



**COWLEY COLLEGE  
& Area Vocational Technical School**

**COURSE PROCEDURE FOR**

**COMPUTER HARDWARE/SOFTWARE  
CNP1957 3 Credit Hours**

**Student Level:**

This course is open to students on the college level in either the freshman or the sophomore year and to area high school vocational students.

**Catalog Description:**

**CNP1957 Hardware/Software (3 hrs)**

This course is the managing and maintaining of a personal computer. This course is designed to teach the student how a computer works and the integration of hardware and software. Students will gain practical knowledge on how to Install/configure/troubleshoot computer systems for Windows 2000 and later operating systems. Students will also be introduced to network fundamentals and customer service skills.

**Prerequisites:**

None

**Controlling Purpose:**

This course is designed to help the students increase their knowledge concerning troubleshooting and repairing microcomputer systems and their peripherals. The course specifically addresses the following areas: introducing Hardware, how software and hardware work together, command line processes, working with specific hardware, multimedia technology, operating systems, understanding and supporting Windows 2000, Windows XP and Windows 7, installation and support for Windows XP and Windows 7, the decision to buy or build your own PC, communication over phone lines, network fundamentals and the internet, support for printers and Notebook computers, virus, disaster recovery, maintenance plans, and the Professional PC Technician.

**Learner Outcomes:**

Upon completion of the course, the student will be able to identify how software and hardware work together, installation and support for operating systems, and knowledge of building a PC.

**Units Outcomes and Criterion Based Evaluation Key for Core Content:**

The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

A = All major and minor goals have been achieved and the achievement level is considerably

- B = above the minimum required for doing more advanced work in the same field.  
 All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

<b>UNIT 1: Introducing Hardware</b>						
Outcomes: Identify basic terms, concepts and function of a personal computer.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe basic hardware components
						Describe the purpose of BIOS
						Identify basic hardware inside the case

<b>UNIT 2: How Hardware and Software Work Together</b>						
Outcomes: Students will understand how the operating systems function and understand using the operating system tools.						
A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Describe an operating systems function
						Describe and Understand how I/O addresses, IRQ, DMA channels and Memory addresses work
						Understand and use Operating System tools to examine a system

**UNIT 3: Understanding the Boot Process and Command Line**

Outcomes: Students will be able to install an operating system by use of the boot process and command line interface.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Describe the boot process
						Understand the command line interface
						Use command line utilities to prepare a system for installation of an operating system

**UNIT 4: Electricity and Power Supplies**

Outcomes: Describe basic electrical and electronic terms and make use of safe procedures when dealing with power supplies and monitors.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe basic electrical and electronic terms
						Demonstrate proper ESD and safety procedures
						Detect and correct power supply problems

**UNIT 5: The Motherboard**

Outcomes: Students will be able to identify the basic components of a motherboard as well as install and troubleshoot problems.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe and Identify the components of a motherboard
						Select the proper case and install a motherboard
						Troubleshoot the motherboard and CPU

**UNIT 6: Managing Memory**

Outcomes: At the end of this unit, students will understand how memory is used in a personal computer and identify the different types.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe how Memory is used in a system
						Describe the different types of memory
						Understand memory management

**UNIT 7: Floppy Drives**

Outcomes: Students will be able to install and configure floppy drives by the end of this unit.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe how a floppy works
						Describe how data is stored on a floppy
						Demonstrate the ability to install, configure and troubleshoot floppy drives

**UNIT 8: Understanding and Installing Hard drives**

Outcomes: Students will demonstrate the ability to install, configure, and troubleshoot hard drives including IDE, EIDE, Serial ATA, and SCSI drives.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand hard drive terminology
						Describe how a hard drive stores data
						Demonstrate the ability to troubleshoot hard drive installations

**UNIT 9: Optimizing and Protecting Hard Drives**

Outcomes: Students will use the basic utilities to protect, optimize, and maintain hard drives.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Use software tools to perform basic maintenance on hard drives
						Describe how to protect a hard drive from viruses and other infestations
						Demonstrate the ability to troubleshoot hard drives

