



Course Code ECE-350	Course Title Principles of Communications	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites ECE-330
Type of Course Required	Field Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 3 rd	Lecturer(s) Dr Antonis Hadjiantonis
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisite None

Objectives of the Course:

The main objectives of the course are to:

- introduce the need of electrical signal communication
- present energy and power signals and signal distortion
- introduce and analyze various analog and digital modulation techniques
- prove the sampling theorem and use it in digital signal communication
- explore various digital transmission concepts

Learning Outcomes:

After completion of the course students are expected to be able to:

1. identify the main points of a communication link
2. examine signals in both time- and frequency domain
3. interpret how signals are transmitted through linear channels
4. illustrate the need for modulation in communication with electrical signals
5. solve basic analog and digital modulation problems
6. design fundamental analog and digital communication link parameters
7. apply the sampling theorem in analog to digital conversions
8. produce communication-related computer projects

Course Contents:

1. Introduction to a communication system and its basic building blocks.
2. Analysis and transmission of signals: Review of Fourier series, Fourier transform and its properties
3. Signal transmission: distortion, bandwidth versus rate of transmission, energy spectral density, power spectral density.
4. Introduction to analog modulation techniques: AM, FM and PM.
5. Sampling theorem. Quantization process, Quantization noise. Digital communication system, pulse amplitude modulation (PAM), PCM and Delta

modulation, digital multiplexing
6. Line coding, pulse shaping, M-ary communication.

Learning Activities and Teaching Methods:

Lectures

Assessment Methods:

Homework, Projects, Mid-Term, Final Exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
B.P. Lathi	Modern Digital and Analog Communication Systems	OUP	1998	0-19-511009-9

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
A. Bruce Carlson, Paul B. Crilly & Janet C. Rutledge	An Introduction to Signal and Noise in Electrical Communication	McGraw Hill	2002	0-07-011127-8