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Course Outline for CNT 62B

CISCO NETWORK ACADEMY CCNA 3-4

Effective: Fall 2006

I. CATALOG DESCRIPTION:
CNT 62B — CISCO NETWORK ACADEMY CCNA 3-4 — 4.00 units

This course covers the third and fourth parts of the Cisco Certified Network Associate (CCNA) curriculum, and the objectives of the CCNA 640-811 ICND exam. It covers internetwork topology and design, configuring LAN switches, STP, VLANs and trunking, TCP/IP suite, VLSM / CIDR IP addressing and subnetting, advanced routing concepts and configuration for RIP, EIGRP, IGRP, and static routes. Also includes WANs using Frame Relay, ISDN, dial-on-demand routing, PPP, PAP/CHAP authentication, and network address translation. Network security, best practices, router/switch security, passwords, and remote access concepts. This class includes hands-on experience using Cisco routers and switches.

3.00 Units Lecture 1.00 Units Lab

Prerequisite
-
with a minimum grade of C
or

-

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	54.00
Lab Hours:	54.00
Total Hours:	108.00

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

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

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

A. explain LAN switching;
B. configure LAN switches, VLANs and trunking;
C. describe Spanning Tree Protocol operation;
D. describe the TCP/IP suite and its parts;
E. plan VLSM and CIDR IP addressing and subnetting;
F. implement RIP, EIGRP, IGRP and static routes;
G. formulate commands to configure serial and ethernet router interfaces;
H. explain advanced routing concepts and configuration;
I. classify the protocols of the TCP/IP suite;
J. distinguish WAN layer 2 protocols;
K. configure Frame Relay Point to point, point to multi-poin;
L. demonstrate ISDN / BRI /PRI configuration;
M. devise configurations for Dial-on-demand routing with PPP and PAP/CHAP authentication;
N. identify network security best practices;
O. implement Router /Switch security with passwords;
P. install Network Address Translation;
Q. plan the use of access lists to control router decisions;
R. perform troubleshooting on WAN/LAN networks.

V. CONTENT:
A. Review: LANs and Ethernet networks
1. OSI Model
2. Ethernet 802.3

3. Network devices

B. LAN Design
   1. LAN design goals and components
   2. Network design methodology
   3. Layer 1 design
   4. Layer 2 design
   5. Layer 3 design
   6. Design validation methods

C. Interior Gateway Routing Protocols
   1. Routed and routing protocols
   2. Rip v1,2
   3. IGRP
   4. EIGRP
   5. Configuration tasks
   6. Troubleshooting methods, tools and skills

D. Access Control List (ACL)
   1. Access control list (ACL)
   2. ACL configuration task
   3. Standard ACL
   4. Extended ACL
   5. Named ACL
   6. Using ACLs with protocols
   7. Placing ACLS
   8. Verifying ACLs

E. Multilayer LAN switching
   1. VLANs
   2. Segmentation and switching architecture
   3. VLAN implementation
   4. Trunking
   5. Core switching architecture concepts
   6. Switched architecture design goals and concepts

F. WAN communications
   1. Layer 1 protocols
   2. Layer 2 protocols
   3. Layer 1 design
   4. Layer 2 design
   5. Layer 3 design

G. ISDN
   1. ISDN concepts
   2. BRI and PRI
   3. PPP
   4. Authentication PAP and CHAP
   5. Troubleshooting methods, tools and skills

H. Frame Relay
   1. Frame Relay concepts
   2. Frame Relay technology
   3. ACL configuration tasks
   4. LMI
   5. Configuration
   6. Traffic management / QoS
   7. Point to Point / Point to Multipoint / Hub and Spoke
   8. Troubleshooting methods, tools and skills

I. TCP/IP in LAN and WAN communications
   1. Session layer
   2. Transport layer
   3. Network layer
   4. TCP
   5. UDP
   6. Troubleshooting methods, tools, and skills

J. WAN Design
   1. WAN design goals and components
   2. Internetwork design methodology
   3. Layer 1 design
   4. Layer 2 design
   5. Layer 3 design
   6. Design validation methods

K. Network Management
   1. Network Management
   2. Network documentation
   3. Network security
   4. Best Practices
   5. Disaster Planning/Business continuity
   6. Backup
   7. Network Monitoring/IDS/Forensics
   8. Network performance
   9. Server administration
   10. Network troubleshooting methods, tools, and skills

L. CCNA Exam review
   1. CCNA basic
   2. CCNA ICDN
   3. Skills based scenarios
   4. Test environment and practices
   5. Key concepts

VI. METHODS OF INSTRUCTION:

A. **Lecture** -
B. **Lab** -
C. **Discussion** -
D. **Demonstration** -

VII. TYPICAL ASSIGNMENTS:
A. Reading: 1. Read on-line curriculum chapter 9. Discuss store and forward and cut through switching methods 2. Work IP problems in the online IP addressing work sheet B. Demonstrate switch configuration C. Work in groups to create an addressing scheme for a router group

VIII. EVALUATION:

A. **Methods**

B. **Frequency**

1. Frequency
    a. Module quizzes, written final, hands-on final
    b. Weekly hands-on lab assignments
    c. One or two group projects

IX. TYPICAL TEXTS:

1. Wendell Odom *CCNA ICND Exam Certification Guide*., Cisco Press, 2005.
2. Cisco Networking Academy on-line curriculum.

X. OTHER MATERIALS REQUIRED OF STUDENTS: