Course Syllabus

INTRODUCTION TO TELECOMMUNICATION SYSTEMS

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Program: Telecommunications Engineering

1. Course number and name

TELG1002 - INTRODUCTION TO TELECOMMUNICATION SYSTEMS

2. Credits and contact hours

3 credits and 3 contact hours

3. Instructor's course or coordinator's name

JUAN CARLOS AVILES CASTILLO

4. Text book, tittle, author, and year

• Couch, Leon W.. Digital & Analog Communication Systems (8th Edition)

a.Other supplemental materials

• Proakis, John G. Salehi,Masoud. Fundamentals of Communication Systems (2nd Edition)

• Proakis, John G. & Salehi, Masoud & Gerhard Bauch. Contemporary Communication Systems Using MATLAB (Third Edition)

5. Specific course information

a. Brief description of the content of the course (catalog description)

In the present course, analog and baseband digital modulation and demodulation systems are analyzed in the absence and presence of noise. Each scheme is reviewed in detail in the time and frequency domains, establishing a comparison of their performance and main applications. In addition, channel bandwidth sharing methods among several users are studied.

b. Prerequisites

STOCHASTIC PROCESSES - ESTG1003

SIGNALS AND SYSTEMS - TELG1001

c. This course is: Required

6. Specific goals for the course

a. Specific outcomes of instruction

1.- To explain the analog and digital baseband modulation schemes through mathematical analysis and simulations.

2.- To calculate the signal to noise ratio at the output of analog and baseband digital modulators for the comparison of their performances.

3.- To relate the subjects of sampling, quantization and line coding with the sampling theorem for a correct baseband digital transmission.

4.- To take advantage of the multiplexing process in the frequency and time domain for the sharing of a communication channel among several concurrent users

b. Explicity indicate which of the student outcomes listed in Criterion 3 or any other

outcomes are addressed by the course

- An ability to design a system, component or process to satisfy realistic constraints
- An ability to communicate effectively in English

7. Brief list of topics to be covered

1.- Bandpass signaling techniques.

2.- Linear modulation.

3.- Angle modulation.

4.- Performance of analog communication systems in the presence of noise.

5.- Baseband pulse modulation and digital signaling.