

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

COURSE OUTLINE

ELEC 236 – TELECOMMUNICATIONS II

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
ELECTRICAL ENGINEERING TECHNOLOGY
MARCH 2012

ELEC 236 – TELECOMMUNICATIONS II

- A. TITLE: TELECOMMUNICATIONS II
- B. COURSE NUMBER: ELEC 236
- C. CREDIT HOURS: 4
- D. WRITING INTENSIVE COURSE (OPTIONAL): N/A
- E. COURSE LENGTH: 15 weeks
- F. SEMESTER(S) OFFERED: Spring
- G. HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:
4 hours of lecture per week
- H. CATALOG DESCRIPTION: This course is designed to train students in the organization architecture, setup, maintenance, and hardware/software aspects of local area networks. Topics include: introduction to networks; types and characteristics of different network architectures and network topologies; intra and inter-network devices; network operating systems; peer-to-peer and client/server environments; LAN setup and maintenance, network printing; internal web server. A hands-on approach and team projects will be used throughout.
- I. PRE-REQUISITES/CO-COURSES: ELEC 235 – Telecommunication I

J. GOALS (STUDENT LEARNING OUTCOMES):

By the end of this course, the student will be able to:

<i>Course Objectives</i>	<i>Institutional SLO</i>
a. Analyze network problems	2. Crit. Thinking 3. Prof. Competence
b. Compare various LAN protocols and interconnection technologies	2. Crit. Thinking 3. Prof. Competence
c. Evaluate network hardware and security	2. Crit. Thinking 3. Prof. Competence
d. Troubleshoot and maintain network devices	2. Crit. Thinking 3. Prof. Competence
e. Perform network analysis using software	2. Crit. Thinking 3. Prof. Competence
f. Discuss TCP/IP networking	1. Communication 3. Prof. Competence
g. Perform network calculations	3. Prof. Competence
h. Differentiate different network media	2. Crit. Thinking 3. Prof. Competence

K. TEXTS:

1. Dean Tamara, *Network+ Guide to Networks*, 4th Edition.
25 Thomson Place, Boston: Course Technology, 2006.
2. Chappell Laura, *Guide to TCP/IP*, 1st Edition.
25 Thomson Place, Boston: Course Technology, 2006.

L. REFERENCES: Graziani Rick and Johnson Allan, *Routing Protocols and Concepts: 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, Projects, Homework and Final Exam.

P. DETAILED TOPICAL OUTLINE:

I. Media and Topologies

1. Logical or physical network topologies (Star, Bus, Mesh, and Ring)
2. 802.2 (Logical Link Control), 802.3 (Ethernet), 802.5 (token ring), 802.11 (wireless), and FDDI (Fiber Distributed Data Interface)
3. Cable characteristics (speed, length, topology, and cable type)
4. Media types, connectors and uses
5. Purposes, features and functions of network components
6. General characteristics (carrier speed, frequency, transmission type and topology) of wireless technologies
7. Range and speed of wireless service (interference, antenna type and environmental factors).

II. Protocols and Standards

1. MAC (Media Access Control) address and its parts.
2. OSI (Open Systems Interconnect) model layers and their functions.
3. OSI (Open Systems Interconnect) layers and network components
4. Routing and addressing schemes of network protocols
5. Components and structure of IP (Internet Protocol) addresses (IPv4, IPv6) and required settings for connections across the Internet.
6. Classful IP (Internet Protocol) ranges and their subnet masks (For example: Class A, B and C).
7. Subnetting and implementation of subnetting schemes.
8. Differences between private and public network addressing schemes.
9. IP (Internet Protocol) addressing methods
10. Common protocols used in the TCP / IP (Transmission Control Protocol / Internet Protocol) suite
11. Function of TCP / UDP (Transmission Control Protocol / User Datagram Protocol) ports
12. Well-known ports associated with commonly used services and protocols
13. Purpose of network services and protocols
14. Basic characteristics (speed, capacity and media) of common WAN (Wide Area Networks) technologies

III. Network Support

1. Given a troubleshooting scenario, select the appropriate network utility
2. Given various network scenarios, determine the nature of a stated problem.