

**Bhoj Reddy Engineering College for Women: Hyderabad**  
**Department of Electronics and Communication Engineering**  
 Lesson plan of faculty member for the academic year 2020–21  
 Class: II B Tech      Branch-Section: ECE-C      Semester: I  
 Subject: Signals and Systems      Lectures per week: 3 + 1 (Tutorial)

Lecture Number	Topic to be covered	Date(s)
<b>UNIT – I: Signal Analysis</b>		
1.	Introduction to the subject	02 September 2020
2.	Classification of signals: CT and DT, analog and digital, deterministic and random signals	04 September 2020
3.	Tutorial: Energy and power signals, problem solving	05 September 2020
4.	Even and odd signals, periodic and non-periodic signals, problems	07 September 2020
5.	Causal and non-causal signals, concepts of basic continuous time signals	09 September 2020
6.	Properties of unit impulse, basic operations on signals	11 September 2020
7.	Tutorial: Problem solving on operations on signals, Classification of systems	12 September 2020
8.	Problem solving on systems classification	14 September 2020
9.	Problem solving on systems classification	16 September 2020
10.	Analogy between vectors and signals, vectors, orthogonal vectors	18 September 2020
11.	Tutorial: Signals, orthogonal functions, Orthogonal vector space and signal space	19 September 2020
12.	Approximation of a function by a set of mutually orthogonal functions	21 September 2020
13.	Mean square error, Closed or complete set of orthogonal functions	23 September 2020
14.	Orthogonality in complex functions	25 September 2020
15.	Tutorial: Problem solving on orthogonal functions	26 September 2020
<b>UNIT - II: Fourier series</b>		
16.	Linear combinations of harmonically related complex exponentials	28 September 2020
17.	Fourier series representation of continuous time periodic signals	30 September 2020
18.	Dirichlet's conditions, problem solving on Fourier series	03 October 2020
19.	Properties of Fourier Series	05 October 2020
20.	Trigonometric Fourier Series and Exponential Fourier Series	07 October 2020
21.	Fourier Transforms: Deriving Fourier Transform from Fourier series	09 October 2020
22.	Tutorial :Complex Fourier spectrum, problem solving	10 October 2020
23.	Fourier Transform of arbitrary signal	12 October 2020
24.	Fourier Transform of Periodic Signals	14 October 2020
25.	Tutorial: Fourier Transform of standard signals, problem solving	16 October 2020
26.	Properties of Fourier Transform, Fourier Transforms involving Impulse function and Signum function	26 October 2020
27.	Introduction to Hilbert Transform	28 October 2020
28.	Tutorial: Problem solving on Fourier transforms	31 October 2020
<b>UNIT – III: Signal Transmission through Linear Systems</b>		
29.	Linear System, Impulse response, Response of a Linear System	09 November 2020
30.	Linear Time Invariant (LTI) System, Linear Time Variant (LTV) System, Transfer function of a LTI System	11 November 2020
31.	Filter characteristic of Linear System, Distortion less transmission through a system, Signal bandwidth, System Bandwidth, Ideal LPF, HPF and BPF characteristics	13 November 2020
32.	Causality and Paley-Wiener criterion for physical realization	16 November 2020
33.	Relationship between Bandwidth and rise time	18 November 2020

34.	Convolution of signals, problem solving , Graphical representation of Convolution	20 November 2020
35.	Correlation of Signals, Properties of correlation	21 November 2020
36.	Concept of convolution in Time domain and Frequency domain	23 November 2020
37.	Tutorial: Convolution of signals, problem solving	25 November 2020
<b>UNIT – IV: Laplace Transforms and Z-Transforms</b>		
38.	Concept of Laplace Transforms (L.T) ,Laplace transform of standard signals	27 November 2020
39.	Concept of Region of Convergence (ROC) for Laplace Transforms, Properties of L.T, problem solving	28 November 2020
40.	Laplace Transform of certain signals using waveform synthesis	02 December 2020
41.	Problem solving, Relation between L.T and F.T of a signal	04 December 2020
42.	Z–Transforms: Concept of Z- Transform of a Discrete Sequence	05 December 2020
43.	Tutorial: Problem solving on inverse Laplace transform	07 December 2020
44.	Distinction between Laplace, Fourier and Z Transforms	09 December 2020
45.	Properties of Z-transforms	11 December 2020
46.	Tutorial: Inverse Z-transform	12 December 2020
<b>UNIT – V: Sampling theorem and Correlation</b>		
47.	Graphical and analytical proof for Band Limited Signals	14 December 2020
48.	Impulse Sampling, Natural and Flat top Sampling ,Introduction to Band Pass Sampling	16 December 2020
49.	Reconstruction of signal from its samples, Effect of under sampling – Aliasing	18 December 2020
50.	Correlation: Cross Correlation and Auto Correlation of Functions, Properties of Correlation Functions	19 December 2020
51.	Energy Density Spectrum, Parseval's Theorem, Power Density Spectrum	21 December 2020
52.	Relation between Autocorrelation Function and Energy/Power Spectral Density Function	23 December 2020
53.	Relation between Convolution and Correlation	28 December 2020
54.	Detection of Periodic Signals in the presence of Noise by Correlation, Extraction of Signal from Noise by Filtering.	30 December 2020
55.	Revision	01 January 2021
56.	Revision	02 January 2021

#### TEXT BOOKS:

1. Signals, Systems & Communications - B.P. Lathi, 2013, BSP.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawabi, 2 Ed.
3. Signals and Systems – Simon Haykin and Van Veen, Wiley 2 Ed.,
4. Signals and Systems – P. Ramesh Babu and R.Anandanatarajan

Name and signature of the faculty: G Srilakshmi----

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