

Advanced Instrumental Analysis

Synopsis

The most outstanding instrumental methods for trace analysis in environmental samples using mass spectrometry will be provided. Essentially, the basic concepts and applications of mass spectrometry for molecular analysis and liquid chromatography and gas chromatography will be covered.

Aims

To provide exposure to the most outstanding instrumental methods for trace analysis in environmental samples.

Objectives

At the end of the Unit, you must:

1. Understand the basic concepts of mass spectrometry.
2. Be able to design the steps and requirements of an instrumental analysis method to meet quality requirements.
3. Understand the basic concepts of advanced chromatographic methods.

Key Skills Acquired

That the student is capable of designing and developing advanced methods of instrumental analysis using mass spectrometry.

That the student is capable of developing chromatographic methods for the analysis of organic micro-polluting agents.

That the student is able to apply mass spectroscopy to environmental analysis.

At the end of this Unit, you should understand:

The key points of an instrumental method of trace analysis using mass spectrometry.

Good analytical practices.

Syllabus

Topics covered include:

- * Basics on mass spectrometry
- * Analysis of micro-organic contaminants by liquid or gas chromatography coupled to mass spectrometry

Learning & Teaching

- Computer work practice, laboratory, site visits, field trips, external visits: 40 hr
- Individual works and/or group works: 36 hr
- Expositive classes: 20 hr
- Evaluation: 4 hr

Teaching Staff :O Zuloaga (Coord.)

Semester: 2

Timetable slot: To be advised

ECTS: 4

Level: Optional

Bibliography

- E. Hoffmann. 2008. Mass spectrometry: principles and applications, John Wiley & Sons, Chichester, UK.
- V.R. Meyer. 2010. Practical high-performance liquid chromatography. John Wiley & Sons, Chichester, UK.
- D. Rood. 2007. The troubleshooting and maintenance guide for gas chromatographers. Wiley-VCH, Weinheim, Germany
- S. Mitra (Ed.). 2003. Sample preparation techniques in analytical chemistry. Wiley-Interscience, Hoboken, New Jersey

Assessment

- Written theory examination (40%)
- Works and projects (60%)

Course Evaluation

By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Coordinator.