

EE303: SIGNAL ANALYSIS AND TRANSFORM METHODS (4 Credits, Required)

Catalog Description

Analyzes linear-, discrete-, and continuous-time signals and systems. Topics include Laplace and z-transforms; Fourier analysis; sampling.

Prerequisites

Prerequisite(s): EE203 or CEN junior standing

Corequisites: None

Textbooks(s) and/or other required material

B. P. Lathi, Linear Systems and Signals, Oxford Univ. Press, New York, 2nd Edition, 2005. ISBN 0-19-515833-4

Course Objectives

By the end of the course, the successful student will:

Be able to determine the system response for linear systems in the time domain

Be able to analyze continuous-time systems with Laplace transform and discrete time systems with z transform

Be able to analyze periodical and a-periodical signals in the frequency domain with Fourier series and transform, respectively

Understand the relationship between continuous- and discrete-time signals through the sampling theorem

Be able to analyze simple signals and systems with Matlab

Topics Covered

Introduction to Signals and Systems

Time-domain Analysis of Continuous-time Systems

Time-domain Analysis of Discrete-time Systems

System Analysis with Laplace Transform

Discrete-time System Analysis with z-transform

Continuous-time Signal Analysis: Fourier Series

Continuous-time Signal Analysis: Fourier Transform

The Sampling Theorem

Fourier Discrete-time Signal Analysis

Class / Lab Schedule

Three 50-minute lectures per week

One 50-minute recitation per week

Contribution of course to professional component/criterion 5

Engineering Topics: Transform Theory

Relationship of course to program outcomes

- (a) an ability to apply knowledge of mathematics, probability and statistics, computer science and electrical engineering as it applies to the fields of computer software and hardware
- (e) an ability to identify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principles
- (g) an ability to effectively communicate technical information in speech, presentation, and writing
- (k) an ability to use the techniques, skills, and modern hardware and software engineering tools necessary for computer engineering practice

Persons who prepared this description and date of preparation

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