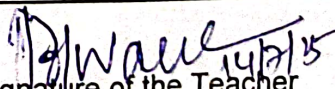


GOVT. POLYTECHNIC KENDRAPARA
LESSON PLAN
Session(2025-2026)

Discipline: Electronics & Telecommunication Engineering	Semester: 3rd Winter-2025	Name of the Faculty: B B NAIK (Sr. LECTURER)
Subject: TH:5- SIGNAL & SYSTEMS	No. of Days/week: 03	Start Date: 14/07/2025 End Date: 15/11/2025 No. of Week: 15

SL NO	Week/Month	Class Day	Theory Topics
1	1st week (14th July to 19th July 2025)	1st	I-Introduction to Signals and Systems 1.1 Signals and systems as seen in everyday life
		2nd	1.2 Signals and systems in various branches of engineering
		3rd	1.3 Electrical, mechanical, hydraulic, thermal, biomedical signals and systems as examples
2	2nd week (21th July to 25th July 2025)	1st	1.4 Extracting the common essence and requirements of signal and system
		2nd	II-Formalizing signals, 2.1 Energy and power signals
		3rd	2.2 Signal properties, 2.2.1 Periodicity, 2.2.2 Absolute integrability
3	3rd week (28th July to 02nd Aug 2025)	1st	2.2.3 Determinism and stochastic character, 2.3 Some special signals of importance
		2nd	2.3.1 The unit step, 2.3.2 The unit impulse, 2.3.3 The sinusoid
		3dr	2.3.4 The complex exponential, 2.4 some special time-limited signals
4	4th week (04th Aug to 8th Aug 2025)	1st	2.4.1 Continuous and discrete time signals,, 2.4.2 Continuous and discrete amplitude signals.
		2nd	2.5 Formalizing systems- system properties, 2.5.1 Linearity
		3dr	2.5.2 Additivity and homogeneity, 2.5.3 Shift-invariance
5	5th week (11th Aug to 16th Aug 2025)	1st	2.5.4 Causality, 2.5.5 Stability, 2.5.6 Reliability
		2nd	III-Continuous time and discrete time Systems 3.1 Linear shift-invariant (LSI) systems in detail
		3rd	3.2 The impulse response and step response, 3.3 Convolution
6	6th week (18th Aug to 26th Aug 2025)	1st	3.4 Input-output behavior with aperiodic convergent inputs 3.5 Cascade interconnections
		2nd	3.6 Characterization of causality and stability of linear shift-invariant systems
		3rd	3.7 System representation through differential equations and difference equations
7	7th week (29th Aug to 06th Sept 2025)	1st	IV-Periodic and semi-periodic inputs to an LSI system 4.1 The notion of a frequency response and its relation to the impulse response,
		2nd	4.2 Fourier series representation
		3rd	4.3 The Fourier Transform
		1st	4.4 Convolution/multiplication and their effect in the frequency domain, magnitude and phase response, Fourier domain duality.

8	8th week (08st Sept to 12th Sept 2025)	2nd	4.5 The Discrete-Time Fourier Transform (DTFT) 4.6 The Discrete Fourier Transform (DFT)
		3rd	4.7 Parseval's Theorem, 4.8 The idea of signal space and Orthogonal bases of signals.
9	9th week (15th Sept to 20th Sept 2025)	1st	V-Laplace Transform for continuous time signals and systems-5.1 The notion of Eigen functions of LSI systems
		2nd	5.2 A basis of Eigen functions
		3rd	5.3 Region of convergence
10	10th week (22nd Sept to 26th Sept 2025)	1st	5.4 System functions
		2nd	5.5 Poles and zeros of system functions and signals
		3rd	5.6 Laplace domain analysis
11	11th week (3rd oct to 10th oct 2025)	1st	5.7 Solution to differential equations and system behavior
		2nd	5.8 Generalization of Parseval's Theorem
		3rd	VI-System realization , 6.1 System realization through block-diagram representation and system
12	12th week (13th oct to 18th oct 2025)	1st	6.2 State-space analysis and multi-input, multi-output representation. 6.3 The state-transition matrix and its role.
		2nd	6.4 The Sampling Theorem and its implications
		3rd	6.4.1 Spectra of sampled signals.
13	13th week (20th oct to 31th oct 2025)	1st	6.5 Reconstruction:
		2nd	6.5.1 Ideal interpolator
		3rd	6.5.2 Zero-order hold
14	14th week (01st Nov to 07th Nov)	1st	6.5.3 First-order hold
		2nd	6.6 Aliasing and its effects
		3rd	6.7 Relation between continuous and discrete time systems.
15	15th week (10th Nov to 15th Nov)	1st	VII-Applications of signal and system theory , 7.1 Modulation for communication and filtering
		2nd	7.2 Time-frequency representation and the uncertainty principle
		3rd	7.3 Short-time Fourier Transforms and wavelet transforms.


 Signature of the Teacher