Innovative technologies, devices and materials

ECTS
5 crédits

Hourly volume
54h

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain:

- plasma processes
- new technologies and materials for the microelectronics applications
- concepts of the physics of continuous media
- quantum phenomena such as diffusion, electron paramagnetic resonance, and quantum cryptography: entangled states, single-photon and pairs of entangled states source based on semiconductors quantum dots.

The student will be able to apply the quantum mechanics formalism to describe innovative devices at the nano-scale.

The student will be able to:
- choose the kind of scanning probe microscopy well adapted to a specific application/characterization
- analyze and interpret basic images of scanning probe microscopy.

Necessary prerequisites

Electromagnetism
Quantum Mechanics (I4GPPM11)
Mathematics: matrix calculus and differential equations
Physical Metallurgy (real crystal, diffusion, precipitation, nucleation and growth)
Basic knowledge of symbolic computational tool like Maxima.

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

Toulouse

Non-contractual information