – Managing Device Drivers with Device Manager in Windows 7**
  - **5.3.2.21 Lab – Managing Device Drivers with Device Manager in**

- **Windows Vista**
  - **5.3.2.22 Lab – Managing Device Drivers with Device Manager in Windows XP**
    - The students will be accessing sensitive settings during this lab. Stress the importance of following instructions.
    - Consider performing the lab as a demonstration, asking students to follow you step-by-step.
  - **5.3.2.24 Lab – Regional and Language Options in Windows 7**
  - **5.3.2.25 Lab – Regional and Language Options in Windows Vista**
  - **5.3.2.26 Lab – Regional and Language Options in Windows XP**
- What activities are associated with this chapter?
  - **5.3.3.5 Lab – Monitor and Manage System Resources in Windows 7**
  - **5.3.3.6 Lab – Monitor and Manage System Resources in Windows Vista**
  - **5.3.3.7 Lab – Monitor and Manage System Resources in Windows XP**
    - Provide students with antivirus or antispyware software to download and install prior to performing the lab. Windows Defender will not work otherwise.
  - **5.3.4.2 Lab – Hard Drive Maintenance in Windows 7**
  - **5.3.4.3 Lab – Hard Drive Maintenance in Windows Vista**
  - **5.3.4.4 Lab – Hard Drive Maintenance in Windows XP**
    - Review the purpose of CHKDSK with students prior to performing the lab.
- What activities are associated with this chapter?
  - **5.3.4.6 Lab – Managing System Files with Built-in Utilities in Windows 7**
  - **5.3.4.7 Lab – Managing System Files with Built-in Utilities in Windows Vista**
  - **5.3.4.8 Lab – Managing System Files with Built-in Utilities in Windows XP**
    - The students will be accessing sensitive settings during this lab. Stress the importance of following instructions.
    - Consider performing the lab as a demonstration, asking students to follow you step-by-step.
  - **5.3.5.2 Lab – Remote Desktop and Remote Assistance in Windows 7**
  - **5.3.5.3 Lab – Remote Desktop and Remote Assistance in Windows Vista**
  - **5.3.5.4 Lab – Remote Desktop and Remote Assistance in Windows XP**
    - Confirm that computers are configured properly before beginning the lab. Instructions are included in the lab.
- What activities are associated with this chapter?

- **5.3.7.2 Lab – Working with CLI Commands in Windows**
  - Lab is new to the curriculum.
  - Review the purpose of the CLI Commands on page 5.3.7.1 prior to performing the lab.
- **5.3.7.4 Lab – Run Line Utilities in Windows 7**
- **5.3.7.5 Lab – Run Line Utilities in Windows Vista**
- **5.3.7.6 Lab – Run Line Utilities in Windows XP**
  - The students will be accessing sensitive settings during this lab. Stress the importance of following instructions.
  - Consider performing the lab as a demonstration, asking students to follow you step-by-step.
- What activities are associated with this chapter?
  - **5.4.1.4 Lab – Install Virtual PC**
    - Lab is new to the curriculum.
    - Prior to assigning the lab, perform the required downloads and test all software on lab computers to make sure that Windows XP Mode is supported and works properly.
  - **5.5.1.2 Lab – Managing the Startup Folder in Windows 7**
  - **5.5.1.3 Lab – Managing the Startup Folder in Windows Vista**
  - **5.5.1.4 Lab – Managing the Startup Folder in Windows XP**
    - Ask students to confirm that they have removed FreeCell from the Startup Folder.
- What activities are associated with this chapter?
  - **5.5.1.7 Lab – Schedule a Task Using the GUI and the at command in Windows 7**
  - **5.5.1.8 Lab – Schedule a Task Using the GUI and the at command in Windows Vista**
  - **5.5.1.9 Lab – Schedule a Task Using the GUI and the at command in Windows XP**
    - Ask students to create a list of other tasks that they would schedule using their personal computers.
    - After completing this lab for the first time, consider assigning it for homework.
  - **5.5.1.11 Lab – Use the System Restore Tool in Windows 7**
  - **5.5.1.12 Lab – Use the System Restore Tool in Windows Vista**
  - **5.5.1.13 Lab – Use the System Restore Tool in Windows XP**
    - Consider repeating this lab with students the next time that software needs to be downloaded for class use.

