HIGHLAND COMMUNITY COLLEGE

Syllabus

CST106 Introduction to Networks: CCNA 1
Prerequisite: Concurrent enrollment in CST or
CompTIA A+ certification or
Permission of Instructor
3 Credit Hours
C&I Revision Date: 04/14/2023

Department:

Computer Support Technology

Course Description:

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the Open System Interconnection (OSI) and Transmission Control Protocol (TCP) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of Internet Protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Labs use a "model internet" to allow students to analyze real data without affecting production networks. Packet Tracer (PT) activities help students analyze protocol and network operation and build small networks in a simulated environment. This is the first class in a series of four 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. Identify the seven layers of the OSI model and explain functions of each layer.
2. Define network architectures and demonstrate an understanding of popular architectures.
3. Identify network devices and explain the purpose of each.
4. Identify various communication media and cable connectors.
5. Build, configure, and maintain a client server and peer-to-peer network.
6. Identify and configure network standards and protocols.

Course Content:

A. Basic Network Connectivity and Communications
    1. Networking Today
    2. Basic Switch and End Device Configuration
    3. Protocols and Models
B. Ethernet Concepts
    1. Physical Layer
    2. Number Systems
    3. Data Link Layer
    4. Ethernet Switching
C. Communicating Between Networks
    1. Network Layer
    2. Address Resolution
    3. Basic Router Configuration
D. IP Addressing
    1. IPv4 Addressing

2. IPv6 Addressing
3. ICMP

E. Network Application Communications
   1. Transport Layer
   2. Application Layer

F. Building and Securing a Small Network
   1. Network Security Fundamentals
   2. Build a Small Network

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:

Cisco Networking Academy (n.d.). Retrieved from https://netacad.com

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

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.