

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

**COURSE OUTLINE
ELEC 235 -TELECOMMUNICATIONS 1**

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**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
ELECTRICAL TECHNOLOGY
MARCH 2012**

ELEC 235 - TELECOMMUNICATIONS 1

- A. **TITLE:** TELECOMMUNICATIONS 1
- B. **COURSE NUMBER:** ELEC 235
- 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:**
4 lecture hours per week
- H. **CATALOGUE DESCRIPTION:** An introduction to the techniques, principles, and terminology of Voice telecommunications will be presented. Public and private telecommunication networks will be examined. Telecommunication equipment, switching and transmission technology will be demonstrated. The frequency spectrum, modulation schemes and multiplexing techniques will be explored. Lectures, interactive learning and demonstrations will be employed. Laboratory exercises will be required.
- I. **PRE-REQUISITES:** ELEC 145 Electrical Circuits and ELEC 146 Introduction to Electronics
- J. **GOALS (STUDENT LEARNING OUTCOMES):**
By the end of this course, the student will:

<i>Course Objectives</i>	<i>Institutional SLO</i>
a. Articulate the fundamental concepts of Telecommunications such as bandwidth, capacity and data rates.	1. Communication 2. Crit. Thinking
b. Describe basic communications concepts including Networks, Telephone Equipment, Multiplexing, Switching, and Transmissions Media.	1. Communication 3. Prof. Competence
c. Express concepts in language appropriate to the Telecommunications field.	1. Communication 3. Prof. Competence
d. Appraise current telecommunication subject related literature for project work.	2. Crit. Thinking 3. Prof. Competence
e. Calculate communications parameters such as decibels, frequency, signal bandwidth and channel capacity.	2. Crit. Thinking 3. Prof. Competence
f. Use basic telecommunications test equipment.	3. Prof. Competence

- K. **TEXTS:** 1. Communications “101”, Stark, Preliminary Edition, 2004

- L. **REFERENCES:** “Lab Manual to Accompany Telecommunications”, 3/e
Warren Hioki, Prentice Hall
Communications “101”, Stark, Preliminary Edition, 2004, Available at:
www.users.cloud9.net/~stark/commbook.htm
- M. **EQUIPMENT:** Laptop Computer, Scientific Calculator, CircuitMaker by Microsoft Office
- N. **GRADING METHOD:** (P/F, A-F, etc.) A-F
- O. **MEASUREMENT CRITERIA/METHODS:** Typical breakout
Exams
Quizzes
Homework
Final Exam
Project Work
- P. **DETAILED TOPICAL OUTLINE:**

I Information – Creation of the message

(Each of the following is presented with concepts of BW, filters, frequency, dB fundamentals being introduced and defined on a conceptual level)

- a. Voice – Frequency, dB, filters, harmonics
- b. Video- BW, filters, frequency
- c. Data – Analogue / Digital signals defined and compared

II Digital Concepts

- a. Digital Fundamentals
- b. Conversions D/A and A/D

III Transmission Media and Concepts:

- a. Wired
 1. Cable Standards
 2. Twisted Pairs
 3. Coaxial Cables
- b. Fiber Optics
 1. Characteristics
 2. Modes and Waves
- c. Wireless
 1. Signals, frequencies and Transmission
 2. Power, dBs, and distance

IV Traditional Transmission Methods

- a. Modulation
- b. Telephone system overview
- c. Modems, ADSL, Cable Modem

V Digital Methods

- a. Multiplexing and TDM

- b. Analogue and Digital Subscriber Loops
- c. Network Fundamentals
- d. Carrier and Testing

Q. **LABORATORY OUTLINE:** NA