

EC401: SIGNALS & SYSTEMS

Teaching Scheme			Examination Scheme							
Lect.	Pract	Total	Theory				Practical			Grand Total
			Int. Assess.	Sem End		Total	Int. Assess.	Sem End	Total	
				Marks	Hrs					
3	2	5	30	70	3	100	25	25	50	150

1. Introduction

What is signal?, What is system?, Overview of specific systems, Classification of signals, Basic operations of signals, Elementary signals, Signals viewed as interconnections of operations, Properties of systems

2. Linear Time-Invariant systems

Discrete time LTI systems: The Convolution sum, Continuous time LTI systems: The Convolution Integral, Properties of LTI systems, Causal LTI system Described by Differential and Difference Equations

3. Fourier series representation of periodic signals

The response of LTI system to Complex Exponentials, Fourier Series representation of Continuous-time periodic signals, Convergence of the Fourier Series, Properties of Continuous-time Fourier Series, Fourier Series representation of Discrete-time periodic signals, Properties of Discrete-time Fourier Series, Fourier Series and LTI systems.

4. The Continuous-time Fourier Transform

Introduction, Presentation of aperiodic signals: The Continuous-time Fourier Transform, Fourier Transform for periodic signals, Properties of Continuous-time Fourier Transform, The convolution property, The multiplication property

5. The Discrete-time Fourier Transform

Introduction, Presentation of aperiodic signals: The Discrete-time Fourier Transform, Fourier Transform for periodic signals, Properties of Discrete-time Fourier Transform The convolution property, The multiplication property.

6. The z- Transform

Introduction, The z-transform, The region of convergence for the z-transform, The inverse z-transform, Geometric Evaluation of the Fourier Transform from pole-zero plot, Properties of the z-transform, Some common z-transform pairs, Analysis and characterizing of LTI systems using z-transform

Reference books:

1. Simon Haykin, Barry van Veen, "Signals and Systems", John Wiley and Sons (Asia) Private Limited, 2001.
2. Alan V. Oppenheim, Alan S. Willsky and S. Hamid Nawab, "Signals & Systems", Pearson Education Asia, 2nd edition, 1997.
3. Michel J. Roberts, "Signals and Systems: Analysis of signals through linear systems", Tata McGraw Hill, 2003.