

DISCIPLINE: Electrical & Electronics Engg.	SEMESTER: 3 RD Semester	NAME OF THE TEACHING FACULTY: Mr. Bibhuti Gampai PTGF IN EEE
SUBJECT: SIGNAL & SYSTEMS	NO OF DAYS/PER WEEK CLASSES ALLOTTED:03	SEMESTER FROM DATE: 14.07.2025 TO DATE: 15.11.2025 NO OF WEEKS:15

Week	Class Day	Topics
		1.Introduction to Signals and Systems
1ST	1 ST	Signals and systems as seen in everyday life
	2 ND	Signals and systems in various branches of engineering
	3 RD	Electrical, mechanical, hydraulic, thermal, biomedical signals and systems as examples
2ND	1 ST	Extracting the common essence and requirements of signal and system
	2 ND	ASSIGNMENT
		2.Formalizing signals
	3 RD	Energy and power signals
3RD	1 ST	Signal properties a. Periodicity b. Absolute integrability c. Determinism and stochastic character
	2 ND	ASSIGNMENT
	3 RD	Some special signals of importance a. The unit step b. The unit impulse c. The sinusoidal d. The complex exponential
4TH	1 ST	CLASS NOTES REVISION
	2 ND	some special time-limited signals a. Continuous and discrete time signals b. Continuous and discrete amplitude signals.
	3 RD	Formalizing systems- system properties a. Linearity b. Additivity and homogeneity c. Shift-invariance d. Causality e. Stability f. Reliability
5TH	1 ST	TEST
		3. Continuous time and discrete time Systems
	2 ND	Linear shift-invariant (LSI) systems in detail

6 TH	3 RD	The impulse response and step response and Convolution
	1 ST	Input-output behaviour with a periodic convergent inputs and Cascade interconnections
	2 ND	Characterization of causality and stability of linear shift-invariant systems
7 TH	3 RD	System representation through differential equations and difference equations
	1 ST	ASSIGNMENT
		4.Periodic and semi-periodic inputs to an LSI system
8 TH	2 ND	The notion of a frequency response and its relation to the impulse response
	3 RD	Fourier series presentation
	1 ST	The Fourier Transform
9 TH	2 ND	Convolution/multiplication and their effect in the frequency domain, magnitude and phase response, Fourier domain duality
	3 RD	The Discrete-Time Fourier Transform(DTFT)
	1 ST	The Discrete Fourier Transform (DFT)
10 TH	3 RD	Parseval's Theorem and The idea of signal space and Orthogonal bases of signals.
	3 RD	ASSIGNMENT
		5.Laplace Transform for continuous time signals and systems
11 TH	1 ST	The notion of Eigen functions of LSI systems
	2 ND	A basis of Eigen functions
	3 RD	Region of convergence
12 TH	1 ST	System functions
	2 ND	Poles and zeros of system functions and signals and
	3 RD	ASSIGNMENT
13 TH	1 ST	Laplace domain analysis
	2 ND	Solution to differential equations and system behaviour
	3 RD	Generalization of Parseval's Theorem
14 TH	1 ST	TEST
		6.System realization
	2 ND	System realization through block-diagram representation and system interconnection
14 TH	3 RD	State-space analysis and multi-input, multi-output representation. The state-transition matrix and its role.
	1 ST	The Sampling Theorem and its implications Spectra of sampled signals.
14 TH	2 ND	5 Reconstruction: a. Ideal interpolator b. Zero-order hold

		c. First-order hold
	3 RD	Aliasing and its effects, and Relation between continuous and discrete time systems.
15TH		Applications of signal and system theory
	1 ST	Modulation for communication and filtering
	2 ND	Time-frequency representation and the uncertainty principle
	3 RD	Short-time Fourier Transforms and wavelet transforms.

G. Bibhuti
10.09.25
Signature of the Faculty

[Signature]
10.09.25
Signature of the HOD