Chapter 6: Activities
- What activities are associated with this chapter?
  - **6.3.2.7 Lab – Configure a NIC to use DHCP in Windows 7**
  - **6.3.2.8 Lab – Configure a NIC to use DHCP in Windows Vista**

- **6.3.2.9 Lab – Configure a NIC to use DHCP in Windows XP**
  - Students need to know the pathway to the "Internet Protocol Version 4 (TCP/IPv4) Properties" in all versions of Windows.
  - Students should practice implementing both DHCP and Static IP address assignment often.
- **6.3.2.10 Packet Tracer – Adding Computers to an Existing Network**
  - Introduce Packet Tracer and its features to students prior to completing this activity.
  - Depending on your students, direct instruction may be needed the first time students complete this lab.
  - Packet Tracer provides a wonderful classroom tool but it is not a replacement for working with the actual equipment.
- What activities are associated with this chapter*?*
  - **6.3.3.4 Worksheet – Protocol Definitions and Default Ports**
    - Port numbers need to be committed to memory.
    - Students should be given multiple opportunities to review the port numbers throughout the remainder of the course.
  - **6.4.2.4 Lab – Building Straight-Through and Crossover UTP Cables**
    - Students will need ample time to complete this lab.
    - Have students work in partners if connector supply is an issue.
    - Always have students verify their work before crimping the connector.
  - **6.4.2.5 Packet Tracer – Cabling a Simple Network**
    - After completing this activity, have students duplicate the instructions with real equipment.
  - **6.5.1.2 Packet Tracer – Physical Topologies**
    - After completing this activity, have students build different physical topologies with actual equipment if possible.
- What activities are associated with this chapter*?*
  - **6.8.2.2 Worksheet – Internet Search for NIC Drivers**
    - If students are installing a different wireless NIC in the following labs, have them search and detail the driver for their actual hardware.
    - Pre-screen online resources prior to having students complete worksheet.
  - **6.8.2.4 Lab – Install a Wireless NIC in Windows 7**
  - **6.8.2.5 Lab – Install a Wireless NIC in Windows Vista**
  - **6.8.2.6 Lab – Install a Wireless NIC in Windows XP**

- Revisit lab safety rules prior to installing hardware.
  - **6.8.2.9 Packet Tracer – Install a Wireless NIC**
  - **6.8.3.5 Lab – Connect to a Router for the First Time**
    - This lab is written for Windows 7. If using another version of Windows, provide students with modified instructions.
    - Instruct students on resetting defaults to the router after completing a lab activity and emphasis the importance of this step.
- What activities are associated with this chapter?
  - **6.8.3.6 Packet Tracer Connect to a Wireless Router and Configure Basic Settings**
    - Completing this Packet Tracer will prepare students for the upcoming hands-on labs.
    - Students should be proficient at implementing a small wireless network; therefore, ample practice time should be given in both Packet Tracer and lab settings.
    - In all Packet Tracer labs, the Linksys WRT300n is used for configurations as a substitute for the Linksys E2500 Wireless Router.
  - **6.8.3.8 Lab – Configure Wireless Router In Windows 7**
  - **6.8.3.9 Lab – Configure Wireless Router In Windows Vista**
  - **6.8.3.10 Lab – Configure Wireless Router In Windows XP**
    - This lab is written for Linksys E2500 Wireless Router, which is new to this course.
    - In order to gain more practice with equipment, students can complete earlier version of this lab designed for the Linksys WRT300N after completing the new lab.
- What activities are associated with this chapter?
  - **6.8.3.11 Packet Tracer – Connecting Wireless PCs to a Linksys WRT300N**
    - This lab requires students to use the Linksys software to connect to the wireless router. Students may be unfamiliar with this interface and need assistance on Packet Tracer.
  - **6.8.3.14 Lab - Test the Wireless NIC in Windows 7**
  - **6.8.3.15 Lab - Test the Wireless NIC in Windows Vista**
  - **6.8.3.16 Lab - Test the Wireless NIC in Windows XP**
    - Prior to completing this lab, review the following tools and concepts: loopback, ipconfig, ping, tracert, and nslookup
  - **6.8.3.17 Packet Tracer – Test a Wireless Connection**
    - Lab provides extra practice with tools utilized in the **Test the Wireless NIC** hands on labs.
- What activities are associated with this chapter?

