EE 315 Signal and Systems Analysis

Credits: 3

Categorization of credits: engineering topic

Instructor(s) or course coordinator: Anders Host-Madsen.

Text Book and Other Required Materials:

Main Text: A. Oppenheim, A. Willsky and S. H. Nawab, Signals and Systems , Prentice Hall, 2nd Ed., 1996

Designation: Required

Catalog Description: Discrete Fourier transform, Fourier Series, Fourier Transform, Laplace Transform, Fast Fourier Transform, analysis of linear systems. Pre: 213; or consent.

Pre-and Co-requisites: EE 213 Basic Circuit Analysis II

Class/Lab Schedule: 3 lecture hours per week

Topics Covered:

Signals and systems, linear time-invariant systems, Fourier series, Fourier transform, frequency analysis, sampling, communications systems.

Course Objectives and Their Relationship to Program Objectives:

A student studies signals and systems that are linear and time invariant. Time and frequency domain tools are used to study signals and systems and their application to problems in communications, filtering, and sampling. [Program Objectives that this course addresses: 1, 3 and 4.]

Course Outcomes and Their Relationship to Program Outcomes:

The following are the course outcomes and the subset of Program Outcomes (numbered 1-7 in square braces "[ ]") they address:

- Use advanced mathematics (differential equations, Fourier analysis) to study signals and linear time invariant systems. [1, 2]
- Develop tools and analytical skills to study signals and linear time invariant systems. [1, 2, 7]
- Classify signals and systems. [1, 2]

- Represent signals in time and frequency domain. [1, 2]
- Study communication and filtering applications. [1, 2, 4, 7]
- Understand sampling theorem, connections between discrete time and continuous time, and advantages of discrete time processing. [1, 2, 4, 7]
- Verify analytical results through computer simulations about signals and linear time invariant systems (e.g. Matlab). [1, 2]

Contribution of Course to Meeting the Professional Component

Engineering Topics: 100%

Computer Usage:

Computer usage is minimal.

Design Credits and Features:

EE 315 has 0 design credits.

Yingfei Dong. Revised 6/14/2021.