Las Positas College
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Course Outline for CNT 8001

INTRODUCTION TO NETWORKS (CCNA1)

Effective: Spring 2018

I. CATALOG DESCRIPTION:
CNT 8001 — INTRODUCTION TO NETWORKS (CCNA1) — 3.00 units

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The course uses the OSI and 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 IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. At the end of the course, students build simple LAN topologies by applying basic principles of cabling; performing basic configurations of network devices, including routers and switches; and implementing IP addressing schemes. This course is preparation for the CompTIA Network+ certification exam. It also covers the first half of the CCENT Cisco Certified Entry-Level Network Technician Associate Cisco CCENT certification exam. CNT 8002 covers the second half. Students will get hands-on experience configuring Cisco routers and switches. Students should have strong basic computer skills and knowledge of Internet use.

2.50 Units Lecture 0.50 Units Lab

Strongly Recommended
CIS 50 - Intro to Computing Info Tech

Grading Methods:
Letter or P/NP

Discipline:
- Computer Service Technology

	MIN
Lecture Hours:	45.00
Expected Outside of Class Hours:	90.00
Lab Hours:	27.00
Total Hours:	162.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. CIS50
1. Describe existing and emerging technologies and their impact on organizations and society;
2. Describe and evaluate the development and use of information systems in business;
3. Solve common business problems using approporiate Information Technology applications and systems;
4. Demonstrate familiarity with the computing environment, including the hardware, operating system, the user interface, and applications;
5. Demonstrate the possible solution(s) for simple business applications by applying productivity tools including, word processing, spreadsheets, databases, and presentation software;
6. Investigate current issues in computer environments such as security, society and business ethics over the use of computer data, and organization of data processing resources within the organization; and

IV. MEASURABLE OBJECTIVES:

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

A. describe and differentiate the devices and services used to support communications in data networks and the Internet;
B. describe the role of protocol layers in data networks;
C. evaluate the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments;
D. design, calculate, and apply subnet masks and addresses to fulfill given requirements in IPv4 and IPv6 networks;
E. explain fundamental Ethernet concepts such as media, services, and operations;
F. build a simple Ethernet network using routers and switches;
G. compose Cisco command-line interface (CLI) commands to perform basic router and switch configurations;

H. experiment with common network utilities to verify small network operations and analyze data traffic.

V. CONTENT:
A. Lecture Content:
1. OSI (Open Systems Interconnection) and TCP/IP (Transmission Control Protocol/Internet Protocol) layered models
2. IP addressing (IPv4 and IPv6)
3. Routing and switching
4. Functions of common networking protocols
5. DNS (Domain Name System)
6. DHCP (Dynamic Host Configuration Protocol)
7. Standard media types (for example: Fiber, Copper), associated properties, standard connector types
8. Wireless standards
9. WAN (Wide Area Networks) technology types and properties
10. Network topologies (for example: Ring, Star, Client-server)
11. LAN (Local Area Networks) technology types and properties
12. Wireless Security Measures
13. Network Access Security Methods
B. Lab Content:
1. Installation and configuration of routers and switches
2. Installation and configuration of a wireless network
3. Network troubleshooting methodology
4. Planning and implementation of a basic network
5. Hardware and software tools to troubleshoot connectivity issues
6. Network monitoring resources to analyze traffic
7. Network performance optimization
8. User authentication Methods
9. Common threats, vulnerabilities, and mitigation techniques

VI. METHODS OF INSTRUCTION:
A. **Lecture** -
B. **Lab** -
C. **Discussion** -
D. **Demonstration** -

VII. TYPICAL ASSIGNMENTS:
A. Network addressing worksheet:
1. Given a list of IP addresses and subnet masks, identify the network address, the broadcast address, and calculate the number of available host addresses.
B. Personal computer configuration lab:
1. Configure IP address, subnet mask, gateway, and DNS on a personal computer without DHCP.
2. Verify connectivity within the LAN and to the Internet with Ping and a web browser application.

VIII. EVALUATION:
Methods/Frequency

A. Exams/Tests
B. Quizzes
C. Simulation
D. Class Participation
E. Home Work
F. Lab Activities

IX. TYPICAL TEXTS:
1. Odom, Wendell . *CCENT/CCNA ICND1 100-105 Official Cert Guide.* 1 ed., CiscoPress, 2016.
2. Johnson, Allan . *31 Days Before Your CCENT Certification Exam: A Day-By-Day Review Guide for the ICND1.* 2 ed., Cisco Press, 2016.
3. Lammle , Todd . *CCENT ICND1 Study Guide: Exam 100-105.* 3 ed., Sybex, 2016.
4. Cisco Networking Academy on-line curriculum.

X. OTHER MATERIALS REQUIRED OF STUDENTS: