



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**NETWORKING PLUS
CNP1958 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:

CNP1958 – NETWORKING PLUS (3 hrs)

This course is preparation for CompTIA’s N+ exam certification. The class deals primarily with network operating systems and network design issues. Also covered at length are back-up and disaster recovery issues and viruses. Prerequisite: Hardware/software experience, certification, or equivalent experience.

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Controlling Purpose:

The goal of this course is to provide an introduction to networking technologies This course covers a wide range of material about networking, from careers in networking to local area networks, wide area networks, protocols, topologies, transmission media, and security. It not only introduces a variety of concepts, but also discusses in-depth the most significant aspects of networking, such as the TCP/IP protocol suite. In addition to explaining concepts, the course uses a multitude of real world examples of networking issues from a professional’s standpoint, making it a practical preparation for the real world.

Learner Outcomes:

Upon completion of the course, the student will be able to identify the elements of a network and describe the advantages between Network computing and Standalone computing.

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 above the minimum required for doing more advanced work in the same field.
- B = 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

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- 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.

UNIT 1: An Introduction to Networking

Outcomes: Students will understand the elements of a network and certifications available to networking professionals.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List the advantages of networked computing relative to standalone computing.
						Identify the elements of a network.
						Describe several specific uses for a network.
						Identify some of the certifications available to networking professionals.
						Identify the kinds of non-technical, or "soft," skills that will help you succeed as a networking professional.

UNIT 2: Networking Standards and the OSI Model

Outcomes: Students will describe layers of the OSI Model and identify standards for organizations networking.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify organizations that set standards for networking.
						Explain the layers of the OSI Model.
						Describe specific networking services within each layer of the OSI Model.
						Explain how two systems communicate through the OSI Model.
						Discuss the structure and purpose of data frames.
						Describe the two types of addressing contained in the OSI Model.

UNIT 3: Network Protocols

Outcomes: Students will understand and identify characteristics of network protocols.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the characteristics of TCP/IP, IPX/SPX, NetBIOS, and AppleTalk.
						Understand the position of network protocols in the OSI Model.
						Identify the core protocols of each protocol suite and its functions.
						Understand each protocol's addressing scheme.
						Install protocols on Windows 95 and Windows NT Clients.

UNIT 4: Networking Media

Outcomes: The student will be able to explain concepts related to data transmission, benefits, and limitations of networking media, and identify the best practices for cabling work areas.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Explain concepts related to data transmission and noise.
						Describe the physical characteristics of coaxial cable, STP, UTP, and fiber-optic media.
						Explain the benefits and limitations of different networking media.
						Identify the best practices for cabling buildings and work area.
						Describe methods of transmitting data through the atmosphere.
						Identify the network media best suited to specific LAN environments.

UNIT 5: Network Architecture

Outcomes: Upon completion of the unit, students will be able to explain the benefits and uses of different topologies.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the basic and hybrid LAN topologies.
						Describe a variety of enterprise-wide WAN topologies.
						Explain the benefits and uses of different topologies.
						Discuss several versions of the Ethernet transport system.
						Explain the structure and functioning of the Token Ring network transport system.

UNIT 6: Networking Hardware

Outcomes: Upon completion of the unit, students will be able to distinguish between the different types of networking hardware

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the functions of LAN connectivity hardware.
						Install and configure a network interface card (NIC).
						Identify problems associated with connectivity hardware.
						Describe the factors involved in choosing a NIC, hub, switch, or router.
						Describe the uses of repeaters, hubs, bridges, switches, and gateways.
						Describe the function of routing protocols.

UNIT 7: WANs and Remote Connectivity

Outcomes: Upon completion of the unit, students will understand and have the ability to distinguish between WAN technology and remote connectivity.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand the differences between LANs and WANs.
						Identify network applications that require WAN technology.
						Describe the various WAN transmission methods.
						Identify criteria for selecting an appropriate WAN topology, transmission method, and operating system.
						Install and configure simple remote connectivity for a telecommuting client.

