

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

NPTEL Video Course - Electronics and Communication Engineering - Analog IC Design

Subject Co-ordinator - Dr. Nagendra Krishnapura

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Course introduction; Negative feedback control
- Lecture 2 - Negative feedback amplifier
- Lecture 3 - Step response, sinusoidal steady state response
- Lecture 4 - Loop gain and unity loop gain frequency; Opamp
- Lecture 5 - Opamp realization using controlled sources; Delay in the loop
- Lecture 6 - Negative feedback amplifier with ideal delay-small delays
- Lecture 7 - Negative feedback amplifier with ideal delay-large delays
- Lecture 8 - Negative feedback amplifier with parasitic poles and zeros
- Lecture 9 - Negative feedback amplifier with parasitic poles and zeros; Nyquist criterion
- Lecture 10 - Nyquist criterion; Phase margin
- Lecture 11 - Phase margin
- Lecture 12 - Single stage opamp realization
- Lecture 13 - Two stage miller compensated opamp
- Lecture 14 - Two stage miller compensated opamp
- Lecture 15 - Two and three stage miller compensated opamps; Feedforward compensated opamp
- Lecture 16 - Feedforward compensated opamp
- Lecture 17 - Feedforward compensated opamp
- Lecture 18 - Feedforward compensated opamp; typical opamp data sheet
- Lecture 19 - Opamp offset and CMRR; Transimpedance amplifier using an opamp
- Lecture 20 - Components available in a CMOS process
- Lecture 21 - MOS transistors-basics
- Lecture 22 - MOS transistors-parasitics, mismatch
- Lecture 23 - MOS transistors-mismatch, speed
- Lecture 24 - Noise in resistors
- Lecture 25 - Noise in MOS transistors; Input and output referred noise
- Lecture 26 - Noise scaling; Basic amplifier stages-Common source, common gate
- Lecture 27 - Basic amplifier stages-Common drain; Frequency response of amplifiers
- Lecture 28 - Common source amplifier frequency response; Differential amplifier
- Lecture 29 - Differential and common mode half circuits; Differential pair with active load

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- Lecture 30 - Differential pair with current mirror load
- Lecture 31 - Single stage opamp characteristics
- Lecture 32 - Opamp with single and dual supplies; Single stage opamp tradeoffs
- Lecture 33 - Telescopic cascode opamp
- Lecture 34 - Telescopic cascode opamp; Folded cascode opamp
- Lecture 35 - Folded cascode opamp
- Lecture 36 - Two stage opamp
- Lecture 37 - Two stage opamp; Three stage and triple cascode opamps
- Lecture 38 - Common mode rejection ratio; Example
- Lecture 39 - Fully differential circuits
- Lecture 40 - Fully differential single stage opamp
- Lecture 41 - Common mode feedback
- Lecture 42 - Fully differential single stage opamp
- Lecture 43 - Fully differential two stage opamp; Fully differential versus pseudo-differential
- Lecture 44 - Circuit simulators and analyses
- Lecture 45 - Phase locked loop as frequency multiplier
- Lecture 46 - Phase domain model
- Lecture 47 - Type I PLL transfer function and reference feedthrough
- Lecture 48 - Type II PLL
- Lecture 49 - Type II PLL transfer functions; Implementation
- Lecture 50 - Type II PLL-extra poles; Random noise in a PLL
- Lecture 51 - Oscillator phase noise
- Lecture 52 - PLL phase noise; LC and ring Oscillators
- Lecture 53 - Generating PTAT and constant MOS gm bias currents
- Lecture 54 - Reducing supply sensitivity; Bandgap voltage reference
- Lecture 55 - Fractional bandgap reference; Low dropout regulator
- Lecture 56 - Low dropout regulators; Continuous-time active filters
- Lecture 57 - Continuous-time active filters
- Lecture 58 - Continuous-time active filters
- Lecture 59 - Discrete-time active filters
- Lecture 60 - Transistor sizing in practice; Course summary