

Module Title: Introduction to Electroanalytical Techniques
Module Code: AM0914
Maximum Number of Students: 20
Total ECTS Credits 2
Notional Learning Hours (a) Contact Time - 10 h (b) Private Study - 40 h Format of Teaching: Lectures 10 h Laboratories or Practicals 0 h Other 0 h Teaching Strategy: Formal lectures in 60/90 min timetable
Convener: Miquel Esteban
University / Department: University of Barcelona, Department of Analytical Chemistry
Language of Tuition: English
Module Description - The Purpose or Aims: <ol style="list-style-type: none"> To introduce the fundamentals of the main electroanalytical techniques. To illustrate the main applications of electroanalytical techniques
Specific Learning Outcomes for this module: (contributing to general learning outcomes GLO 1 – GLO 10) At the end of the module the learner is expected to be able to: <ol style="list-style-type: none"> know the classification and the principles of the main electroanalytical techniques know the instrumentation of the main electroanalytical techniques select the most adequate electroanalytical technique for the analysis of a give system, and correctly identify the key parameters for the development and optimisation of an electroanalytical method
Summary of Course Content: This module aims to show the students a general view of the electrochemical techniques of analysis (electroanalytical techniques) and a more detailed description of the most used ones, as conductometry, potentiometry and voltammetry (mainly, modern polarographic and stripping voltammetric techniques). The pedagogical approach will be the same in all cases: at first, the fundamental of the technique will be studied; in a second step, the instrumentation used will be described; at last, some examples of the main application will illustrate the use of every technique.
Transferable Skills Taught: <i>Communication:</i> Writing electroanalytical reports <i>Information Technology:</i> Software programing for electroanalytical instrumentation
Assessment Methods: <ol style="list-style-type: none"> LO1 – LO3 Written Examination (100%)

Assessment Criteria:Threshold

LO1 – to identify some of the main electroanalytical techniques

LO2 – to know the main instrumental aspects of the main electroanalytical techniques

LO3 – to define what type of analysis can be performed with some of the main techniques

Good

LO1 – to know the classification of the principles of some of the main electroanalytical techniques

LO2 - to describe the components of some of the main electroanalytical system

LO3 - to define what type of analysis can be performed with the different techniques

Excellent

LO1 – to know the classification and the principles of the main electroanalytical techniques

LO2 - to correctly describe the components of a given electroanalytical system

LO3 – to choose the best available electroanalytical techniques to analyse a given set of samples, and to know the most relevant parameters to develop and optimise an electroanalytical method.

Resource Implications of Proposal and Proposed Solutions:

Lecture notes will be available for students.

Recommended reading:

"Quantitative Chemical Analysis", D. C. Harris, Freeman, 6th ed., 2003.

"Analytical Chemistry", R. Kellner, J.M. Mermet, M. Otto, H.M. Widmer, Wiley-VCH Verlag, Weinheim, Germany, 1998.

"Principles of Instrumental Analysis", D.A. Skoog, F.J. Holler, T.A. Nieman, 5th ed., Saunders College, Florida, 1998

Pre-Requisites:

No pre-requisites are required.