

GOPAL KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: SIGNALS AND SYSTEMS

Name of the Faculty: Subrat Prasad Rath

Semester: 3RD Semester

Branch: ETC

Semester From: July to December

No. of Weeks: 15 Weeks

Week	Day	Theory/ Practical Topics	Classes
		Unit 1 - Discrete-Time Systems	7
1	1.	Time and discrete-Time Signals	1
	2.	Elementary signals (Impulse, Ramp, step, exponential)	1
	3.	Classification of Discrete-Time Signals	1
	4.	Simple Manipulation of Discrete time signals	1
2	5.	Basics of continuous	1
	6.	Block Diagram Representation	1
	7.	Classification and Interconnection	1
		Unit 2- Analysis of Discrete-Time LTI Systems	8
3	8.	Techniques, Response of LTI Systems	1
	9.	Properties of Convolution	1
	10.	Causal LTI Systems	1
	11.	Stability of LTI Systems	1
4	12.	Discrete-Time Systems described by Difference Equations	1
	13.	Implementation of Discrete-Time Systems	1
	14.	Correlation of Discrete-Time Signals:	1
	15.	Cross correlation and Autocorrelation Sequences, Properties	1
		Unit 3- Fourier series representation	4
5	16.	Continuous time Fourier series (CTFS)	1
	17.	Dirichlet conditions, properties of CTFS	1
	18.	discrete time Fourier series (DTFS)	1
	19.	properties of DTFS	1
		Unit 4- Sampling	4
6	20.	Representation of a Continuous-Time Signal by Its Samples	1
	21.	The Sampling Theorem	1
	22.	Reconstruction of a Signal from Its Samples Using Interpolation, Aliasing	1
	23.	Discrete-Time Processing of Continuous-Time Signals	1

		Unit 5- The continuous-Time Fourier Transform (CTFT)	7
7	25.	Basic concepts of the Fourier Transform	1
	26.	Fourier Transform of periodic and Aperiodic signals	1
	27.		1
	28.	Properties of the continuous-Time Fourier Transform	1
8	29.	The discrete time Fourier transform(DTFT)	1
	30.		1
	31.	Fouriertransform of periodic and Aperiodic signals, properties of DTFT	1
	32.		1
	33.		1

Course Outcomes:

At the end of the course, students will be able to

1. CO1: understand the basic properties of signals and systems in both continuous and discrete time.
2. CO2: classify systems based on their properties and determine the response of LTI system using convolution.
3. CO3: analyse the spectral characteristics of continuous-time periodic and aperiodic signals using Fourier analysis.
4. CO4: understand the process of sampling and the effects of under sampling.
5. CO5: apply the discrete time Fourier transform for analysis of discrete-time signals

Books Recommended:

1. Digital Signal Processing — Principles, Algorithms and Applications, John. G. Proakis and Dimitris. G. Manolakis, 4th Edition, Pearson.
2. Signals & Systems by Alan V Oppenheim, A.S. Willsky and S.H. Nawab 2nd Edition, Pearson.
3. Signals and Systems by Simon Haykin and Barry Van Veen, 2nd Edition, Willey.
4. Fundamentals of Signals and Systems - M J Roberts, TMH