

STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

COURSE OUTLINE

ELEC 237 – TELECOMMUNICATIONS III

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
ELECTRICAL ENGINEERING TECHNOLOGY
MARCH 2012

ELEC 237 – TELECOMMUNICATIONS III

- A. TITLE: ELEC 237 – TELECOMMUNICATIONS III
- B. COURSE NUMBER: ELEC 237
- C. CREDIT HOURS: 4
- D. WRITING INTENSIVE COURSE (OPTIONAL): N/A
- E. COURSE LENGTH: 15 Weeks
- F. SEMESTER(S) OFFERED: Fall
- G. HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:
3 hours lecture and 2 hours laboratory
- H. CATALOGUE DESCRIPTION: This course is designed to train students on organization, architecture, setup, hardware and software aspects of interconnecting local area networks (LANS) and wide area networks (WANs). Topics include: introduction to intra and inter-network devices; network operating systems; client/server environments; LAN/WAN setups, networking printing; internal web server. A hands-on approach will be taken, with team projects throughout.
- I. PRE-REQUISITES: ELEC 236 Telecommunications II
- J. GOALS (STUDENT LEARNING OUTCOMES):

<i>Course Objectives</i>	<i>Institutional SLO</i>
a. Describe LAN / WAN organization and operation.	1. Communication 2. Crit. Thinking
b. Describe the purpose and function of various LAN / WAN protocols.	1. Communication 2. Crit. Thinking
c. Describe the purpose and function of LAN / WAN interconnection technologies.	1. Communication 2. Crit. Thinking
d. Use LANs / WANs for data communications.	3. Prof. Competence
e. Use network analysis software to view, verify, and troubleshoot network traffic conditions.	3. Prof. Competence
f. Work productively as a team, practicing project leadership, interpersonal skills and conflict resolution in a networked environment.	1. Communication 3. Prof. Competence
g. Practice problem solving via the planning, organization and delivery of projects in a networked environment.	3. Prof. Competence

K. TEXTS:

Cannon Kelly and Caudle Kelly, *CCNA Guide to Cisco Networking*, 3rd Edition.
25 Thomson Place, Boston: Course Technology, 2008.

L. REFERENCES: Graziani Rich and Johnson Allan, *Routing Protocols and Concept: CCNA Exploration Companion Guide*, 2nd Edition. Upper Saddle River, New Jersey: Prentice-Hall, 2008

M. EQUIPMENT: Verizon will supply any equipment needed for this course.

N. GRADING METHOD: A-F

O. MEASUREMENT CRITERIA/METHODS: Quizzes, Midterm, Lab Projects, Homework, and Final Exam.

P. DETAILED TOPICAL OUTLINE:

I. Internet protocols and IP Routing

1. Review of IP routing
2. Intermediate / advanced TCP / IP protocol suite and port ID
3. Firewalls – ACLs
4. Introduction to inter LAN connectivity and associated protocols
5. Identify the purpose and characteristics of: Storage, Backup / Restore and Offsite storage

II. Switching Technologies

1. Overview of switches and switch configuration
2. VLAN operation and configuration
3. VLAN Trunking
4. Inter-VLAN routing

III. Management and Internetworking -Operating System Setup and Configuration

1. Identify the basic capabilities of the server operating systems
2. Given a remote connectivity scenario comprised of a protocol, an authentication scheme
3. Physical connectivity and configuration of the server.

IV. WAN Technologies

1. The basic characteristics
2. Fiber Distributed Data Interface, T1, E, J1, T3, and OC
3. X.25, POTS / PSTN, and Satellite/Wireless.
4. Packet/Circuit Switching
5. ISDN (Integrated Services Digital Network)
6. FDDI (Fiber Distributed Data Interface)
7. MPLS

8. Frame Relay
9. ATM
10. xDSL (Digital Subscriber Line)
11. Broadband Cable (Cable modem)
12. POTS/PSTN (Plain old telephone service/public switched telephone network)
13. Satellite
14. Wireless

V. Suggested Project Topics:

1. Firewalls
2. VPNs
3. Remote Access/Security
4. Linux vs NT
5. Protocol Analyzer Comparison
6. VoIP

Q. LABORATORY OUTLINE:

- I. Firewalls
- II. VPN's
- III. Remote Access / Security
- IV. Linux vs NT
- V. Protocol Analyzer Comparison
- VI. VoIP
- VII. VLAN Configuration
- VIII. Building LAN Using Hubs/Cisco Switches
- IX. Building and Testing LAN Using Cisco Routers and Switches
- X. Performing Network Troubleshooting (LAN/MAN/WAN)
- XI. Cisco Router Configuration
- XII. Network Traffic Testing
- XIII. Final Project