

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Signals & Systems
Year: - 2nd

Subject Code: - EC-209A
Semester: - 3rd

Lecture No	Unit No	Topic	COs Covered
L 1	UNIT-I	Continuous and discrete time signals, deterministic and stochastic signals, periodic and aperiodic signal	CO1
L 2		even and odd signals	
L 3		energy and power signals	
L 4		exponential and sinusoidal signals and singular functions.	
L 5		Signal representation in terms of singular functions, orthogonal functions and their use in signal representation	
L 6		Linear and non-linear systems	
L 7	UNIT-I	time invariant and time varying systems	CO2
L 8		lumped and distributed systems, deterministic and stochastic systems, casual and non-causal systems, analog and discrete/digital memory and memory less systems.	
L 9		Introduction to Random Variables, pdf, cdf	
L 10	UNIT-II	moments, distributions, correlation functions.	CO1
L 11		Introduction to linear time invariant (LTI) systems	
L12		properties of LTI systems	
L13		convolution integral	
L 14		convolution sum	
L 15		causal LTI systems described by differential and difference equations,	
L 16	UNIT-III	Concept of impulse response	CO2
L 17		Introduction to sampling	
L 18		sampling theorem and its proof	
L 19	UNIT-III	effect of undersampling	CO3
L 19			

L 20		reconstruction of a signal from sampled signal	
L 21		Continuous time Fourier series (CTFS),	CO2
L 22		Properties of CTFS, Convergence of Fourier series	
L 23		Discrete time Fourier Series (DTFS)	
L 24		Properties of DTFS	
L 25		Fourier series and LTI system, Filtering.	
L 26		Continuous Time Fourier Transform (CTFT)	
L 27		Properties of CTFT	
L 28		Systems characterized by linear constant-coefficient differential equations	
L 29		Discrete time fourier transform (DTFT)	
L 30		Properties of DTFT	
L 31		Duality	
L 32		Systems characterized by Linear constant coefficient difference equations.	
L33	UNIT-IV	Introduction to Laplace transform	
L34		Region of convergence for laplace transform	
L35		Inverse laplace transform,	
L36		Properties of laplace transform	
L37		Analysis and characterization of LTI systems using laplace transform	
L38		System function algebra and block diagram representations	
L39		Unilateral laplace transform	

Text Books:

Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab, Signals and Systems, Prentice Hall India, 2nd Edition, 2009

References:

Simon Haykins – “Signal & Systems”, Wiley Eastern

Tarun Kumar Rawat, Signals and Systems, Oxford University Press.

H. P. Hsu, “Signals and systems”, Schaum’s series, McGraw Hill Education, 2010.

M. J. Robert “Fundamentals of Signals and Systems”, McGraw Hill Education, 2007.

B. P. Lathi, “Linear Systems and Signals”, Oxford University Press, 2009.

Web resources:

<https://archive.nptel.ac.in/courses/108/104/108104100/>

<https://archive.nptel.ac.in/courses/108/106/108106163/>

<https://www.youtube.com/watch?v=Eknlx7zHBVo>