

Wallenpaupack Area School District

COURSE: A+ Certification - Microcomputer Technician

GRADE LEVEL: 11-12

LENGTH OF COURSE: 1 semester

TEXT: A+ Guide to Managing and maintaining your PC – Comprehensive Version, 3rd Edition,
Jean Andrews

PUBLISHER: Course Technology

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COURSE DESCRIPTION:

This course is designed to design an in-depth study of the various areas that are related to servicing microcomputers and peripheral PC devices. This course will cover hardware components, troubleshooting techniques, software installations, working with peripheral devices and an in-depth study of DOS, and Windows 95 and 98.

CURRICULUM WRITING TEAM:

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DATE OF REVISION:

2005

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Overview of Course,
Introduction to curriculum,
Computer Hardware

PA Standards: 3.7.10.A
3.7.10.C
3.7.10.E

Topics:	Skills
Hardware used for input and output Permanent storage devices System board components used for communication among devices Interface/expansion cards The electrical system software	Identify the functions performed by different hardware components of a microcomputer Identify the three types of software and how they relate to one another and to hardware Recognize how the CPU uses primary and secondary storage to manage software
Activities:	Performance Assessments:
Class Discussion Multimedia Curricula Handouts	Question and Answer Dialog Written Examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Unit: The Boot/Startup Process

Grade Level: 11-12

PA Standards: 3.7.10.A
3.7.10.E
3.7.12.C
3.7.12.D

Topics:	Skills
The Boot process – step by step How software manages hardware resources Protecting data software and hardware	Identify what happens when you first turn on a computer, so that both the hardware and the software are poised to follow the user's directions Explain how hardware interacts with the system and how software manages hardware resources Identify and explain practical and simple ways to protect hardware and software
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Unit: The System Board

Grade Level: 11-12

PA Standards: 3.7.12.A
3.7.12.C

Topics:	Skills
The CPU and chip set Buses and expansion slots On-board ports Hardware configuration	Identify physical components on the system board Explain how the system board transports data, follows programming logic, and coordinates the timing and execution of each processing task Set the CPU and system bus frequency for the system board
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Understanding and Managing
Memory

Grade Level: 11 & 12

PA Standards: 3.7.12.A
3.7.12.C
3.7.12.E

Topics:	Skills
Physical memory How DOS and Windows 9X view memory Managing memory Windows NT Memory management Upgrading memory	Identify the types of physical memory housed on the system board Explain how memory is used by DOS and Windows 9X Manage memory using DOS and Windows 9X Upgrade the memory in a typical PC
Activities:	Performance Assessments:
Instructor Led Demonstration Class Discussion Multimedia Curricula Hands On Lab Exercises	Written Examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Floppy Drives

PA Standards: 3.7.12.A
3.7.12.C
3.7.12.E

Topics:	Skills
Introduction to how data is physically stored on a disk Exchanging and supporting floppy drives	Explain how data is stored on floppy disks Use DOS and Window commands to manage disks Replace or install a disk drive Explain concepts related to removable drives
Activities:	Performance Assessments:
Instructor demonstration Class discussion Multimedia Curricula Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Introduction to Hard Drives

Grade Level: 11 & 12

PA Standards: 3.7.12.A
3.7.12.C
3.7.12.E

Topics:	Skills
Hard drive technology How a hard drive is logically organized to hold data Operating system command to manage a hard drive Optimizing a hard drive Removable hard drives	Explain how data is stored on a hard drive Use DOS and Windows command to manage data on a hard drive Identify various types of hard drives and understand the advantages of each Manage a hard drive to optimize its performance
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Hard Drive Installation and
Support

Grade Level: 11 & 12

PA Standards: 3.7.12.A
3.7.12.C
3.7.12.E

Topics:	Skills
Installing a hard drive Troubleshooting hard drives and data recovery Hard drive troubleshooting guidelines	Install a hard drive Use diagnostic software Recover lost data on hard drives Apply hard drive troubleshooting skills
Activities:	Performance Assessments:
Class discussion Instructor led demonstration Multimedia Curricula Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Troubleshooting Fundamentals

PA Standards: 3.7.10.A
3.7.10.C
3.7.10.D
3.7.10.E
3.7.12.A
3.7.12.B
3.7.12.D

Topics:	Skills
Troubleshooting tools How to isolate computer problems Troubleshooting guidelines	Protect themselves, hardware, and software while solving computer problems Identify tools needed to support personal computers Isolate computer problems and devise a course of action Explain the importance of good record keeping Take a computer apart and re-assemble it
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Supporting I/O Devices

