

# **Teaching Plan**

## **AY 2018-19**



Estd: 2009

JNTUH College Code: 6C

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## PRIYADARSHINI INSTITUTE OF SCIENCE AND TECHNOLOGY FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to JNTUH Hyderabad)

SaiPrabhath Nagar , Khammam Rural -507003, Khammam Dist., Telangana State.

Website: [www.priw.ac.in](http://www.priw.ac.in) Email Id: [iks\\_edu@yahoo.com](mailto:iks_edu@yahoo.com) Cell: +91-92466 25050.

### LESSON PLAN

Name of the Faculty: Mrs. N. Jayamma

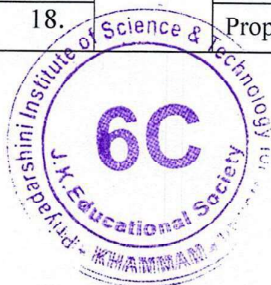
Subject Code: EC304ES

Subject Name: Signals and Stochastic Process

Academic Year: 2018-19

B.Tech II Year I Sem

S. No	Unit No.	Topics to be covered	Ref	Teaching Method
1.	I	<b>Signal Analysis:</b> Analogy between Vectors and Signals	T1,R3	Chalk and Talk
2.		Orthogonal Signal Space, Signal approximation using Orthogonal functions	T1,R3	Chalk and Talk
3.		Mean Square Error, Closed or complete set of Orthogonal functions	T1,R3	Chalk and Talk.
4.		Orthogonality in Complex functions, Exponential and Sinusoidal signals	T1,R3	Chalk and Talk
5.		Concepts of Impulse function, Unit Step function, Signum function.	T1,R1	Chalk and Talk/ PPT
6.		<b>Signal Transmission through Linear Systems:</b> Linear System, Impulse response, Response of a Linear System	T1,R1	Chalk and Talk/ PPT
7.		Linear Time Invariant (LTI) System, Linear Time Variant (LTV) System	T1,R1	Chalk and Talk
8.		Transfer function of a LTI system, Filter characteristics of Linear Systems	T1,R1	Chalk and Talk
9.		Distortion less transmission through a system, Signal bandwidth, System bandwidth	T1,R1	Chalk and Talk
10.		Ideal LPF, HPF and BPF characteristics	T1,R1	Chalk and Talk/ Quiz
11.		Causality and Paley-Wiener criterion for physical realization	T1,R1	Chalk and Talk/ PPT
12.		Relationship between Bandwidth and Rise time	T1,R1	Chalk and Talk/ PPT
13.		Concept of convolution in Time domain and Frequency domain	T1,R1	Chalk and Talk/ PPT
14.		Graphical representation of Convolution	T1,R1	Chalk and Talk/ PPT
15.		Convolution property of Fourier Transforms	T1,R1	Chalk and Talk / PPT
16.		<b>Fourier series, Transforms, and Sampling:</b> Fourier series: Representation of Fourier series	T1,R1	Chalk and Talk
17.		Continuous time periodic signals	T1,R1	Chalk and Talk
18.		Properties of Fourier Series	T1,R1	Chalk and Talk







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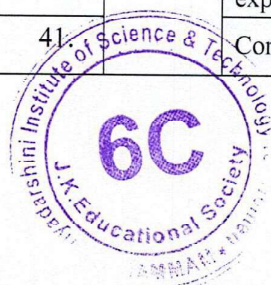
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19.	II	Dirichlet's conditions	T1,R1	Chalk and Talk
20.		Trigonometric Fourier Series and Exponential Fourier Series	T1,R1	Chalk and Talk
21.		Complex Fourier spectrum	T1,R1	Chalk and Talk
22.		<b>Fourier Transforms:</b> Deriving Fourier Transform from Fourier series	T1,R1	Chalk and Talk
23.		Fourier Transform of arbitrary signal	T1,R1	Chalk and Talk
24.		Fourier Transform of standard signals	T1,R1	Chalk and Talk
25.		Fourier Transform of Periodic Signals	T1,R1	Chalk and Talk
26.		Properties of Fourier Transform	T1,R1	Chalk and Talk
27.		Fourier Transforms involving Impulse function and Signum function		
28.		Sampling: Sampling theorem	T1,R1	Chalk and Talk/ PPT
29.		Graphical and analytical proof for Band Limited Signals	T1,R1	Chalk and Talk/ PPT
30.		Reconstruction of signal from its samples	T1,R1	Chalk and Talk/ PPT
31.		Effect of under sampling – Aliasing.	T1,R1	Chalk and Talk/ PPT
32.	III	<b>Laplace Transforms and Z-Transforms:</b> Laplace Transforms: Review of Laplace Transforms (L.T)	T1,R1	Chalk and Talk/ PPT
33.		Partial fraction expansion, Inverse Laplace Transform	T1,R1	Chalk and Talk/ PPT
34.		Concept of Region of Convergence (ROC) for Laplace Transforms	T1,R1	Chalk and Talk/ PPT
35.		Constraints on ROC for various classes of signals	T1,R1	Chalk and Talk/ PPT
36.		Properties of L.T, Relation between L.T and F.T of a signal	T1,R1	Chalk and Talk/ PPT
37.		Laplace Transform of certain signals using waveform synthesis.	T1,R1	Chalk and Talk/ PPT
38.		<b>Z-Transforms:</b> Fundamental difference between Continuous and Discrete time signals	T1,R1	Chalk and Talk/ PPT
39.		Discrete time signal representation using Complex exponential and Sinusoidal components	T1,R1	Chalk and Talk/ PPT
40.		Periodicity of Discrete time signal using complex exponential signal	T1,R1	Chalk and Talk/ PPT
41.		Concept of ZTransform of a Discrete Sequence	T1,R1	Chalk and Talk/ PPT







