

# Integration of instrumentation chains



Component  
École Nationale  
Supérieure  
d'Électrotechnique  
d'Électronique

## In brief

- > **Amety's Code:** N9EE07A
- > **Open to exchange students:** Yes

## Presentation

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### Objectives

- Design an analog CMOS interface for a MEMS accelerometer.
- Understand fully differential techniques for operational amplifiers.
- Design common mode control architectures for fully differential amplifiers.
- Understand noise reduction techniques such as chopping and auto-zeroing.
- Learn how to write a design report.

### Description

The aim of this course is to discover CMOS design techniques used for the analog front end of sensors: low noise, differential, leakage current, etc.

During this course, students will design and simulate a CMOS circuit to interface a MEMS accelerometer by implementing a fully differential amplifier with integrated common mode control and a chopping system.

### Pre-requisites

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Circuit basics

Transistor circuits

Operational amplifier circuits

Analog integrated circuits

Amplification classes