Analog integrated circuits

Component
École Nationale Supérieure d'Électrotechnique d'Électronique d'Informatique d'Hydraulique et des Télécommunications

In brief

- **Ametys Code:** N8EE02C
- **Open to exchange students:** Yes

Presentation

Objectives

Understand the basic structures of integrated electronics in bipolar and MOS transistors.

Design amplification, filtering and analogue processing chains.

Understand the principle of amplifier compensation using the Miller effect.

Design an amplifier in accordance with specifications.

Description

This course covers three areas: (1) fundamental functions performed using MOS and bipolar transistors; (2) the principle of negative feedback, different topologies and their effects on gain, input and output impedance, and bandwidth; and (3) the Miller effect-based compensation method for amplifiers.

Practical application will be carried out through the analysis of the 741 op-amp (theory and simulation) and the design of a CMOS amplifier (theory, simulation).

Pre-requisites

- Circuit basics
- Operational amplifiers and compensation
- Semiconductor physics and PN junctions
- Signal transistors and power components
- Transistor amplifier circuits