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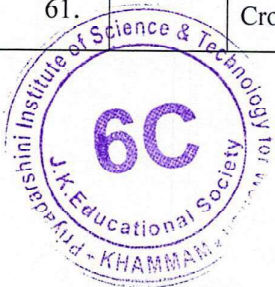
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42.		Distinction between Laplace, Fourier and Z Transforms	T1,R1	Chalk and Talk/ PPT
43.		Region of Convergence in Z-Transform	T1,R1	Chalk and Talk/ PPT
44.		Constraints on ROC for various classes of signals	T1,R1	Chalk and Talk/ PPT
45.		Inverse Z-transform, Properties of Z-transforms.	T1,R1	Chalk and Talk/ PPT
46.	IV	<b>Random Processes – Temporal Characteristics:</b> The Random Process Concept	T1,R1	Chalk and Talk/ PPT
47.		Classification of Processes, Deterministic and Nondeterministic Processes	T1,R1	Chalk and Talk/ PPT
48.		Distribution and Density Functions, concept of Stationarity and Statistical Independence	T1,R1	Chalk and Talk/ PPT
49.		First-Order Stationary Processes, Second- Order and Wide-Sense Stationarity	T1,R1	Chalk and Talk/ PPT
50.		(N-Order) and Strict Sense Stationarity, Time Averages and Ergodicity	T1,R1	Chalk and Talk/ PPT
51.		Autocorrelation Function and Its Properties, Cross-Correlation Function and Its Properties, Covariance Functions	T1,R1	Chalk and Talk/ PPT
52.		Gaussian Random Processes, Poisson Random Process	T1,R1	Chalk and Talk/ PPT
53.		Random Signal, Mean and Mean-squared Value of System Response	T1,R1	Chalk and Talk/ PPT
54.		autocorrelation Function of Response	T1,R1	Chalk and Talk/ PPT
55.		Cross-Correlation Functions of Input and Output.	T1,R1	Chalk and Talk/ PPT
56.	V	<b>Random Processes – Spectral Characteristics:</b> The Power Spectrum: Properties	T2,R4	Chalk and Talk/ PPT
57.		Relationship between Power Spectrum and Autocorrelation Function	T2,R4	Chalk and Talk/ PPT
58.		The Cross-Power Density Spectrum	T2,R4	Chalk and Talk/ PPT
59.		Properties, Relationship between Cross-Power Spectrum and Cross Correlation Function	T2,R4	Chalk and Talk/ PPT
60.		Spectral Characteristics of System Response: Power Density Spectrum of Response	T2,R4	Chalk and Talk/ PPT
61.		Cross-Power Density Spectrums of Input and Output.	T2,R4	Chalk and Talk/ PPT





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### **TEXT BOOKS:**

1. Signals, Systems & Communications - B.P. Lathi , 2013, BSP.
2. Signal and systems principles and applications, shaila dinakar Apten, Cambridez university press, 2016.
3. Probability, Random Variables & Random Signal Principles - Peyton Z. Peebles, MC GRAW HILL EDUCATION, 4th Edition, 2001

### **REFERENCE BOOKS:**

1. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, 2 Ed.,
2. Signals and Signals – Iyer and K. Satya Prasad, Cengage Learning



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