Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for CNT 67

WIFI/WIRELESS/HOTSPOT NETWORKS

Effective: Fall 2008

I. CATALOG DESCRIPTION:
CNT 67 — WIFI/WIRELESS/HOTSPOT NETWORKS — 3.00 units

This course will prepare students to plan, purchase, and install a small to medium-sized wireless or WIFI HotSpot network and secure it, and meets the needs of small businesses, SOHO (Small Office, Home Office) workers, telecommuters, and home wireless networks. Subjects covered include: wireless network access, modems, routers, firewalls, war-driving, security, compatibility, site survey and network planning, basic network administration, basic network troubleshooting, and objectives of the CWNA wireless networking exam.

2.50 Units Lecture 0.50 Units Lab

Strongly Recommended
CIS 50 - Intro to Computing Info Tech

CNT 55 - Installing & Configuring Windows Server MCSA I
or

-

Grading Methods:
Letter or P/NP

Discipline:
- Computer Service Technology

	MIN
Lecture Hours:	45.00
Lab Hours:	27.00
Total Hours:	72.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 2

III. PREREQUISITE AND/OR ADVISORY SKILLS:

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

A. CIS50
B. CNT55

IV. MEASURABLE OBJECTIVES:

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

A. demonstrate an understanding of basic wireless and networking concepts;
B. devise a basic wireless network plan;
C. analyze the pros and cons of wireless networking methods;
D. identify and evaluate security concerns in wireless networks;
E. describe and compare methods of resolving security problems;
F. administer a small network using basic network administration techniques;
G. troubleshoot common network problems using a systematic approach.

V. CONTENT:
A. Wireless networks, history and development
   1. Radio telecommunications
   2. Cellular communications
   3. Wireless network devices
B. Wireless network systems
   1. WLAN components
   2. Telecom standards
   3. OSI model for WLAN
   4. TCP/IP for WLAN

5. Media Access Control
6. IP for WLAN

C. Antenna and radio fundamentals
1. Radio fundamentals
2. Antenna fundamentals
3. RF behavior and measurement
4. WLAN antennas and locations
5. Troubleshooting methods, tools and skills

D. Protocols and devices
1. WNIC
2. WAP
3. Modem
4. Routers and switches
5. Routing
6. NAT/PAT
7. Authentication/encryption

E. Regulations and standards
1. 802.11
2. 802.11b-g
3. 802.11n
4. Wireless modulation methods

F. LAN fundamentals
1. Layer 1 protocols
2. Layer 2 protocols
3. Layer 3 protocols

G. Site Surveys and assessment
1. Methods and tools
2. Site plan
3. Reception/Coverage
4. Measurement and documentation

H. Planning and designing a WIFI network
1. Needs assessment
2. Analyzing requirements
3. RFQ
4. RFP
5. Network layout
6. Costing and purchasing

I. Installing and configuring network devices
1. ISPs – DSL, Cable
2. DNS, DDNS
3. WIFI portal – proxy
4. HotSpot open source solutions
5. HotSpot configuration
6. Troubleshooting methods, tools, and skills

J. Security
1. WEP, EEP, LEAP
2. VPN, IPSec
3. AAA
4. IDS
5. Address filtering
6. MiM and DoS attacks
7. War driving / WEP cracking
8. Troubleshooting methods, tools, and skills

K. Network Management
1. Security policy
2. Network documentation
3. Network security management
4. Best practices
5. Disaster Planning/Business continuity
6. Backup
7. Network Monitoring/IDS/Forensics
8. Troubleshooting methods, tools, and skills

L. CWNA exam objectives
1. Hardware
2. Software
3. Skills based scenarios
4. Test environment and practices
5. Key concepts

VI. METHODS OF INSTRUCTION:
A. **Lecture** -
B. **Demonstration** -
C. **Research** -
D. **Lab** -
E. Assigned reading
F. **Discussion** -

VII. TYPICAL ASSIGNMENTS:
A. Reading / listening to presentations and readings 1. Presentations and lectures 2. Selected current online readings B. Search for relevant material and read 1. Students use search engines to find readings relevant for each module a. Example: Find resources for combating the Nimbda virus, select 3 to read C. Provide comments regarding curriculum 1. Discussion and response questions accompany each module D. Answer comments and questions from fellow students and instructor 1. Students must participate in group discussion a. Example: Is 802.11B or g more appropriate for your network? Why or why not? E. Selected current online readings

VIII. EVALUATION:
A. **Methods**

B. **Frequency**

1. Frequency:
    a. 6-10 module assignments
    b. Weekly discussion of group work
    c. 6-10 module quizzes
    d. 6-10 labs
    e. 1 final project
    f. Final exam
2. Typical question:
    a. Which 802.11 standard allows for the highest data rate?
    b. Configure your workstation with the gateway address 12.12.12.12.255.255.0.0

IX. TYPICAL TEXTS:

1. Mark Ciampa *CWNA Guide to Wireless LANs.*, Course Technology, 2005.
2. Padjen Ouelet, et al *Building a Cisco Wireless LAN.*, Syngress Media, Inc., 2006.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Students require access to a computer connected to the Internet, with word processing and browser software, and an email address