COURSE DESCRIPTION

Prerequisites: DREA0093.

A course in the fundamentals of networking concepts and technologies. In this course, you will learn both the practical and conceptual skills that build the foundation for understanding basic networking. This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks, the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum.

This is a 4 credit hour course. (3 lec. 4 lab.)

END OF COURSE OUTCOMES

By the end of this course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.

STUDENT LEARNING OUTCOMES

Upon successful completion of ITCC 1477 CCNA Routing and Switching: Introduction to Networks the student will be able to:

- Understand and describe the devices and services used to support communications in data networks and the Internet
- Understand and describe the role of protocol layers in data networks
- Understand and describe the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments
- Design, calculate, and apply subnet masks and addresses to fulfill given requirements in IPv4 and IPv6 networks
- Explain fundamental Ethernet concepts such as media, services, and operations
- Build a simple Ethernet network using routers and switches
- Use Cisco command-line interface (CLI) commands to perform basic router and switch configurations
- Utilize common network utilities to verify small network operations and analyze data traffic

COURSE MATERIALS


**Provided:** Student Login for on-line course materials  
Cabling supplies and tools  
Curriculum available online

A student of this institution (El Centro College) is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

**Major Course Requirements**

Students will review **Comprehensive Lecture** on each chapter topic.

Students will perform **Syntax Checker** Activities to practice entering Cisco IOS commands.

Students will complete **Chapter Exam**, which evaluate the students’ knowledge in each of the topic areas.

Students will complete an objective comprehensive **Final Exam** which will evaluate the student’s understanding of the concepts of Routing Protocols and Concepts in each unit.

Students will complete a **Skills Based Assessment - Student Training Exam** which will evaluate the student’s skills performance of the fundamentals of Routing Protocols and Concepts.

Students will complete a **Course Feedback** Survey which will evaluate the student’s attitude about the course and individual knowledge and skills.

Students will complete **Class Activities, Interactive Activities, Packet Tracer, Hands-on Labs related** to concepts for each chapter including reflections, challenges, and cleanup which will evaluate the student’s skills performance of the following topics:

- Collaboration Tools
- Operation of IP Networks
- Purpose and functions of various network devices such as routers, switches, bridges, and hubs
- Components required to meet a given network specification
- Common Applications mad their impact on the network
- Purpose and basic operation of protocols in the OSI and TCP/IP models
- Data flow between two hosts across a network
- Appropriate media, cables, ports, and connectors to connect Cisco Network devices to other network devices and hosts in a LAN
- Implement a Small Switched Network
- Technology and media access control method for Ethernet networks
- Basic Switching concepts and the operation of Cisco switches
- Configure and verify initial switch configuration including remote access management
- Verify network status and switch operation using basic utilities such as ping, telnet, and...
• Operation and necessity of using private and public IP addresses for IPv4 addressing
• Appropriate addressing scheme to satisfy addressing requirements in a LAN/WAN environment
• Appropriate addressing scheme using VLSM and summarization to satisfy addressing requirement in a LAN/WQN environment
• Technological requirements for running IPV6 in conjunction with IPV4
• IPv Addressing
• IP V6 Addressing
• Basic Routing concepts
• Configure and verify utilizing the CLI to set a basic router configuration
• Configure and verify operation status of an Ethernet Interface
• Verify router configuration and network connectivity
• Configure and verify routing configuration for a static or default route given specific routing requirements
• Differentiate methods of routing and routing protocol
• Configure SVI interfaces
• Configure and verify DHCP
• Configure and verify network device security features
• Troubleshoot and correct common problems associated with IP addressing and host configurations
• Troubleshoot and resolve Layer 1 problems

Subject Matter

Topics covered in the course include:
   Exploring the Network
   Configuring a Network Operating System
   Network Protocols and Communications
   Network Access
   Ethernet
   Network Layer
   Transport Layer
   IP Addressing
   Subnetting IP Networks
   Application Layer
   It’s a Network

Disclaimer
The provisions contained in this syllabus do not constitute a contract between the student and El Centro College. These provisions may be changed at the discretion of the Coordinator/Instructor. When necessary, appropriate notice of such changes will be given to the student.
The instructor-of-record may provide additional information to enhance the course to meet the needs of the enrolled students, provided that the enhancements do not conflict with the official course syllabus.

**Policies**
Students should click on the links below and read all of these policies.

- [General institutional policies](#)
- [Course-related institutional policies](#)