MEMS

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Ametys Code:** N9EE10C
- **Open to exchange students:** Yes

Presentation

Objectives

At the end of this course, students will be able to:
- understand the techniques used to implement mobile objects
- understand the different stages of MEMS design and mechanical analysis
- dimension a MEMS that meets criteria for switching speed, switching voltage, and reliability.
- extract an electrical behavioral model of the MEMS
- use MEMS to design an original RF function with tunable electrical characteristics.

Description

MEMS: What are they?

Application of MEMS in the following fields:

Optics

Mechatronics

Medical

RF

Clean room technology concepts

Mechanical model of MEMS:

Static model

Dynamic model

RF modeling of MEMS

Example of a MEMS-RF design procedure

Application project: Design of a tunable RF system using a V-band (60GHz) MEMS

Implementation of an electromagnetic model of MEMS (HFSS)

Extraction of the electrical model (ADS) and application of a parametric model for the design of a tunable bandpass filter from 60GHz to 40 GHz.

Definition of a tunable function to be designed, implemented, and validated by simulation.