

Module Title: Introduction to Chromatographic Techniques
Module Code: AM0903
Maximum Number of Students: 20
Total ECTS Credits 2
Notional Learning Hours (a) Contact Time - 10h (b) Private Study - 40h Format of Teaching: Lectures 10 h Laboratories or Practicals 0 h Other 0 h Teaching Strategy: Formal lectures in 60/90 min timetable.
Convener: I. Cavaco, K. Koci
University: University of Algarve
Language of Tuition: English
Module Description - The Purpose or Aims: <ol style="list-style-type: none"> To introduce fundamental concepts on chromatography To introduce analytical techniques of gas chromatography, high performance liquid chromatography, ion chromatography and size exclusion chromatography.
Learning Outcomes: At the end of the module the learner is expected to be able to: <ol style="list-style-type: none"> correctly identify and describe the principles and instrumentation in the main column chromatography techniques Select the most adequate chromatographic technique for the analysis of a given system Critically analyze and evaluate the efficiency of a chromatographic system Correctly develop and optimize a chromatographic analytical method
Summary of Course Content: This module introduces concepts of fundamental chromatography. It then explores the most widely used chromatographic techniques: gas chromatography, high performance liquid chromatography, ion chromatography and size exclusion chromatography. For each technique, the principles, instrumentation, limitations and typical applications are presented.
Transferable Skills Taught:
Assessment Methods: <ol style="list-style-type: none"> LO1 – Written Examination (100%)

Assessment Criteria:Threshold

- LO1 – to correctly describe the components of a given chromatographic system
- LO2 – to identify the main chromatographic techniques and the when they can be applied
- LO3 – to correctly calculate efficiency parameters for a chromatographic column
- LO4 – to correctly perform a chromatographic analysis using a method already implemented.

Good

- LO1 – to correctly identify a chromatographic equipment and define what type of analysis it can perform
- LO2 – to be able to choose the most adequate chromatographic technique to perform the analysis of a given sample
- LO3 – to correctly analyze the efficiency of a chromatographic system and design solutions to increase its performance
- LO4 – to develop and optimize a chromatographic method for a given analysis

Excellent

- LO1 – to correctly identify the parts of any chromatographic equipment and define what type of analysis can be performed in each equipment
- LO2 – given a set of samples, to choose the best available chromatographic techniques to analyse each sample
- LO3 – to develop a laboratory quality control plan for chromatographic equipment, based on the efficiency of each equipment
- LO4 – to develop and optimize a chromatographic method for a given analysis, obtaining the best possible relation between time of analysis and efficiency of separation.

Resource Implications of Proposal and Proposed Solutions:

Lecture notes will be available for students.

Recommended reading:

"Quantitative Chemical Analysis", Daniel 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

"Chemical Analysis – Modern Instrumentation Methods and Techniques", F. Rousseac, A. Rousseac, Wiley, 2000

"Analytical Instrumentation – Performance, Characteristics and Quality", G. Currell, Wiley, 2000.