- **6.8.4.7 Lab – Share a Folder, Create a Homegroup and Map a Network Drive in Windows 7**
- **6.8.4.8 Lab – Share a Folder and Map a Network Drive in Windows Vista**
- **6.8.4.9 Lab – Share a Folder and Map a Network Drive in Windows XP**
    - For all sharing labs, implement before teaching. Be aware of account permissions when attempting this lab.
- **6.9.1.6 Worksheet – Answer Broadband Questions**
- **6.9.1.8 Worksheet – ISP Connection Types**
    - Prior to completing this worksheet, have students brainstorm and list the internet access options in your location.
- **Chapter 6 Quiz**

Chapter 7: activities
- What activities are associated with this chapter*?*
    - **7.1.1.6 Worksheet – Research Docking Stations**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
        - Provide struggling students with an example worksheet that has already been filled out. Ask them to find a different model when they complete the worksheet.
    - **7.3.1.3 Worksheet – Match ACPI Standards**
        - Ask students to reference page 7.3.1.1 when completing the worksheet.
        - Consider assigning the worksheet as homework, or using it for review at the beginning of class.
    - **7.5.1.4 Worksheet – Laptop RAM**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - **7.5.2.3 Worksheet – Laptop Batteries**
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - **7.5.2.5 Worksheet – Laptop Screens**
        - Worksheet is new to the curriculum.
        - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - **7.5.2.7 Worksheet – Laptop Hard Drives**
        - Worksheet is new to the curriculum.
        - Conduct Internet research to pre-screen online resources

for use in completing the worksheet and create a list for students.

- **7.5.2.13 Worksheet – Build a Specialized Laptop**
    - Review the concept of compatibility before students begin their research.
    - Assign students to complete their research in small groups and ask them to present their findings to the class.
- **7.7.2.2 Worksheet – Research Laptop Problems**
    - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - Prior to assigning the worksheet, identify a laptop model that students should use for their research. Consider using a model that they may find at your school or training center.
- **7.7.2.3 Worksheet – Gather Information from the Customer**
    - After students have finished the worksheet, ask them to extend the activity by creating a list of laptop-related problems that they may have to address during their career as a technician.
- **7.7.2.4 Worksheet – Investigating Support Websites and Repair Companies**
    - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
    - Consider assigning the 'Local Laptop Repair Company' section to half of your class, and the 'Laptop Manufacturer Support Website' section to the other half. Ask students to present their findings and discuss any notable differences between local companies and laptop manufacturers.

Chapter 8: Activities
- What activities are associated with this chapter?
    - **8.2.2.3 Lab – Working with Android**
        - Paper lab is new to the curriculum.
        - If students or teacher have access to an Android device, complete the lab with device.
    - **8.2.3.3 Lab – Working with iOS**
        - Paper lab is new to the curriculum.
        - If students or teacher have access to an iOS device, complete the lab with the device.
    - **8.2.4.3 Lab – Mobile Device Features**
        - Paper lab is new to the curriculum.
        - Follow up the lab by comparing and contrasting the

different platforms

- **8.2.4.4 Worksheet - Mobile Device Information**
  - Worksheet is new to the curriculum.
  - Teacher should prescreen the worksheet and select specific devices that students will be researching.
  - Have students complete a cost analysis for the two devices at your location.
- **8.3.1.2 Lab - Mobile Wi-Fi – Android and iOS**
  - This paper lab is new to the curriculum.
  - Follow up by comparing and contrasting the different platforms.
  - If mobile devices are available, students can set up wireless networks to be used in the lab.
- **8.4.1.2 Lab – Passcode Locks – Android and iOS**
  - Paper lab is new to the curriculum.
  - Follow up the lab by comparing and contrasting the different platforms
- **8.5.2.2 Lab – Troubleshooting Mobile Devices**
  - Paper lab is new to the curriculum.
  - Before completing the lab, have students brainstorm and document prior troubleshooting that they have completed on mobile devices
- **Chapter 8 Quiz**

