

# UE Advanced characterization for Nanostructures



Level  
Baccalaureate  
+5



ECTS  
3 credits



Component  
UFR PhITEM  
(physique,  
ingénierie, terre,  
environnement,  
mécanique)



Semester  
Automne

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** PAX9NPAM

## Presentation

### Description

This course will be dedicated to advanced characterization techniques of nanostructures. It will cover electron microscopy techniques (electron diffraction, loss spectroscopy, imaging), X ray spectroscopy and scattering techniques and Synchrotron radiation measurements.

### Content

X-ray scattering (from single electron to periodic material, anomalous scattering)

Reciprocal space (reminder +

Surface sensitive X-ray scattering

X-ray absorption fine structure

Examples of application : strain and composition determination, *in situ* studies of growth

Introduction to the X-ray synchrotron radiation production (including the forth generation source like the ESRF Extremely Brilliant Source)

Coherent X-ray scattering and X-ray photon correlation spectroscopy

The basis of electron microscopy

Electron diffraction and Electron loss Spectroscopy

Imaging and chemical sensitivity (Transmission Electron Microscopy and Scanning Transmission Electron Microscopy)

Case studies

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## Course parts

UE Advanced characterization for Nanostructures - CMTD

Lectures (CM) & Teaching Unit (UE)

24h

**Period :** Semester 9

## Useful info

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### Campus

› [Grenoble - University campus](#)