UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

SESSION: 2025-2026

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SUBJECT CODE: TH:4(a)
NAME OF THE SUBJECT: DIGITAL SIGNAL PROCESSING
BRANCH: ELECTRONICS & TELECOMMUNICATION ENGG.
SEMESTER: 4TH
NUMBER OF CLASSES ALLOTED PER WEEK : 3
TOTAL PERIODS ALLOTED TO THE SUBJECT ACCORDING TO SCTEVT: 45
NAME OF THE FACULTY: TAPAN KUMAR DAS

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SEMESTER:	**DIPLOMA 4th SEM**
PERIODS PER WEEK:	**3 (22/12/2025 to 18/04/2026)**

Week/Date	Lecture	Topic to be covered
1st week	1st	UNIT-1: **Discrete Time Signals** 1.1Sequences 1.2Representation of signals on orthogonal basis
	2nd	1.3Sampling and reconstruction of signals 1.4Discrete systems attributes
	3rd	1.5 Z-Transform
2nd week	1st	1.5 Z-Transform
	2nd	1.5 Z-Transform
	3rd	1.6 Analysis of LSI systems

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Week/Date	Lecture	Topic to be covered
3rd week	1st	1.7 Frequency Analysis
	2nd	1.8 Inverse Systems
	3rd	1.8 Inverse Systems
4th week	1st	1.9 Discrete Fourier Transform (DFT)
	2nd	1.9 Discrete Fourier Transform (DFT)
	3rd	1.10 Fast Fourier Transform Algorithm

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Week/Date	Lecture	Topic to be covered
5th week	1st	1.10 Fast Fourier Transform Algorithm
	2nd	1.11 Implementation of Discrete Time Systems
	3rd	1.11 Implementation of Discrete Time Systems
6th week	1st	UNIT-II **Design of FIR Digital Filters** 2.1 Window method
	2nd	2.1 Window method
	3rd	2.2 Park-McClellan's method

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Week/Date	Lecture	Topic to be covered
7th week	1st	2.2 Park-McClellan's method
	2nd	2.3 Design of IIR Digital Filters: 2.3.1Butterworth,
	3rd	2.3.2 Chebyshev
8th week	1st	2.3.3 Elliptic Approximations
	2nd	2.4 Low pass filters
	3rd	2.4 Low pass filters
9th week	1st	2.5 Band pass filters
	2nd	2.5 Band pass filters
	3rd	2.6 Band stop filters

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Week/Date	Lecture	Topic to be covered
10th week	1st	2.6 Band stop filters
	2nd	2.7 High pass filters.
	3rd	2.7 High pass filters.
11th week	1st	UNIT-III **Finite Register Length in FIR Filter Design** 3.1 Effect of finite register length in FIR filter design
	2nd	3.1 Effect of finite register length in FIR filter design
	3rd	3.1 Effect of finite register length in FIR filter design

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12th week	1st	3.2 Parametric and non-parametric spectral estimation
	2nd	3.2 Parametric and non-parametric spectral estimation
	3rd	3.2 Parametric and non-parametric spectral estimation
13th week	1st	3.3 Introduction to multi rate signal processing.
	2nd	3.3 Introduction to multi rate signal processing.
	3rd	UNIT-IV 4.1 Application of DSP to Speech signal processing.

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14th week	1st	4.1 Application of DSP to Speech signal processing.
	2nd	4.1 Application of DSP to Speech signal processing.
	3rd	4.1 Application of DSP to Speech signal processing.
15th Week	1st	4.2 Application of DSP to Radar signal processing.
	2nd	4.2 Application of DSP to Radar signal processing.
	3rd	4.2 Application of DSP to Radar signal processing.

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16th week	1st	Previous year Questions Analysis
	2nd	Previous year Questions Analysis
	3rd	Previous year Questions Analysis
17th Week	1st	Model questions Analysis
	2nd	Model questions Analysis
	3rd	Model questions Analysis