Chapter 9: Activities
- What activities are associated with this chapter?
  - **9.3.1.2 Lab – Install a Printer in Windows 7**
  - **9.3.1.3 Lab – Install a Printer in Windows Vista**
  - **9.3.1.4 Lab – Install a Printer in Windows XP**
    - Ensure that students download the most current driver for the printer.
    - Have students install printers on multiple occasions with different printers if possible.
    - Instruct students how to completely remove a printer and driver from an OS.
    - Have students document the differences in the installation process between Windows OS.
  - **9.4.2.3 Lab – Share a Printer In Windows 7**
  - **9.4.2.4 Lab – Share a Printer in Windows Vista**
  - **9.4.2.5 Lab – Share a Printer in Windows XP**
    - If issues arise, be sure to check permissions.
    - Challenge students to share printers across different Windows Operating Systems.
  - **9.5.1.5 Worksheet – Search for Certified Printer Technician Jobs**

- Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
- **Chapter 9 Quiz**

Chapter 10: Activities
- What activities are associated with this chapter*?*
  - **10.1.1.7 Worksheet – Security Attacks**
    - Search the Internet for recent thefts or virus and malware attacks. Give students examples of major attacks that have occurred recently.
    - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
  - **10.2.1.2 Worksheet – Answer Security Policy Questions**
    - Assign students to groups and ask them to present their findings to the class.
    - Consider assigning each group of students a different type of organization that they should create their security policy for.
  - **10.2.1.7 Lab – Securing Accounts Data and the Computer in Windows 7**
  - **10.2.1.8 Lab – Securing Accounts Data and the Computer in Windows Vista**
  - **10.2.1.9 Lab – Securing Accounts Data and the Computer in Windows XP**
    - Lab is new to the curriculum.
    - Prepare any necessary account information for students prior to performing the lab.

Make students aware of the key combination required to enter the BIOS Setup Utility
  - **10.2.3.2 Worksheet – Third-Party Antivirus Software**
    - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
  - **10.2.4.5 PT – Wireless Security Techniques**
    - Make sure that Packet Tracer has been installed on all student computers prior to completing the Packet Tracer Lab.
  - **10.2.4.8 Worksheet – Research Firewalls**
    - Conduct Internet research to pre-screen online resources for use in completing the worksheet and create a list for students.
  - **10.2.4.10 Lab – Configure Wireless Security**
    - Provide each router in your classroom with a unique SSID.

- Create information cards for each router with the following information: Login, SSID, Network Mode, and Channel.
- **10.3.1.2 Worksheet – Operating System Updates in Windows**
  - Consider assigning the worksheet as homework.
  - Review the term 'configuration option' with students to ensure they understand what is being asked of them when completing the worksheet.
- **10.3.1.4 Lab – Data Backup and Recovery in Windows 7**
- **10.3.1.5 Lab – Data Backup and Recovery in Windows Vista**
- **10.3.1.6 Lab – Data Backup and Recovery in Windows XP**
  - Make sure that students have storage equipment that they can backup their files on.
  - If external hard drives or USB flash drives are not available for students, ask them to bring in their own backup devices.
- **10.3.1.8 Lab – Configure a Windows 7 Firewall**
- **10.3.1.9 Lab – Configure a Windows Vista Firewall**
- **10.3.1.10 Lab – Configure a Windows XP Firewall**
  - Provide students with Ethernet cables and hubs or switches.
  - Ask student pairs to make sure that their computers are on the same workgroup prior to completing the lab.
- **10.4.2.2 Worksheet – Gather Information from the Customer**
  - Review how to handle frustrated or angry customers prior to completing the lab.