PA Standards: 3.7.12.A
3.7.12.B

Topics:	Skills
Basic principals of peripheral installations Using ports and expansion slots for Add-on devices SCSI devices	Use standard resources on a computer system when installing add-on devices Resolve resource conflicts Install a new device on a computer Explain and discuss keyboards pointing devices, and video subsystems
Activities:	Performance Assessments:
Demonstration Handouts	Question and answer dialog Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Multimedia Technology

PA Standards: 3.7.12.B
3.7.12.D
3.7.12.E

Topics: Multimedia on a PC Devices supporting multimedia	Skills Identify the fundamental workings of multimedia technology Identify multimedia standards and how they have helped shape the computer industry Support man multimedia devices including CD-ROM drives, sound cards, and DVD drives
Activities: Class discussion Multimedia Curricula Handouts	Performance Assessments: Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Electricity and Power Supplies

PA Standards: 3.7.12.A
3.7.12.B

Topics:	Skills
Introduction to basic electricity Measuring the voltage of a power supply Problems with the power supply Energy star computer standards surge protection and battery backup	Measure AC and DC voltages at various sources Measure the voltage output of the power supply Change and replace a power supply Protect a computer system from damaging changes in electrical power
Activities:	Performance Assessments:
Class discussion Demonstration Handouts	Question and answer dialog Lab exercise report Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Supporting Windows 3.X and
9X

Grade Level: 11 & 12

PA Standards: 3.7.10.E
3.7.12.D
37.12.E

Topics:	Skills
Supporting Windows 9X Supporting Windows 3.X Supporting Windows 95 and 98 Support from Microsoft	Explain Windows installations and customizing the Windows environment Install and resolve problems with application software Manage Windows resources, including memory and hard drives Optimize Windows performance Identify the Windows Registry and how to repair a corrupted registry Use some diagnostic software Explain plug and play and how to troubleshoot Plug and Play problems
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Understanding and Supporting
Windows NT

Grade Level: 11 & 12

PA Standards: 3.7.10.E
3.7.12.E

Topics:	Skills
Windows NT vs. Windows 9X Windows NT Environment Installing and customizing Windows NT Supporting NT and applications Windows NT Registry	Discuss the Windows NT environment and its architecture Identify the strengths and weaknesses of Windows NT Evaluate when Windows NT is the best choice for a PC Operating System Install and customize Windows NT Set up a Windows NT environment for a DOS or Windows 3.X application Use some Windows NT troubleshooting technique4s and tools
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Building your own Computer

Grade Level: 11 & 12

PA Standards: 3.7.10.E
3.7.12.A
3.7.12.D
3.7.12.E

Topics:	Skills
Selecting a personal computer to fit your needs Preparing to build your own PC Step-by-step process of building a PC	Explain and discuss the different operating systems within windows 2000 suite Identify similarities among Windows 98, NT, and 2000 Professional Install Windows 2000 Professional Explain the Windows 2000 boot process, management tools, and problem solving tools Troubleshoot problems with Windows 2000 Professional
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Multi-day Project Analysis

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician
Unit: Communication Over Phone
Lines

Grade Level: 11 & 12

PA Standards: 3.7.10.A
3.7.10.C
3.7.10.E

Topics:	Skills
Communication layers All about modems Communication software Troubleshooting guidelines	Describe the basics of how computer communicate with each other Identify problem faced by systems communicating over phone lines Explain how modems work and what features and protocols modems use Configure a modem, using Windows 9x, Windows NT, or Windows 2000 Discuss features of different communications software Troubleshoot modem operations Define and discuss high-speed digital communication lines, including ISDN, DSL, and cable modem
Activities:	Performance Assessments:
Class discussion Multimedia Curricula Handouts	Question and answer dialog Written examination

Wallenpaupack Area School District

Course: A+ Certification -
Microcomputer Technician

Grade Level: 11 & 12

Unit: Networking fundamentals and
the Internet

PA Standards: 3.7.10.E
3.7.12.A
37.12.E

Topics:	Skills
An overview of networking Network architectures Network hardware Network software PCs and the Internet Troubleshooting Guidelines	List and identify the typical hardware components of a network Explain how popular network technologies manage data traffic Explain how data is transmitted over several interconnected networks Describe how communications layers and their protocols are used on a network Connect to a network using a modem and a phone line Support PC's connected to the Internet
Activities:	Performance Assessments:
Demonstration Multimedia Curricula Handouts	Question and answer dialog Lab project report Written examination