**UNIT 10: Supporting I/O Devices**

Outcomes: Students will understand I/O slots and the use of expansion cards to extend the capability of a personal computer.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain the different type of ports and expansion slots
						Describe and install different types of input devices
						Describe and install different types of output devices

**UNIT 11: Multimedia Devices and Mass Storage**

Outcomes: Students will have a working knowledge on Multimedia devices and mass storage devices to backup computer systems.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the different standards for Multimedia
						Install, configure, and troubleshoot Multimedia devices
						Describe mass storage devices and how they can be used to back-up systems

**UNIT 12: Understanding and Installing Windows NT/2000/XP**

Outcomes: Students will have an understanding of Windows NT/2000/XP architecture and install hardware and applications.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the Windows NT/2000/XP architecture
						Install Windows 2000 Professional
						Install hardware and applications under Windows 2000

**UNIT 13: Managing and Troubleshooting Windows XP**

Outcomes: Students will understand the use of operating system tools to troubleshoot Windows 2000.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Describe the Windows NT/2000/XP boot process
						Troubleshooting Windows 2000
						Understand and use Operating System tools to examine a system

**UNIT 14: Installing and Using Windows XP Professional**

Outcomes: Upon completion of the unit, the students will be able to install and use Windows XP hardware and applications.

A	B	C	D	F	N	Specific Competencies:
						Demonstrate the ability to:
						Install Windows XP and Windows 7
						Use Windows XP and Windows 7
						Install hardware and applications

**UNIT 15: Managing and Supporting Windows XP and Windows 7**

Outcomes: Students will have knowledge of basic security principals in Windows XP.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe basic security principals in Windows XP and Windows 7
						Describe the Windows NT/2000/XP/7 Registry
						Troubleshooting the Boot Process

**UNIT 16: Supporting Modems**

Outcomes: Students will understand the use of modems through installation, configurations, and troubleshooting.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe how modems are rated
						Install and configure modems
						Troubleshoot modems

**UNIT 17: PCs on a Network**

Outcomes: Students will understand the process for putting a computer on a network.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the physical Network Architectures
						Install a Network Card and connect to a Network
						Troubleshoot Network connection issues

**UNIT 18: PCs on the Internet**

Outcomes: Students will demonstrate the ability to configure and troubleshoot computers on the Internet.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand the TCP/IP protocol
						Describe how to connect to the Internet
						Describe Internet clients

**UNIT 19: Notebooks, Tablet PCs and PDAs**

Outcomes: Students will understand the differences between Notebooks, Tablet PC's and PDAs.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Use Notebook Computers
						Troubleshoot Notebook PCs
						Connect a PDA to a PC

**UNIT 20: Supporting Printers**

Outcomes: Students will know how to install, configure, and troubleshoot printers and drivers.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe how Laser Printers work
						Describe how Ink Jet Printers work
						Troubleshoot printers and printer drivers



**UNIT 21: All About SCSI**

Outcomes: Students will demonstrate the ability to install, configure, and troubleshoot SCSI devices.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the difference between SCSI and IDE
						Install SCSI devices
						Troubleshooting SCSI devices

**UNIT 22: Purchasing or Building your own PC**

Outcomes: Students will understand the advantages and disadvantages of purchasing or building their own computer system.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe preparing to build your own PC
						Install, configure and troubleshoot your own PC
						Select a PC to meet your needs

**UNIT 23: Troubleshooting and Maintenance Fundamentals**

Outcomes: Students will understand troubleshooting and preventive maintenance.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Discuss your approach to troubleshooting
						Discuss Preventive Maintenance
						Discuss different Troubleshooting Tools

**Projects Required:**

None

**Textbook:**

Contact Bookstore for current textbook.

**Materials/Equipment Required:**

None

**Attendance Policy:**

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

**Grading Policy:**

The grading policy will be outlined by the instructor in the course syllabus.

**Maximum class size:**

Based on classroom occupancy

**Course Timeframe:**

The U.S. Department of Education, Higher Learning Commission, and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching, and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

**Refer to the following policies:**

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

**Disability Services Program:**

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.