Chapter 11: Activities
- What activities are associated with this chapter?
  - **11.1.1.3 Worksheet: Technician Resources**
    - Conduct Internet research to pre-screen online resources for students to use in completing the student worksheet.
  - **11.1.2.2 Class Discussion – Control the Call**
    - This activity can be completed as a large group discussion but can also be completed in smaller groups/partners to actively solicit input from all students.
  - **11.1.2.5 Class Discussion – Customer Types**
    - This discussion allows students to identify customer types. To further the discussion, revisit strategies to deal with specific customers after identifying.
  - **11.2.1.1 Class Discussion – Customer Privacy**
    - To further the discussion, have students brainstorm privacy issues related to their institution.
  - **Chapter 11 Quiz**

Chapter 12: Activities

- What activities are associated with this chapter*?*
    - **12.1.1.4 Lab – Repair Boot Problem**
        - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
        - Monitor student progress throughout the lab, as the lab provides little to no guidance.
    - **12.1.1.5 Lab – Remote Technician – Repair Boot Problem**
        - Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
        - As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
    - **12.1.1.6 Lab – Troubleshooting Hardware Problems in Windows 7**
    - **12.1.1.7 Lab – Troubleshooting Hardware Problems in Windows Vista**
    - **12.1.1.8 Lab – Troubleshooting Hardware Problems in Windows XP**
        - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
        - Test the setup of all student machines before assigning the lab.
    - **12.2.1.4 Lab – Fix an Operating System Problem**
        - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
        - Monitor student progress throughout the lab, as the lab provides little to no guidance.
    - **12.2.1.5 Lab – Remote Technician – Fix an Operating System Problem**
        - Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
        - As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
    - **12.2.1.6 Lab Troubleshooting Operating System Problems in Windows 7**
    - **12.2.1.7 Lab Troubleshooting Operating System Problems in Windows Vista**
    - **12.2.1.8 Lab Troubleshooting Operating System Problems in Windows XP**
        - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
        - Test the setup of all student machines before assigning

the lab.

- What activities are associated with this chapter?
  - **12.3.1.4 Lab – Fix a Network Problem**
    - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
    - Monitor student progress throughout the lab, as the lab provides little to no guidance.
  - **12.3.1.5 Lab – Remote Technician – Fix a Network Problem**
    - Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
    - As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
  - **12.3.1.6 Lab – Troubleshooting Network Problems in Windows 7**
  - **12.3.1.7 Lab – Troubleshooting Network Problems in Windows Vista**
  - **12.3.1.8 Lab – Troubleshooting Network Problems in Windows XP**
    - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
    - Test the setup of all student machines before assigning the lab.
  - **12.4.1.4 Lab – Fix a Laptop Problem**
    - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
    - Monitor student progress throughout the lab, as the lab provides little to no guidance.
  - **12.4.1.5 Lab – Remote Technician – Fix a Laptop Problem**
    - Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
    - As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
  - **12.4.1.6 Lab – Troubleshooting Laptop Problems in Windows 7**
  - **12.4.1.7 Lab – Troubleshooting Laptop Problems in Windows Vista**
  - **12.4.1.8 Lab – Troubleshooting Laptop Problems in Windows XP**
    - Prior to performing the lab, setup student hardware in accordance with the lab instructions.
    - Test the setup of all student machines before assigning the lab.
  - **12.5.1.4 Lab – Fix a Printer Problem**
    - Prior to performing the lab, setup student hardware in accordance with the lab instructions.

		▪ Monitor student progress throughout the lab, as the lab provides little to no guidance.
		▪ **12.5.1.5 Lab – Remote Technician – Fix a Printer Problem**
		   ▪ Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
		   ▪ As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
		▪ **12.5.1.6 Lab – Troubleshooting Printer Problems in Windows 7**
		▪ **12.5.1.7 Lab – Troubleshooting Printer Problems in Windows Vista**
		▪ **12.5.1.8 Lab – Troubleshooting Printer Problems in Windows XP**
		   ▪ Prior to performing the lab, setup student hardware in accordance with the lab instructions.
		   ▪ Test the setup of all student machines before assigning the lab.
		▪ **12.6.1.4 Lab – Fix a Security Problem**
		   ▪ Prior to performing the lab, setup student hardware in accordance with the lab instructions.
		   ▪ Monitor student progress throughout the lab, as the lab provides little to no guidance.
		▪ **12.6.1.5 Lab – Remote Technician – Fix a Security Problem**
		   ▪ Consider asking students to record themselves while completing the lab. Ask them to analyze their performance once they have finished.
		   ▪ As students perform the lab, ask them to stop the demonstration and check for understanding and progress.
		▪ **12.6.1.6 Lab – Troubleshooting Access Security Problems in Windows 7**
		▪ **12.6.1.7 Lab – Troubleshooting Access Security in Windows Vista**
		▪ **12.6.1.8 Lab – Troubleshooting Access Security in Windows XP**
		   ▪ Prior to performing the lab, setup student hardware in accordance with the lab instructions.
		   ▪ Test the setup of all student machines before assigning the lab.