UNIT 8: Network Operating Systems and Windows NT-Based Networking

Outcomes: Students will be able to perform Windows NT server installation, manage users, groups, and rights under Windows NT server.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Define the requirements and characteristics of a Windows NT network environment.
						Describe how a Windows NT server fits into an enterprise-wide network.
						Perform a simple Windows NT server installation.
						Manage users, groups, and rights under Windows NT Server.
						Understand how Windows NT server integrates with other network operating systems.
						Discuss the elements of a network operating system.

UNIT 9: Netware-Based Networking

Outcomes: Students will be able to explain NetWare integration with other network operating systems and perform simple NetWare server installation.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the advantages of using the NetWare network operating system.
						Describe NetWare's server hardware requirements.
						Describe NetWare's memory, directory structure and file system architectures.
						Plan for and perform a simple NetWare server installation.
						Explain how NetWare integrates with other network operating systems.

UNIT 10: Networking with UNIX

Outcomes: Students will understand the UNIX server, execute basic UNIX commands and understand why a corporate network would choose UNIX server.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the origins and history of the Unix operating system.
						Identify similarities and differences between popular implementations of UNIX.
						Understand why you might choose a UNIX server for a corporate network.
						Explain and execute basic UNIX commands.
						Use Linux of add groups and users and to change file access permissions.
						Explain how UNIX can be internet-worked with other network operating systems.

UNIT 11: Networking with TCP/IP and the Internet

Outcomes: Students will understand the purposes and uses of host files, BOOTP, DHCP, WINS, and DNS. Students will use TCP/IP protocols for network troubleshooting.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Discuss additional details of TCP/IP addressing and sub protocols.
						Understand the purposes and uses of BOOTP, DHCP, WINS, DNS, and host files.
						Use TCP/IP protocols for network troubleshooting.
						Understand and use TCP/IP applications, such as internet browsers, e-mail, and e-commerce.

UNIT 12: Trouble Shooting Network Problems

Outcomes: Upon completion of the unit, students will be able to troubleshoot using software and hardware tools to diagnose problems.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the elements of an effective troubleshooting methodology.
						Discuss practical issues related to troubleshooting.
						Use software and hardware tools to diagnose problems.

UNIT 13: Maintaining and Upgrading a Network

Outcomes: Upon completion of the unit, students will be able to perform a baseline analysis of the network, plan regular hardware/software maintenance, know the pitfalls of making changes to the network, and research trends for future network upgrades.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Perform a baseline analysis to determine the state of your network.
						Plan and follow regular hardware and software maintenance routines.
						Describe the steps involved in upgrading network operating system software.
						Describe the steps involved in adding or upgrading network hardware.
						Address the potential pitfalls of making changes to the network.
						Research networking trends to plan future network upgrades.

UNIT 14: Ensuring Integrity and Availability

Outcomes: Students will be able to identify and protect a network from loss or damage.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify the characteristics of a network that keep data safe from loss or damage.
						Protect an enterprise-wide network from viruses.
						Explain network – and system – level fault-tolerance techniques.
						Discuss issues related to network backup and recovery strategies.
						Describe the components of a useful disaster recovery plan.
						Describe the function of routing protocols.

UNIT 15: Network Security

Outcomes: Students will understand how physical security contributes to a network security and install and configure remote connectivity.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify security risks in LAN's and WAN's.
						Explain how physical security contributes to network security.
						Discuss hardware- and design – based security techniques.
						Identify criteria for selecting an appropriate WAN topology, transmission method, and operating system.
						Install and configure simple remote connectivity for a telecommuting client.

UNIT 16: Managing Network Design and Implementation

Outcomes: Students will be able to analyze the status of a network, perform an needs assessment for managing a network implementation project.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Describe the elements and benefits of project management.
						Analyze the current status of a network.
						Perform a needs assessment and recommended changes based on your findings.
						Manage a network implementation project.
						Design and test a pilot network.

Projects Required:**Textbook:**

Contact Bookstore for current textbook. Tool kit available from bookstore

Materials/Equipment Required:

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.