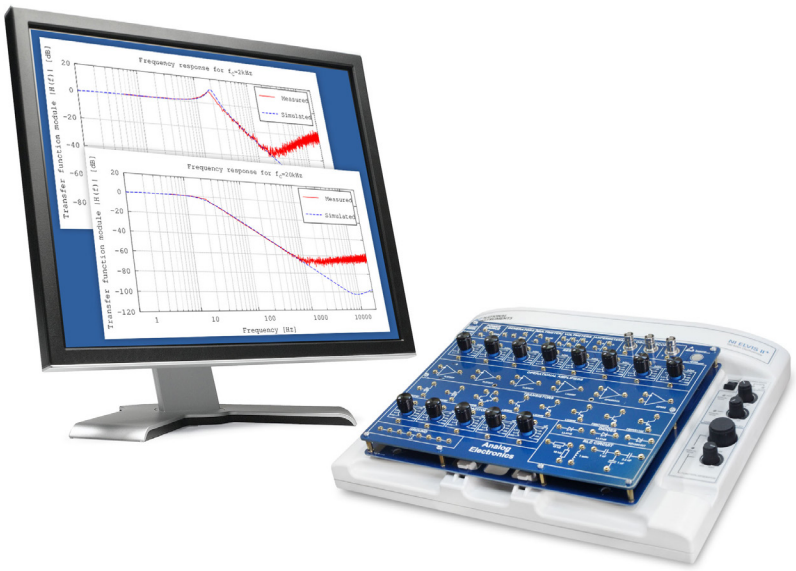
Analog Electronics Basics Lab



Overview

The Analog Electronics Basics Lab is a hands-on course, which allows to study the operation principle and characteristics of analog electronic components, as well as methods and principles of electronic circuits design.

During the hands-on labs students study the operation principles of basic electronics components and their applications. Such as serial, parallel and mixed connections of resistors and capacitors, various circuits based on inductors, diodes, transistors, operational amplifiers and so on.

The lab is based on National Instruments hardware. The lab software is developed in the LabVIEW graphical programming environment.

The lab is intended to be used in higher and secondary educational institutions for supporting «Electronics Fundamentals» course and allied disciplines.

Hardware and software

- NI ELVIS platform
- Analog Electronics board
- Lab software
- User manual

Features

- 34 experiments on Analog Electronics Basics
- An intuitive GUI
- Menu-driven navigation through the labs
- Step-by-step instructions
- Graphical representation of results

List of labs

1. Ohm's law
2. Kirchhoff's circuit laws
3. Series, parallel and mixed connection of resistors
4. Working principle of a capacitor
5. Series, parallel and mixed connection of capacitors
6. Working principle of an inductor
7. Inductive and capacitive reactance
8. Low pass and high pass RC filters
9. Diode characteristics
10. Zener diode characteristics
11. Diode bridge and rectifier
12. Diode limiters (clippers)
13. Output characteristics of bipolar transistor

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14. Bipolar transistor as a switch
15. Bipolar transistor as an amplifier
16. Emitter follower
17. Astable and monostable multivibrator
18. Field-effect transistor as a switch
19. Field-effect transistor as an amplifier
20. Comparator
21. Schmitt trigger
22. Non-inverting amplifier
23. Voltage follower (buffer)
24. Inverting amplifier
25. Summing amplifier
26. Integrator amplifier
27. Differentiator amplifier
28. Logarithmic amplifier
29. Anti-logarithmic (exponential) amplifier
30. Clippers using op-amp
31. Precision half-wave and full-wave rectifiers
32. Wien bridge sine wave generator
33. Triangle wave generator
34. Sawtooth wave generator

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