

Semiconductors Physics and PN Junctions



Component

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



Semester

Printemps

In brief

> **Code:** N6EE04A

Presentation

Objectives

Integrated circuits are composed of active components whose operation is based on the properties of semiconductor materials (mostly silicon). They represent a compendium of very high-level science and technological development and, at the same time, a factor of socioeconomic progress incomparable since the progress in electricity.



At the end of this module, you will be ready to tackle the operation of all electronic components: principally based on one or more PN junctions or on a Metal/Oxide/Semiconductor (MOS) structure.

Description

All the resources are accessible on the Moodle platform. The theoretical part is divided into 3 parts and is entirely scripted.

If you need or are interested, various links allow you to upgrade:

- In crystallography to better understand the vocabulary used and the calculations made,
- In atomistic, in particular to understand the vocabulary used and the diagrams presented.

The module is composed of:

- 3 classes,
- 1 unsupervised TD during which it is suggested to do exercises whose statements and corrections are on Moodle,
- 1 supervised TD session,
- 1 study desk (over 2 consecutive sessions) to evaluate the skills acquired during this module,
- 1 written test on the knowledge and know-how acquired.