

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC:Digital Signal Processing

Subject Co-ordinator - C. S. Ramalingam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Signal Definition and Classification  
Lecture 2 - Affine Transform  
Lecture 3 - Recap of Affine Transform  
Lecture 4 - Even and Odd Parts of a Signal  
Lecture 5 - The Unit Step Sequence  
Lecture 6 - The Unit Impulse  
Lecture 7 - The Unit Impulse (Continued...)  
Lecture 8 - Exponential Signals and Sinusoids  
Lecture 9 - Sinusoids (Continued...)  
Lecture 10 - When are two sinusoids independent?  
Lecture 11 - Another Difference Between CT and DT Sinusoids  
Lecture 12 - System definition and properties (linearity)  
Lecture 13 - Time-invariance, memory, causality, and stability  
Lecture 14 - LTI systems, impulse response, and convolution  
Lecture 15 - Properties of convolution, system interconnections  
Lecture 16 - Java applet demo of convolution  
Lecture 17 - Systems governed by LCCDE  
Lecture 18 - FIR and IIR systems  
Lecture 19 - Karplus-Strong algorithm  
Lecture 20 - Z-transform definition and RoC  
Lecture 21 - Z-transform (Continued...)  
Lecture 22 - Poles and zeros  
Lecture 23 - Recursive implementation of FIR filters  
Lecture 24 - Convergence criterion  
Lecture 25 - Properties of the RoC  
Lecture 26 - DTFT definition and absolute summability  
Lecture 27 - Linearity  
Lecture 28 - Delay  
Lecture 29 - Exponential multiplication

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- Lecture 30 - Complex conjugation
- Lecture 31 - Time reversal
- Lecture 32 - Differentiation in the Z-domain
- Lecture 33 - Convolution in the time domain
- Lecture 34 - Relationship between  $x[n]$  and  $X(1)$
- Lecture 35 - Initial Value Theorem
- Lecture 36 - Final Value Theorem
- Lecture 37 - Multiplication in the time domain
- Lecture 38 - Parseval's Theorem
- Lecture 39 - Partial Fractions Method
- Lecture 40 - Power series method
- Lecture 41 - Contour Integral Method
- Lecture 42 - Contour Integral Method (Continued...)
- Lecture 43 - Inverse DTFT
- Lecture 44 - DTFT of Sequences that are not absolutely summable
- Lecture 45 - Response to  $\cos(\omega_0 n)$
- Lecture 46 - Causality and Stability
- Lecture 47 - Response to suddenly applied inputs
- Lecture 48 - Introduction to frequency response
- Lecture 49 - Magnitude response and its geometric interpretation
- Lecture 50 - Magnitude Response (Continued...)
- Lecture 51 - Response of a single complex zero/pole
- Lecture 52 - Resonator and Improved Resonator
- Lecture 53 - Notch filter
- Lecture 54 - Moving Average Filter
- Lecture 55 - Comb filter
- Lecture 56 - Phase response of a single complex zero
- Lecture 57 - Effect of crossing a unit circle zero, wrapped and unwrapped phase, resonator phase response
- Lecture 58 - Allpass Filter
- Lecture 59 - Group delay and its physical interpretation
- Lecture 60 - Zero-phase filtering, effect on nonlinear phase on waveshape
- Lecture 61 - Zero-Phase Filtering, Linear Phase - 1
- Lecture 62 - Linear Phase - 2
- Lecture 63 - Linear Phase - 3
- Lecture 64 - Linear Phase - 3
- Lecture 65 - Linear Phase - 3
- Lecture 66 - Linear Phase - 4, Sampling - 1
- Lecture 67 - Linear Phase - 4, Sampling - 1
- Lecture 68 - Linear Phase - 4, Sampling - 1

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Lecture 69 - Sampling - 2  
Lecture 70 - Sampling - 3  
Lecture 71 - Sampling - 4  
Lecture 72 - Sampling - 4  
Lecture 73 - Sampling - 4  
Lecture 74 - The Discrete Fourier Transform - 1  
Lecture 75 - The Discrete Fourier Transform - 1  
Lecture 76 - The Discrete Fourier Transform - 2  
Lecture 77 - The Discrete Fourier Transform - 3  
Lecture 78 - The Discrete Fourier Transform - 3  
Lecture 79 - The Discrete Fourier Transform - 3  
Lecture 80 - The Discrete Fourier Transform - 4  
Lecture 81 - The Discrete Fourier Transform - 4  
Lecture 82 - The Discrete Fourier Transform - 4