

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Circuit Analysis for Analog Designers

Subject Co-ordinator - Prof. Shanthi Pavan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Course Introduction and Motivation
- Lecture 2 - Kirchoff's Current and Voltage Laws, and the Incidence Matrix
- Lecture 3 - Power Conservation and Tellegen's Theorem
- Lecture 4 - Intuition behind Tellegen's Theorem
- Lecture 5 - Tellegen's Theorem and reciprocity in linear resistive networks
- Lecture 6 - Why is reciprocity useful in practice?
- Lecture 7 - Inter-reciprocity in linear time-invariant networks
- Lecture 8 - Inter-reciprocity in linear time-invariant networks (Continued...)
- Lecture 9 - Inter-reciprocity in networks with ideal operational amplifiers
- Lecture 10 - Review of Modified Nodal Analysis (MNA) of linear networks
- Lecture 11 - MNA stamps of controlled sources - the VCCS and VCVS
- Lecture 12 - MNA stamps of controlled sources - the CCCS and C CVS
- Lecture 13 - Inter-reciprocity in linear networks - using the MNA stamp approach
- Lecture 14 - The Adjoint Network
- Lecture 15 - MNA stamp of an ideal opamp
- Lecture 16 - Properties of circuits with multiple ideal opamps
- Lecture 17 - Introduction to Analog Active Filters
- Lecture 18 - Magnitude approximation principles
- Lecture 19 - The maximally flat (Butterworth) approximation
- Lecture 20 - The Butterworth Approximation (Continued...)
- Lecture 21 - Connection between magnitude response and pole locations in an all-pole filter
- Lecture 22 - Cascade-of-biquads, realization of stray-insensitive first-order section
- Lecture 23 - Opamp-RC biquadratic sections
- Lecture 24 - Active-RC biquads and Impedance scaling
- Lecture 25 - Opamp-RC biquadratic sections (Continued...)
- Lecture 26 - High-order filters using cascade of biquads, Dynamic range scaling in opamp-RC filters
- Lecture 27 - The finite gain-bandwidth model of nonideal opamps
- Lecture 28 - Effect of finite opamp bandwidth on an active-RC integrator
- Lecture 29 - Effect of finite opamp bandwidth on an active-RC biquad

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- Lecture 30 - Visualization and mitigation of the effect of Q-enhancement
- Lecture 31 - Transconductance-Capacitance integrators
- Lecture 32 - Introduction to noise in electrical networks
- Lecture 33 - Noise processed by a linear time-invariant system
- Lecture 34 - kT/C noise in a sample-and-hold circuit
- Lecture 35 - Noise in RLC networks
- Lecture 36 - Total integrated noise in RLC Networks
- Lecture 37 - Bode's Noise Theorem - Frequency domain
- Lecture 38 - Input referred noise in electrical networks - Part 1
- Lecture 39 - Input referred noise in electrical networks - Part 2
- Lecture 40 - Input referred noise and the noise factor
- Lecture 41 - Noise Factor Examples
- Lecture 42 - Introduction to distributed networks, the ideal transmission line
- Lecture 43 - Solving the wave equation in an ideal transmission line
- Lecture 44 - Transmission line circuit analysis : The short circuited and open circuited line
- Lecture 45 - Transmission line circuit analysis, the reflection coefficient, open and short-circuited lines
- Lecture 46 - Transmission line driven by a source, power in a transmission line
- Lecture 47 - The Smith chart
- Lecture 48 - The need for scattering parameters
- Lecture 49 - Scattering Parameters: Introduction
- Lecture 50 - Example scattering matrix calculations
- Lecture 51 - Scattering matrices properties
- Lecture 52 - Measuring the S-parameters of a one-port
- Lecture 53 - The one-port vector network analyzer
- Lecture 54 - The two-port vector network analyzer
- Lecture 55 - Weak nonlinearity in electronic circuits, second-order harmonic distortion, HD2 and IM2
- Lecture 56 - Weak nonlinearity in electronic circuits, second-order intermodulation distortion
- Lecture 57 - Gain compression and third-order harmonic distortion
- Lecture 58 - Third-order intermodulation distortion
- Lecture 59 - Weak nonlinearities in circuits: Intuition behind the method of current injection
- Lecture 60 - Weak nonlinearities in circuits: Calculating nonlinear components
- Lecture 61 - Current-injection analysis of distortion in a negative feedback system
- Lecture 62 - Current-injection analysis of distortion in a negative feedback system (Continued...)
- Lecture 63 - Course summary and recap