Pierce County Careers Connection
Dual Credit Articulation Agreement

Upon completion of high school courses equivalent to the following competencies:

Standards and Terminology
- ☐ Define common networking terms for LANs and WANs.
- ☐ Compare a file and print server with an application server.
- ☐ Compare user-level security with access permission assigned to a shared directory on a server.
- ☐ Compare a server-based network to a peer-to-peer network.
- ☐ Compare connection based communications with connectionless communications.
- ☐ *Distinguish whether SLIP or PPP is used as the communications protocol for various situations.*
- ☐ Define the communication devices that communicate at each level of the OSI reference model.
- ☐ Describe the characteristics and purpose of the media used in IEEE 802.3 and IEEE 802.5 standards.
- ☐ Explain the purpose of NDIS and Novell ODI network standards.

Network Fundamentals
- ☐ Explain network structure.
- ☐ Describe network operating systems, clients, and directory.
- ☐ Define IPX, IP, and Net BEUI.
- ☐ Describe fault tolerance and its implementation methods.
- ☐ Describe the OSI reference model and identify the protocols, services, and functions that relate to each layer.
- ☐ Recognize and describe types and characteristics of network media (coaxial, fiber-optic, UTP, STP, 10 BaseT, 100Base, VGAnyLan, RJ24, BNC, and so on).
- ☐ Describe the basic attributes, purposes, and functions of such network elements as:
  - Full and half duplexing.
  - WANS and LANS.
  - Servers, workstations, and hosts.
  - Server-based and peer-to-peer networking.
  - Cabling, NICs and routers.
  - Broadband and baseband transmission.
  - Use of gateways as default IP routers and the means by which to connect dissimilar systems or protocols.
  - Wireless technology protocols.
  - Fiber.

Network Planning
- ☐ Select the appropriate media (including twisted-pair cable, coaxial cable, fiber optic cable, wireless technology) considering various situational elements including cost, distance limitations, and number of nodes.
- ☐ Define the limitations of media.
- ☐ Select the appropriate topology for various token-ring and Ethernet networks.
- ☐ Explain network and transport protocols.
- ☐ Describe connectivity for Token Ring and Ethernet (repeaters, bridges, routers, and so on).
- ☐ Define characteristics of WAN connections (X.25, ISDN, frame relay, and ATM).

Data-Link Layer
- ☐ Define bridges and why they are used.

- ☐ Explain the IEEE Project 802 specifications, including 802.2, 802.3, and 802.5.
- ☐ Describe the function and characteristics of MAC addresses.

Network Layer
- ☐ Define the following routing and network-layer concepts:
  - Routing, including the difference between static and dynamic routing.
  - The difference between router and a brouter.
  - The difference between routable and nonroutable protocols.
  - Default gateways and subnetworks.
  - The reason for employing unique networks IDs.

Transport Layer
- ☐ Describe the purpose of name resolution.
- ☐ Describe the difference between connection and connectionless transport.

TCP/IP Fundamentals
- ☐ Describe the following TCP/IP fundamentals:
  - IP default gateways.
  - DHCP, DNS, WINS, and host files.
  - Main TCP/IP protocols, including TCP, UDP, POP3, SMTP, SNMP, FTP, HTTP, and IP.
  - Broad acceptance of TCP/IP by operating systems and hosts worldwide.
  - Internet domain name server hierarchies.
  - TCP/IP addressing, including the A, B, and C classes of IP addresses and the use if port numbers (HTTP, FTP, SMTP) and the port numbers commonly assigned to a given service.
  - TCP/IP configuration concepts, including IP proxy and the identity of the normal configuration parameters for a workstation, including IP addresses DNS, IP proxy configuration, WIND, DHCP, host name, and Internet domain name.

Remote Connectivity
- ☐ Describe PPP and SLIP.
- ☐ Describe PPTP.
- ☐ Describe VPN, SSL, TS.

- ☐ Explain the attributes, advantages and disadvantages of ISDN and PSTN (POTS).
- ☐ Describe modem configurations, including serial port IRQ, I/O address and maximum port speed.
- ☐ Specify the requirements for a remote connection.

Network Security
- ☐ Describe issues to consider when selecting a security model, including user and share level.
- ☐ Describe standard password practices and procedures.

Network Security (cont'd)
- ☐ Explain the need to employ data encryption to protect network data.
- ☐ Explain the purpose of a firewall.

- ☐ Demonstrate how network components are integrated into a productive data network design methodology.
- ☐ Given multiple case studies apply data communications principles of network architecture and protocols to data network design methodology.
- ☐ Determine predictable trends in data communications technology for network planning purposes.
- ☐ Compare date communications media, line encoding schemes, data link and physical link protocols, and interfaces used in standard data communication systems.

A student earning a "B" grade or better may earn college credit at one of the following colleges:

College	Course	Credits
Bates Technical College	WIRE 215	2
	WIRE 216 (CIP Code: 470103)	2