



South Central College

COMP 2466 Routing & Switching

Course Outcome Summary

Course Information

Description	This course addresses the integration of routing and switching technologies to create efficient enterprise networks. Students will learn to design, build, and configure a network. Students will configure routing protocols and perform LAN, WAN, and VLAN troubleshooting using a structured methodology based on the OSI model. Upon completing this course, the learner will be able to select and implement the appropriate Cisco IOS services required to build a scalable, efficient, and highly available network. This course helps students prepare for the CCNA (Cisco Certified Network Administrator) exam. (Prerequisite: COMP 1360)
Total Credits	4
Total Hours	64

Types of Instruction

Instruction Type	Credits/Hours
Lecture	4/64

Pre/Corequisites

COMP 1360

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Describe network design concepts.

Learning Objectives

List the benefits of a hierarchical network design.

List current network design methodologies.

Describe design considerations for each of the core, distribution, and access layers and the network edge.

List design considerations needed to support remote workers.

2. Gather network requirements.

Learning Objectives

Describe the six phases of the PPDIO model.
Write a response to a Request for Proposal.
Describe the part that business goals play in designing or upgrading a network.

3. Evaluate an existing data network.

Learning Objectives

Identify the strengths and weaknesses of an existing data network.
Identify appropriate hardware upgrades for an existing data network.
Describe the process used to upgrade the IOS software on a router or switch.
Conduct a wireless site survey.
Write a network design requirements document.

4. Identify the impacts that computer applications have on network design.

Learning Objectives

List the characteristics of a network that are affected by computer applications.
Describe the network requirements for commonly used applications.
Describe the role that QoS plays in converged networks.
Create an application traffic flow diagram to determine bandwidth requirements.
Identify potential traffic bottlenecks.

5. Develop the data network design.

Learning Objectives

Analyze business goals and technical requirements.
Create the core, distribution, and access layer topology design documents.
Design the WAN connectivity design documents.
Design the wireless connectivity design documents.
Incorporate security measures into the design documents.

6. Incorporate IP addressing in the network design.

Learning Objectives

Select the appropriate hierarchical IP addressing scheme.
Choose an appropriate routing protocol.
Create a logical naming structure for networked devices.

7. Develop a prototype local area network.

Learning Objectives

Develop a proof-of-concept test.
Conduct a proof-of-concept test.
Identify risks and weaknesses based on the proof-of-concept test.
Adjust network design documents to take risks and weaknesses into account.

8. Develop a prototype wide area network.

Learning Objectives

Identify the components required for WAN connectivity.
List the components of a Frame Relay network.
Configure a Frame Relay connection.
List VPN technologies currently available to support remote connections.
Configure a VPN client connection to a VPN server.

9. Present the network design to the customer.

Learning Objectives

Create a bill of materials.
Develop the implementation schedule.
Determine hardware and software support contract requirements.
Present a network design or upgrade proposal including implementation schedules and costs.

10. Implement a network design.

Learning Objectives

Install networking components.
Install network cabling.
Install backup power systems.
Configure networking components.

11. Test a network design.

Learning Objectives

Develop a network test plan.
Conduct a network test.
Evaluate the results of a network test.
Modify the network design as appropriate based on a network test and implement all required changes.

12. Document a completed network installation and train support personnel.

Learning Objectives

Organize all existing network component documentation into a usable format.
Label all network components and cables.
Incorporate all revisions of network design documentation, test plans, test results, and modifications into the documentation library.
Train support personnel on the design of the network.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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