General Information

Date
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Department
Computing Sciences

Course Prefix
CSC

Course Number
261

Course Title
Routing and Switching

Course Information

Credit Hours
3

Lecture Contact Hours
3

Lab Contact Hours
0

Other Contact Hours

Catalog Description
This course is a study of Routing and Switching fundamentals, and how the Internet is integrated into the computing environment to enable organizations to share resources, collaborate, and meet organizational goals. The networking essentials and the creation of simple Local Area Networks (LANs) introduced in CSC 260, Networking Technologies, are expanded upon to incorporate the linking of these simple networks to each other and to the Internet, to create an internetwork. Routing and Switching devices such as switches and routers will be examined in great detail. Students will focus on techniques to analyze, plan, and manage an enterprise network. In support of these techniques, lab activities will include subnetting, packet-sniffing, and switch and router configuration.

Key Assessment
This course does not contain a Key Assessment for any programs
Prerequisites
CSC 260

Co-requisites
None

Grading Scheme
Letter

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category
None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

- Vitality
- Inquiry

Course Learning Outcomes

1. Configure an addressing scheme for a network
2. Configure routers and switches
3. Troubleshoot networking issues

Outline of Topics Covered

1. IP Addressing
   a. IP Addressing
   b. Subdividing IP Classes
   c. Variable Length Subnet Masks
   d. Working with Hexadecimal Numbers
   e. IPv4 vs. IPv6
2. Router and IOS Basics
   a. Benefits of Routing
   b. Cisco Router User Interface
   c. Router Components

3. Router Startup and Configuration
   a. Router Startup
   b. IP on the Router
   c. IP Connectivity
   d. CDP
   e. Cisco IOS
   f. Router Password Recovery
   g. Security Device Manager

4. Routing Protocols
   a. Non-routable protocols
   b. Routed Protocols
   c. Routing Protocols
   d. Routing Information Protocol
   e. Interior Gateway Routing Protocol
   f. Open Shortest Path First
   g. Static Routing

5. Advanced Routing Protocols
   a. Classful and Classless Routing Protocols
   b. Routing Information Protocol version 2
   c. Enhanced Interior Gateway Routing Protocol
   d. Open Shortest Path First
   e. OSPF Authentication
   f. Controlling Route Traffic

6. Network Services
   a. Network Address Translation
   b. Configuring Network Address Translation
   c. Domain Name System
   d. Dynamic Host Configuration Protocol
e. Security Device Manager

7. Virtual Local Area Networks
   a. Benefits of VLANs
   b. Static vs. Dynamic VLANs
   c. VLAN configuration
   d. VLAN Trunking Protocol (VTP)

8. Access Lists
   a. Access List: Usage and Rules
   b. Standard IP Access Lists
   c. Extended IP Access Lists
   d. Using Named Lists
   e. Controlling VTY Line Access
   f. Using Security Device Manager to Create Access Control Lists
   g. Using Security Device Manager to Create a Router Firewall