

Electronics Class – Prof. A. Spinelli

Lesson recordings for AY 2022-2023 (access restricted to PoliMI students)

Lesson 0: Class overview (from AY 21-22)

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=acf9de0b131f2017cdb15a150ee72be0>

Lesson 1: Review of equivalent circuits and feedback amplifiers

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=9afb7b551c884e58284cc157bb6d1afd>

Lesson 2: Feedback loops and properties. Linear applications of OAs

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=21a9f4c8379a25fb64db9ded1965721f>

Lesson 3: Other linear circuits. Offset voltage and bias current of OAs

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=fc4b0e7d8a0f2058ab0bd3bdba505e5f>

Lesson 4: Bias current compensation. G_{loop} and G_{OL} calculation in feedback circuits. Input impedances

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=3dc662f11e351ba90ab0d6fb0d248288>

Lesson 5 - Impedances in feedback circuits. Frequency response of feedback circuits. Bode stability criterion

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=27dcf8a86a8fc1dfe2047577a5551c47>

Lesson 6 - Loop compensation

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=761246193b634a41ccb79971afef230d>

Lesson 7 - Compensation of the differentiator stage and of the load capacitance. Differential signals and CMRR

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=2efa2dd44ccb60b4d6366592338a7f92>

Lesson 8 - Subtractor stage CMRR and INAs. Other OA parameters.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=30d137911ea11f15bbe5a60147db0f4>

Lesson 9 - Circuit simulation with Simulink. Wheatstone bridge.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=b303840a7bfa5db164c572f6019f1ba4>

Lesson 10 - Lead resistances and 3-wire bridge. Temperature compensation. Fourier transforms

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=4991708eb2c905613b5258d550199672>

Lesson 11 - signals and autocorrelation in time and frequency. Power signals.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=5195baf8ff92f1d91a0348bca8ae024b>

Lesson 12 - Random processes. Thermal noise.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=abf59006c579b91cd4b8ecbab7a9c72b>

Lesson 13 - Shot and flicker noise. LTI systems response to signal

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=0b16faded0eb3f82e9f2e6b0b313a68e>

Lesson 14 - LTI systems response to noise. Noise in amplifiers and OAs

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=1f30910abd185dadbaac42d74dde86f4>

Lesson 15 - LPF filter and effect on S/N. Time-variant filters

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=dd96e2d13c27c95a661cfbf581954a0b>

Lesson 16 - Gated integrators and Boxcar averagers

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=beb0e33ff7ec027a4c5559f05119b956>

Lesson 17 - Boxcar averagers and Ratemeters. Discrete-time filters

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=d94cd8b8bf53fa2fb782026a378ea8e3>

Lesson 18 - Non-uniform DT averages. Optimum filters.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=a8477f1d05a8c28027e09152b262c764>

Lesson 19 - Optimum filter (final). HPF and Baseline restorer

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=62c30a0ec8852a12ce4ac0bcd3e34dc9>

Lesson 20 - BLR weighting function. Amplitude modulation and demodulation.

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=915f5f916e3ba8398bc73d5516107712>

Lesson 21 - S-N ratio in lock-in systems. LIAs and square-wave demodulation

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=0c4038edd1659b2b4173065733af37f9>

Lesson 22 - Analog and digital LIAs. Auto-zero OAs

<https://politecnicomilano.webex.com/politecnicomilano/ldr.php?RCID=38d3f72724c86cfec77ad4744d6a68c3>