

60061 - Detection, characterization and determination techniques of nanomaterials I

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	544 - Master's in Environmental Nanotechnology
ECTS	8.0
Course	1
Period	First semester
Subject Type	Compulsory
Module	---

1. Basic info

1.1. Recommendations to take this course

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

5.2. Learning activities

5.3. Program

Program

1. **Analytical Nanometrology.** Analysis of nanomaterials: Types of analytical information. Selection of techniques and

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methods: Quality criteria. General approach for the analysis of nanomaterials along their cycle of life.

2. Sample preparation: Separation and isolation of nanoparticles. Filtration. Ultrafiltration. Dialysis. Ultracentrifugation. Extraction. Digestion of samples.

3. Microscopy techniques. Scanning Electron Microscopy (SEM). Energy Dispersive X-ray Spectrometry (EDS). Transmission Electron Microscopy (TEM). Atomic Force Microscopy (AFM). Other optical microscopies and scanning microprobes.

4. Light scattering techniques. Dynamic Light Scattering (DLS). Multiangle Light Scattering (MALS). Nanoparticle Tracking Analysis (NTA).

5. Spectrometric Techniques. UV-visible absorption spectrometry. UV-Visible Fluorescence. Atomic spectrometry: Atomic absorption spectrometry (AAE), inductively coupled plasma optical emission spectrometry (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS). X-ray absorption spectrometry (XAS).

5.4.Planning and scheduling

5.5.Bibliography and recommended resources