General Information

Date
11/03/2016

Department
Computing Sciences

Course Prefix:
CSC

Course Number:
261

Course Title:
Routing and Switching

Course Information

Credit Hours
3

Lecture Contact Hours
3

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.

Prerequisites
CSC 260

Grading Scheme
Letter Grade

FLCC Values

College Learning Outcomes Addressed by the Course

Inquiry
Vitality

Course Learning Outcomes
Course Learning Outcomes

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

Program Affiliation

This course is required as a core program course in the following program(s)

AAS Information Technology

Outline of Topics Covered

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