<table>
<tr><td colspan="5">Devi Ahilya Vishwavidhyalaya, Indore, India
Institute of Engineering & Technology</td><td colspan="2">II Year B.Tech. (Electronics and Instrumentation Engineering)</td></tr>
<tr><td>Course Code & Name</td><td colspan="6">Instructions Hours per Semester and Credits</td></tr>
<tr><td rowspan="2">3REPC4

SIGNAL AND SYSTEM ANALYSIS</td><td colspan="2">Classroom Instruction (CI)</td><td>Lab Instruction (LI)</td><td>Term Work (TW) and Self Learning (SL)</td><td>Total no. of Hours Per semester</td><td>Total Credits (Total Hours/30)</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>TW+SL</td><td rowspan="2">90</td><td rowspan="2">3</td></tr>
<tr><td>30</td><td>10</td><td>0</td><td>50</td></tr>
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Course Learning Objectives:

1. To provide detailed description of Fourier series and Fourier transform of continuous and discrete signals
2. To provide knowledge and use of Laplace and Z Transform along with various types of signals and systems.
3. To give knowledge of Network analysis and its synthesis.

Prerequisites:

Basic knowledge of signal, systems and electrical network with mathematical operations on it

COURSE CONTENTS

Unit-I

Countinuous time signals and Discrete time signals, Classifications of Continuous time signals and Discrete time signals, Mathematical operations on Continuous time signals and Discrete time signals, Continuous time systems and Discrete time systems, Properties of systems.
Linear time invariant systems theory; The Convolution sum, Continuous Time LTI system theory, The Convolution Integral, Properties of Linear Time-Invariant Systems.

Unit-II

Fourier Analysis for Continuous Time Signals & Systems: Fourier Series analysis of periodic signals, Continuous Time Fourier Transform, Properties of Continuous Time Fourier Transform, The Convolution theorem , Laplace Transform & its properties. Region of convergence for Laplace Transform, Inverse Laplace Transform, Transfer function and Significance of poles & Zeros. Introduction to State space analysis for continuous time signals and systems.

Unit-III

Z-transform: The Z-Transform and its properties, Region of convergence for Z-Transform, Inverse Z-Transform, Transformation between Continuous-Time and Discrete-Time Systems.
Time Response Analysis: Time Response Analysis of first and second order A.C. Network using differential equation, Time Response Analysis of first and second order A.C. Network using Laplace Transform.

Unit-IV

Two-Port Networks, Different Network Parameters of Two port networks., Driving point Input, Output and Transfer Impedance. Symmetry and reciprocity of two port networks. Interrelationship between

Network parameters. Interconnections of two port networks and related network parameters.

UNIT -V

Network Synthesis: Driving point System functions and Conditions for one port network synthesis, Positive real functions, Foster and Cauer form synthesis of LC Immittances.

Course Outcomes:

CO.No.	CO
CO1	To analyse different types of signals and systems and to understand the mathematical description of continuous and discrete Linear Time Invariant systems.
CO2	To develop understanding of Frequency Domain analysis of Signal and Systems.
CO3	To apply mathematical models of discrete Time systems using Z transform and To understand time response analysis of A.C. Networks using differential equation and Laplace Transform.
CO4	To evaluate two-port network, parameters and their practical application.
CO5	To understand Network Functions and synthesis for one port network.

BOOKS RECOMMENDED:

[1]. A.V. Oppenheim et al, Signals and Systems (2/e), Pearson 2003
[2]. Simon Haykin , "Signals and Systems" 2 nd edition, Wiley, 2008.
[3]**.** M. E. Van Valkenberg, "Network Analysis" 3rd Edition, PHI
[4]. A. Chakravarti and S. P. Ghose, "Network Analysis & Synthesis",

CO-PO-PSO Relationship

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2	PSO 3
3REPC4.CO1	3	3	2	2	1							3	2	1
3REPC$.CO2	3	3	3	2	2							3	2	1
3REPC4.CO3	3	3	3	2	2							3	3	1
3REPC4.CO4	3	3	3	2	1							3	2	1
3REPC4.CO5	3	3	3	2	2							3	2	1