D	*Experiences*	Guest Speaker Field Trip Virtual Tour

Resources

Lab PC Repair Tools
The computer toolkit should include the following tools:
● Phillips screwdriver

● Flathead screwdriver

● Hex socket drivers (various sizes)

● Needle-nose pliers

● Electrostatic discharge (ESD) wrist strap and cord

● Electrostatic discharge (ESD) mat with a ground cord

● Safety glasses

● Lint-free cloth

● Electronics cleaning solution

● Flashlight

● Thermal compound

● Multimeter (optional)

● Compressed air service canister (optional due to varying classroom health and safety laws)

● Power supply tester (optional)

● Wire cutters

● Crimpers (RJ-45)

● Cable strippers

● Cable testers

● Network loop back plugs (optional)

Additional Required Lab Equipment
The ITE lab topologies require the following equipment and accessories:
● 1 Internet connection for Internet searches and driver downloads (this could be the instructor's workstation)

● 1 printer or integrated printer/scanner/copier for the class to share

- 1 Linksys wireless router/switch or equivalent for the class to share, Linksys E2500 recommended
- 2 wireless PCI network adapters (compatible with the above wireless router/switch) for the class to share

Android or IOS devices are optional for use with the labs in the Mobile Devices chapter.

Lab PC Hardware Requirements
- PC Tower Case with 450W power supply
- PCI, PCIe, or AGP-compatible motherboard
- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
- CPU heat sink and cooling fan
- 1 GB RAM (Windows 7 32-bit) or 2 GB RAM (Windows 7 64-bit) (2 X 512 MB or 2 X 1GB suggested)
Some labs will require one module of RAM to be uninstalled for the simulation of a faulty module for troubleshooting purposes.
1 GB is the minimum requirement to run the full functions of Windows 7 Professional
- Floppy drive
- 60 GB hard drive (minimum); 80 GB or more (recommended)
The system must support a full install of Windows 7 and two partitions of the same size.
- 1 DVD-ROM (minimum) or CD/DVD Burner (recommended)
- Ethernet card
- PCI, PCIe (recommended), or AGP video card
DirectX 9 graphics device with WDDM 1.0 or higher driver
- Cables to connect HDD/CD/Floppy
- Mouse
- Keyboard
- Super VGA (1024 X 768) or higher resolution video monitor

Suggested Time Frame:	SCOPE AND SEQUENCE	
	Chapters	Number of Weeks
	Chapter 1: Introduction to the Personal Computer	3.5
	Chapter 2 Safe Lab Procedure and Tool Use	1.5
	Chapter 3 Computer Assembly	3
	Chapter 4 Preventive Maintenance and	2

	Troubleshooting	
	Making Period 1	**Total: 10 weeks**
	Chapter 5 Operating Systems Operating systems Graphic User Interfaces	5
	Chapter 6 Networks	5
	Making Period 2	**Total: 10 weeks**
	Chapter 7 Laptops	2.5
	Chapter 8 Mobile Devices	4
	Chapter 9 Printers	3.5
	Making Period 3	**Total: 10 weeks**
	Chapter 10 Security	3.5
	Chapter 11 The IT Professional	2
	Chapter 12 Advanced Troubleshooting	4.5
	Making Period 4	**Total: 10 Weeks**
		Grand Totals: 40 Weeks

D- Indicates differentiation at the Lesson Level.