

**Bhoj Reddy Engineering College for Women: Hyderabad**  
**Department of Electronics and Communication Engineering**  
 Lesson plan of faculty member for the academic year 2017–18

Class: II B Tech

Branch-Section: ECE-C

Semester: I

Subject: Signals and Stochastic Process

Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
<b>UNIT – I Signal Analysis, Signal Transmission through Linear Systems</b>		
1	Introduction to Signals and Systems and its Classification	12 July 2017
2	Operations on Signals, Problems related to Classification of Signals and Systems	14 July 2017
3	Analogy between Vectors and Signals , Orthogonal Signal Space	18 July 2017
4	Signal Approximation using Orthogonal functions	19 July 2017
5	Mean Square Error , Closed or Complete Set of Orthogonal functions	21 July 2017
6	Orthogonality in Complex functions , Exponential and Sinusoidal Signals	24 July 2017
7	Tutorial: Problems related to Orthogonality , Problems on Exponential and Sinusoidal Signals	24 July 2017
8	Unit Impulse , Unit Step, Signum function	25 July 2017
9	Linear System , Impulse Response, Response of a Linear System	26 July 2017
10	LTI System, LTV System , Transfer function of LTI System	28 July 2017
11	Filter Characteristics of Linear System , Distortion less Transmission through a System	31 July 2017
12	Tutorial : Problems related to LTI , LTV Systems, Problems related to Filters and Bandwidth	31 July 2017
13	Signal Bandwidth and System Bandwidth, Ideal LPF Characteristics	1 August 2017
14	Ideal HPF , BPF Characteristics	2 August 2017
15	Causality and Paley Weiner Criteria, Relationship between Rise time and Bandwidth	4 August 2017
16	Concept of Convolution in Time and Frequency Domain	7 August 2017
17	Problems related to Convolution	7 August 2017
18	Graphical Representation of Convolution, Convolution property of Fourier Transform	8 August 2017
<b>Unit –II Fourier Series, Transforms and Sampling</b>		
19	Representation of Fourier Series, Continuous time Periodic signal, Properties of Fourier Series	9 August 2017
20	Dirichlet Conditions, Trigonometric and Exponential Fourier Series and it's problems	11 August 2017
21	Complex Fourier Spectrum , Problems on Fourier Series	16 August 2017
22	Deriving Fourier Transform from Fourier Series , Fourier Transform of an Arbitrary Signal	18 August 2017
23	Fourier Transform of Standard Signals and Periodic Signal	21 August 2017
24	Tutorial : Problems related to Fourier Transform	21 August 2017
25	Properties of Fourier Transform , Fourier Transforms involving Impulse and Signum function	22 August 2017
26	Sampling Theorem- Graphical and Analytical Proof for Band limited Signals	23 August 2017
27	Reconstruction of signal from Samples , Effect of Under Sampling - Aliasing	28 August 2017
28	Problems related to sampling theorem	28 August 2017
<b>Unit III Laplace Transforms and Z-Transforms</b>		
29	Review of Laplace Transform , Partial Fraction Expansion	29 August 2017
30	Inverse Laplace Transform	30 August 2017

31	Concept of ROC for Laplace Transform ,Constraints of ROC for various classes of signals	1 September 2017
32	Properties of Laplace transform Relation between Laplace Transform , Fourier Transform	4 September 2017
33	Tutorial: Problems related to Laplace transform and Inverse LT	4 September 2017
34	LT of certain signals using waveform synthesis	5 September 2017
35	Differences between Continuous time Signals and Discrete Time Signals	11 September 2017
36	Tutorial: Problems related to LT and ROC	11 September 2017
37	Discrete time Signal Representation using Complex Exponential and Sinusoidal Components	12 September 2017
38	Problems related to Exponential and Sinusoidal Discrete time Signals	13 September 2017
39	Periodicity of Discrete time signal using Complex Exponential Signal	15 September 2017
40	Concept of ZT of Discrete Sequence ,Distinction between LT, FT, ZT	18 September 2017
41	Tutorial : Problems related to Z-Transform	18 September 2017
42	ROC of Z-Transform ,Constraints on ROC for various Signals	19 September 2017
43	Inverse Z-Transform ,Properties of Z-Transform, Problems	22 September 2017
<b>Unit IV Random Processes-Temporal Characteristics</b>		
44	Random Process Concept, Classification of Processes	3 October 2017
45	Deterministic and Nondeterministic Processes, Distribution,Density Functions	4 October 2017
46	Concept of Stationary and Statistical Independence	6 October 2017
47	First-Order Stationary Processes, Second-Order and Wide-Sense Stationary	9 October 2017
48	Tutorial: Problems related to Stationary Processes	9 October 2017
49	Nth Order and Strict-Sense Stationary, Time Averages and Ergodicity	10 October 2017
50	Autocorrelation Function and its Properties	11 October 2017
51	Cross-Correlation Function and its Properties, Covariance Functions	13 October 2017
52	Gaussian Random Processes and Poisson Random Process	16 October 2017
53	Tutorial: Problems related to Ergodic Processes and Cross-Correlation	16 October 2017
54	Random Signal ,Mean and Mean-squared Value of system response	17 October 2017
55	Autocorrelation Function of response	20 October 2017
56	Cross-Correlation Functions of Input and Output	23 October 2017
57	Tutorial: Problems on Auto-Correlation and Cross-Correlation	23 October 2017
<b>Unit V Random Processes –Spectral Characteristics</b>		
58	Power Spectrum and its Properties	24 October 2017
59	Relationship between Power Spectrum and Autocorrelation Function	25 October 2017
60	Relationship between Cross-Power Spectrum and Correlation Function	27 October 2017
61	Cross-Power Density Spectrum Properties	30 October 2017
62	Tutorial :Problems related to Cross-Power Density Spectrum	30 October 2017
63	Spectral Characteristics of System Response	31 October 2017
64	Power Density Spectrum of Response	1 November 2017
65	Cross-Power Density Spectrum of Input and Output	3 November 2017
66	Revision of Problems	6 November 2017
67	Revision of All Chapters	6 November 2017
68	Discussion of previous question papers	7 November 2017

**Text books:**

1. Signals, Systems& Communications -B.P Lathi,2013 BSP
2. Signals and Systems Principles and Applications, Shaila Dinakar Apten,Cambreidez University Press,2016
3. Probability, Random Variables & Random Signal Principles- Peyton Z. Peebles ,MC Grawhill Education,4<sup>th</sup> edition,2001

Name and signature of the faculty: Ms A Nagavamshi

Name and signature of Head of the Department: Ms N Shribala

