

CUMBERLAND COUNTY COLLEGE

Course: CS 233 Routing and Switching Essentials

Credits: 4

Prerequisites: CS 217

Description:

This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.

Learning Outcomes

At the completion of this course, students will be able to:

- Demonstrate understanding of basic switching concepts.
- Demonstrate understanding of the purpose, nature, and operations of a router, routing tables, and the route lookup process.
- Demonstrate understanding of how VLANs create logically separate networks and how routing occurs between them.
- Describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols.
- Configure and troubleshoot static routing and default routing (RIP and RIPv2).
- Configure and troubleshoot an Open Shortest Path First (OSPF) network.
- Configure, and troubleshoot access control lists (ACLs) for IPv4 and IPv6 networks.
- Configure, and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks
- Configure, and troubleshoot Network Address Translation (NAT) operations .

Topical Outline

- Introduction to Switched Networks
- Basic Switching Concepts and Configuration
- VLANs
- Routing Concepts
- Inter-VLAN Routing
- Static Routing

- Routing Dynamically
- Single-Area OSPF
- Access Control Lists
- DHCP
- Network Address Translation for IPv4

Text:

REQUIRED MATERIALS – Packet Tracer v5.3, available for download from the Cisco Netacad site. Routing Protocols and Concepts, CCNA Exploration Labs and Study Guide – Cisco Press – ISBN – 1-58713-204-4–All other instruction and testing is delivered over the Internet from the Cisco web site – access information – cisco.netacad.net

OPTIONAL MATERIALS – Routing Protocols and Concepts, CCNA Exploration Companion Guide – Cisco Press – ISBN – 1-58713-206-0.

Student Assessment

(Assessment may be accomplished through projects, portfolios, exams, labs, presentations and/or papers)

Academic Integrity

Plagiarism is cheating. Plagiarism is presenting in written work, in public speaking, and in oral reports the ideas or exact words of someone else without proper documentation.

Whether the act of plagiarism is deliberate or accidental [ignorance of the proper rules for handling material is no excuse], plagiarism is, indeed, a “criminal” offense.

As such, a plagiarized paper or report automatically receives a grade of **ZERO** and the student may receive a grade of **F** for the semester at the discretion of the instructor.

Tutoring & Project Assist

If you are having difficulty with work in this class tutoring is available through the Center for Academic & Student Success. If you think that you might have a learning disability, contact Project Assist at 856.691.8600 x 1282 for information on assistance that can be provided to eligible students.

Before Withdrawing From This Course

If a student experiences adverse circumstances while enrolled in this course and considers withdrawing, s/he should see an advisor (division or advisement center) BEFORE withdrawing from the class. A withdrawal may cause harmful repercussions to completion rate standards and overall GPA which can limit or eliminate future financial aid in addition to causing academic suspension.