Course Number and Name

BEC301 - SIGNALS AND SYSTEMS

Credits and Contact Hours

4 & 60

Course Coordinator's Name

Ms S.Beulah Hemalatha

Text Books and References

TEXT BOOK:

1. 1. Allan V.Oppenheim, S.Wilsky and S.H.Nawab, "Signals and Systems", Pearson, 2007.

REFERENCES:

1. B. P. Lathi, "Principles of Linear Systems and Signals", Second Edition, Oxford, 2009.
2. R.E.Zeimer, W.H.Tranter and R.D.Fannin, "Signals & Systems - Continuous and Discrete", Pearson, 2007.
3. John Alan Stuller, "An Introduction to Signals and Systems", Thomson, 20076.
4. www.nptel.ac.in

Course Description

This course trains students for an intermediate level of fluency with signals and systems in both continuous time and discrete time, in preparation for more advanced subjects in digital signal processing (including audio, image and video processing),communication theory, and system theory, control and robotics

Prerequisites	Co-requisites
Mathematics-II	Mathematics-III

required, elective, or selected elective (as per Table 5-1)

required

Course Outcomes (COs)

CO1-To Understand different types of signals-continuous and discrete,odd and even,periodicand aperiodic etc.Be able to classify systems based on their properties

CO2- To familiarize the concepts of transform based continuous time and discrete time analysis of signals and systems

CO3- Analyze continuous time signals and systems by using appropriate mathematical tools

CO4-. Analyze sampling process and sampling of discrete time signals.

CO5- Analyze discrete time signals and systems by using appropriate mathematical tools

CO6- Determine Fourier transforms for continuous-time and discrete-time signals (or impulse-response functions), and understand how to interpret and plot Fourier transform magnitude and phase functions.

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H	M		M	H						
CO2	H			M	H					L	
CO3	M			H	H						
CO4					H		M				M
CO5	H	M		M							
CO6	H	M		M		M				M	

List of Topics Covered

UNIT I CLASSIFICATION OF SIGNALS AND SYSTEMS 12

Continuous time signals (CT signals), discrete time signals (DT signals) - Step, Ramp, Pulse, Impulse, Exponential, Classification of CT and DT signals - periodic and aperiodic, random singals, CT systems and DT systems, Classification of systems - Linear Time invariant Systems.

UNIT II ANALYSIS OF C.T. SINGALS 12

Fourier series analysis, Spectrum of C.T. singals, Fourier Transform and Laplace Transform in Signal Analysis.

UNIT III LTI-CT SYSTEMS 12

Differential equation, Block diagram representation, Impulse response, Convolution integral, Frequency response, Fourier Methods and Laplace transforms in analysis, State equations and Matrix.

UNIT IV ANALYSIS OF D.T. SIGNALS 12

Spectrum of D.T. signals, Discrete Time Fourier Transform (DTFT), Discrete Fourier Transform (DFT), Properties of Z-transform in signal analysis.

UNIT V LTI-DT SYSTEMS 12

Difference equations, Block diagram representation, Impulse response, Convolution SUM, Frequency response, FFT and Z-transform analysis, State variable equation and Matrix.