

Inver Hills Community College

ITC 2516: Intro to Networks and Switching, Routing, and Wireless Essentials (CCNA1/2)

A. COURSE DESCRIPTION

Credits: 6

Lecture Hours/Week: 4

Lab Hours/Week: 4

OJT Hours/Week: *.*

Prerequisites:

CIS 1400 - Windows Operating Systems Fundamentals AND ITC 1400 - IT Fundamentals

Corequisites: None

MnTC Goals: None

Introduces the architecture, structure, functions, components, and models of the Internet and other computer networks as well as the implementation of basic enterprise routing, switching, and wireless technologies. The fundamentals of IP addressing, Ethernet, router, switch, and wireless configuration are practiced through hands-on lab work. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with VLANs, Spanning-Tree, EtherChannel, Wireless LANs, DHCP, SLAAC, static IP routes, and first-hop redundancy protocols.

Course Note: The prerequisite for this course can be waived upon proof of passing an IT fundamentals examination administered by the department. Contact the instructor or department for more information.

B. COURSE EFFECTIVE DATES: 07/31/2020 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Networking Today, Network Security Fundamentals 5%
 - Basic Switch, Router, and Device Configuration, Building a Small Network 9%
 - Ethernet Switching, Address Resolution, and ICMP 9%
 - Network Protocols & Models, Physical, Data Link, Network, Transport, and Application Layers 18%
 - Number Systems, IPv4 and IPv6 Addressing 9%
 - Basic Device Configuration, Switching Concepts, LAN Security Concepts & Configuration 12%
 - VLANs, Inter-VLAN Routing, STP, and EtherChannel 13%
 - DHCPv4, SLAAC, and DHCPv6 6%
 - Routing Concepts, Static IP Routing, FHRPs, Troubleshooting Routes 13%
 - WLAN Concepts and Configuration 6%

D. LEARNING OUTCOMES (General)

1. Students will be able to:
 - Explain the advances in modern network technologies.
 - Implement initial settings including passwords, IP addressing, and default gateway parameters on a network switch and end devices.
 - Explain how network protocols enable devices to access local and remote network resources.
 - Explain how physical layer protocols, services, and network media support communications across data networks.
 - Convert numbers between decimal and binary systems.
 - Explain how media access control in the data link layer supports communication across networks.
2.
 - Explain how Ethernet operates in a switched network.
 - Explain how routers use network layer protocols and services to enable end-to-end connectivity.
 - Explain how ARP and ND enable communication on a local area network.
 - Implement initial settings on a router and end devices.
 - Calculate an IPv4 subnetting scheme to efficiently segment your network.
 - Implement an IPv6 addressing scheme.
 - Use various ICMP tools to test network connectivity.
 - Compare the operations of transport layer protocols in supporting end-to-end communication.
3.
 - Explain the operation of application layer protocols in providing support to end-user applications.
 - Configure switches and routers with device hardening features to enhance security.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted