

<b>Module Title:</b> Foods. Sample treatment
<b>Module Code:</b> AM 0205
<b>Maximum Number of Students:</b> 20
<b>Total ECTS Credits</b> 2
<b>Notional Learning Hours</b> <b>(a) Contact Time - 12 h</b> <b>(b) Private Study - 38 h</b>  <i>Format of Teaching:</i> Lectures 8 h Laboratories or Practicals 0 h Other 4 h  <b>Teaching Strategy:</b> Formal lectures in 60/90 timetable. Case study sessions in 60/90 timetable.
<b>Convener:</b> Mercè Granados
<b>University / Department:</b> Universitat de Barcelona/ Department of Analytical Chemistry
<b>Language of Tuition:</b> English
<b>Module Description - The Purpose or Aims:</b>  1. To introduce the fundamentals of sample treatment in food analysis. 2. To introduce extraction techniques in the field of food analysis. 3. To introduce clean-up and/or preconcentration techniques.
<b>Specific Learning Outcomes for this module: (contributing to general learning outcomes GLO 1 – GLO 10)</b>  1. Understanding of the principles of extraction. 2. Knowledge of main extraction techniques in the field of food analysis. 3. Knowledge of clean-up techniques and modes. 4. Knowledge of trace analysis methodological aspects.
<b>Summary of Course Content:</b>  A general introduction to food analysis and requirements for sample treatment in this field will be given. Then, the principles of extraction will be presented, and attention will be paid to the most relevant techniques for sample extraction, such as conventional solid-liquid extraction or microwave assisted extraction, ultrasound assisted extraction and pressurized liquid extraction. On the other hand clean-up and/or preconcentration of sample extracts will be discussed and techniques such as liquid-liquid extraction, solid phase extraction or solid phase microextraction will be introduced. Problems related with trace analysis, such as contamination and losses will be discussed. Finally selected sample treatment procedures will be described and discussed.

**Transferable Skills Taught:**

- Ability to use scientific literature, technical reports, etc.
- Ability to work in small groups.
- Ability to communicate with specific terms related to sample treatment and food terminology.

**Assessment Methods:**

1. LO1- Written exam (20%)
2. LO2- Written exam (35%)
3. LO3- Written exam (35%)
4. LO4- Written exam (10%)

**Assessment Criteria:**Threshold:

LO1- Understanding of the principles of extraction

LO2- Basic knowledge of relevant extraction techniques in the field of food analysis

LO3- Basic knowledge of clean-up techniques and modes

LO4- Basic knowledge of trace analysis

Good:

LO1- Good understanding of the principles of extraction

LO2- Advanced knowledge of relevant extraction techniques in the field of food analysis. Ability to discuss about proposed extraction methods from the scientific literature.

LO3- Advanced knowledge of clean-up techniques and modes. Ability to discuss about clean-up methods proposed in the scientific literature

LO4- Good knowledge of trace analysis

Excellent:

LO1- Good understanding of the principles of extraction

LO2- Ability to design/optimize an extraction procedure for a given sample/analyte(s)

LO3- Ability to design/optimize a clean-up procedure for a given sample/analyte(s)

LO4- Ability to identify potential risks related with trace analysis for a given procedure and to propose alternative solutions.

**Resource Implications of Proposal and Proposed Solutions:**

Lecture notes will be available for students.

Recommended reading: "Methods for environmental trace analysis", John R. Dean. John Wiley & Sons, 2003.

Moreover selected scientific publications related with sample treatment in food analysis will be provided to the students and used during case study sessions