COURSE DESCRIPTION

Prerequisites: ITCC 1477 and ITCC 1478 or instructor approval.

A course in how to configure routers and switches for advanced functionality. The focus of this course is on learning the architecture, components, and operations of routers and switches in a larger and more complex network.

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 configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, STP, and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network.

STUDENT LEARNING OUTCOMES

Upon successful completion of ITCC 2476 CCNA Routing and Switching: Scaling Networks the student will be able to:

- Understand, configure and troubleshoot enhanced switching technologies such as VLANs, Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Plus Protocol (PVST+), and EtherChannel
- Understand, configure, and troubleshoot first hop redundancy protocols (HSRP) in a switched network
- Understand, configure, and troubleshoot wireless routers and wireless clients
- Configure and troubleshoot routers in a complex routed IPv4 or IPv6 network using single-area OSPF, multiarea OSPF, and Enhanced Interior Gateway Routing Protocol (EIGRP)
- Manage Cisco IOS® Software licensing and configuration files

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 Requirement

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 students skills performance of the following topics:

- Identify enhanced switching technologies such as: RSTP, RVSTP, and Etherchannel
- Configure and verify PVSTP operation
- IP Routing Technologies
- Methods of routing and routing protocols
- Manage Cisco IOS Files
- Configure and verify EIGRP (single AS)
- Configure and verify OSPF (Multi-area)
- IP Services
- Recognize high available (FHRP)
- Identify and correct common network problems
- Utilize NetFlow data
- Troubleshoot and resolve spanning tree operation issues
- Troubleshoot and resolve routing issues
- Troubleshoot and resolve OSPF problems
- Trouble and resolve EIGRP problems
- Troubleshoot Etherchannel problems
- Identify different WAN technologies
**Subject Matter**

Topics covered in the course include:
- Introduction to Scaling Networks
- LAN Redundancy
- Link Aggregation
- Wireless LANs
- Adjust and Troubleshoot Single-Area OSPF
- Multiarea OSPF
- EIGRP
- EIGRP Advanced Configurations and Troubleshooting
- IOS Images and Licensing

**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](#)