

# UE Advanced characterization for nanostructures



Niveau d'étude  
Bac +5



ECTS  
3 crédits



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



Période de  
l'année  
Toute l'année

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui
- > **Code d'export Apogée:** PAX9NPAM

## Présentation

### 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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## Heures d'enseignement

UE Advanced characterization for Nanostructures - CM-TD

Cours magistral - Travaux dirigés

24h

**Période :** Semestre 9

## Infos pratiques

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### Lieu(x) ville

> Grenoble

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### Campus

> Grenoble - Domaine universitaire