



Course Code ECE-330	Course Title Signals and Systems	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites ECE-102
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:

- develop an understanding of the need to model signals and systems
- investigate continuous time signals and their transformations
- investigate continuous time systems with emphasis on LTI systems
- introduce signal convolution
- introduce the Fourier series, the Fourier transform the Laplace transform and z-transform along with their properties
- expose the student to various signal- or system- related MATLAB projects

Learning Outcomes:

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

1. identify signals and systems using mathematical functions and equations
2. apply time and amplitude signal transformations
3. categorize systems and investigate LTI systems
4. solve convolution problems in both a graphical way and using MATLAB
5. explain Fourier series and Fourier and Laplace transforms and their properties
6. determine the concept of discrete signals

Course Contents:

1. Signal representation. Classification of signals, elementary signals (unit step/impulse functions)
2. System classification. Linear time-invariant systems, convolution, systems described by differential equations, state-variable representation
3. Fourier series and transforms. Definitions, properties, transfer function, applications
4. Laplace transform. Two-sided/one-sided Laplace transform, properties, inverse Laplace transform, applications
5. Discrete-time systems. Impulse response, difference equation representation

Learning Activities and Teaching Methods:

Lectures, in-class assignments.

Assessment Methods:

Homework, in-class assignments, projects, exams, final exam.
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Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
C. L. Phillips, J. M. Parr, and E. A. Riskin	Signals, Systems, and Transforms	Prentice Hall	2008	0131989235

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
S. S. Soliman and M. D. Srinath	Continuous and Discrete Signals and Systems	Prentice Hall	1998	0131712578
R. Ziemer, W. Tranter, and D. Fannin	Signals and Systems: Continuous and Discrete	Prentice Hall	1998	013496456X