Syllabus
CST212 Enterprise Networking, Security and Automation:
CCNA 3
Prerequisite: CST159
3 Credit Hours
C&I Revision Date: 04/14/2023

Department:

Computer Support Technology

Course Description:

This course describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocol Open Shortest Path First (OSPF). Students will learn about the equipment and technologies used in LANs and WANs. This course covers the features and functions of these devices and under what circumstances each device can be implemented. By the end of this course, students will be able to recognize and correct common routing issues and problems. Students will also be introduced to a variety of security topics and emerging technologies, such as Software Defined Networking (SDN). Students complete a basic procedural lab, followed by basic configuration, implementation, and troubleshooting labs in each chapter. Packet Tracer activities reinforce new concepts, and allow students to model and analyze routing processes that may be difficult to visualize or understand. This is the second class in a series of three offerings to prepare for the Cisco Certified Network Associate (CCNA) certification.

Course Competencies:

Upon completion of the course, the student should be able to:

1. Describe the concepts and configuration of Open Shortest Path First (OSPF)
2. Describe the importance of Access Control Lists (ACL)
3. Implement standard and extended ACLs
4. Describe Network Address Translation (NAT)
5. Implement NAT appropriately on a router
6. Describe the concepts of Quality of Service (QoS)
7. Describe the technologies used to manage networks
8. Discuss Software Defined Networking (SDN) and the technologies used to implement an SDN network

Course Content:

A. OSPF Concepts and Configuration
   1. Single-Area OSPFv2 Concepts
   2. Single-Area OSPFv2 Configuration
B. Network Security
   1. Network Security Concepts
   2. ACL Concepts
   3. ACLs for IPv4 Configuration
C. WAN Concepts
   1. NAT for IPv4

2. WAN Concepts
3. VPN and IPsec Concepts
D. Optimize, Monitor, and Troubleshoot Networks
1. QoS Concepts
2. Network Management
3. Network Design
4. Network Troubleshooting
E. Emerging Network Technologies
1. Network Virtualization
2. Network Automation

Learning Assessments:

Competencies will be assessed by assignments, case problems, quizzes, chapter tests, hands-on projects, lab assignments, a midterm test, and a final test. The test can be in the objective format or in a problem solving format.

Instructional Materials:

Textbook: Empson, S. (2020). *CCNA Routing and Switching Portable Command Guide* (5th ed.). Indianapolis, IN: Cisco Press. ISBN-13: 978-0135937822

Cisco Networking Academy - https://netacad.com

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our Disability Services website.

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an online report about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our Equity Grievance Policy.