

From Silicon to Integrated Circuits



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

In brief

- > **Amety's Code:** N8EE12A
- > **Open to exchange students:** Yes

Presentation

Objectives

Design, manufacture, and characterize a two-stage CMOS operational amplifier using 0.6 μm technology.

Description

The objective of this training course is to offer a comprehensive module covering everything from modeling 6 μm CMOS technology to testing an analog circuit manufactured in a clean room, following a design and simulation phase. Using project-based learning (PBL) methods and active teaching techniques, this training course promotes learning about CMOS circuit design tools and methods through the design and practical implementation of a two-stage CMOS amplifier that meets specific specifications. Throughout this 10-day project, students organized into groups of four will analyze and compare their measurement results with their theoretical and simulated studies for both the technological aspects (characterization of MOS capacitances, diodes, MOS transistors) and the circuit aspects (bandwidth, gain, slew rate, offset, consumption, input and output range).

Pre-requisites

Transistor amplifier circuits

Semiconductor physics and PN junctions