



University of Nicosia, Cyprus

<b>Course Code</b> ECE-352	<b>Course Title</b> Electronic Communications	<b>ECTS Credits</b> 6
<b>Department</b> Engineering	<b>Semester</b> Fall or Spring	<b>Prerequisites</b> ECE-212, ECE-213, ECE-330
<b>Type of Course</b> Elective	<b>Field</b> Engineering	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 3 <sup>rd</sup>	<b>Lecturer(s)</b> Dr Ioannis Kyriakides
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

**Objectives of the Course:**

The main objectives of the course are to:

- relate the theoretical aspect of analog communications to the practical design of electronic communications circuits
- analyze the behavior of tuned circuits and oscillators
- introduce amplitude and frequency modulation and analyze common radio frequency transmitter and receiver circuits
- study the effect of noise on analog communications

**Learning Outcomes:**

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

1. Apply signal and system analysis in the Fourier domain
2. Analyze tuned circuits and amplifiers by deriving the transfer function and describing the input versus output relationship
3. Analyze common oscillator circuits
4. Apply the concepts of transmission of information using amplitude modulation (AM) and frequency modulation (FM)
5. Analyze AM and FM transmitter and receiver circuits
6. Define the effect of noise to the transmitted and demodulated signal and calculate the signal to noise ratio

**Course Contents:**

1. Signal and system analysis. Fourier series and Fourier transform
2. Tuned circuits and amplifiers
3. Oscillators. RC phase-shift, Wien-Bridge, Hartley, Colpitts oscillators
4. Amplitude-modulation (AM): Double, single and vestigial sideband, quadrature AM, AM transmitter and receiver systems, phase-locked loop, local oscillator, mixer, IF amplifier, the superheterodyne receiver
5. Frequency modulation (FM): FM transmitters and receivers
6. Behavior of analog communication systems in the presence of noise

**Learning Activities and Teaching Methods:**

Lectures, in-class assignments.

**Assessment Methods:**

Homework, in-class assignments, projects, exams, final exam.

**Required Textbooks/Reading:**

<b>Authors</b>	<b>Title</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
B. P. Lathi	Modern Digital and Analog Communication Systems	Oxford University Press	1998	0195110099

**Recommended Textbooks/Reading:**

<b>Authors</b>	<b>Title</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
James W. Nilsson, and Susan Riedel	Electric Circuits	Prentice Hall	2007	0131989251
Theodore F. Bogart, Jeffrey S. Beasley, and Guillermo Rico	Electronic Devices and Circuits	McGraw Hill	2003	0131111426