

Module Title: Liquid Chromatography
Module Code: AM0920
Maximum Number of Students: 12
Total ECTS Credits 2
Notional Learning Hours (a) Contact Time - 20h (b) Private Study - 30h Format of Teaching: Lectures 5 h Laboratories or Practicals 15 h Other 0 h Teaching Strate. Formal lectures in 60min timetable followed by Practicals of 3h each.
Convener: M. C. Mateus
University: University of Algarve
Language of Tuition: English
Module Description - The Purpose or Aims: 1. To apply fundamental concepts on Liquid chromatography 2. To introduce laboratory contact with analytical techniques of Liquid chromatography.
Learning Outcomes: At the end of the module the learner is expected to be able to: <ol style="list-style-type: none"> 1. Correctly identify and describe the principles and instrumentation in the liquid chromatographic techniques, namely HPLC/UV/PDA, LC/MS and ionic chromatography. 2. Correctly manipulate a liquid chromatographer apparatus taking in account the specificities of the different kinds of liquid chromatographer technologies (practical application: HPLC/UV/PDA, LC/MS and ionic chromatography). 3. Correctly develop and optimise a liquid chromatography analytical method (practical application: a) HPLC/UV using a RP stationary phase; ionic chromatography using an anionic exchange column). 4. Correctly manipulate the software tools to obtain an acceptable, qualitative and quantitative, analytical chromatographic result (practical application: HPLC/UV). 5. Critically analyse and evaluate a liquid chromatography analytical result (practical application: HPLC/UV/).
Summary of Course Content: This module reviews basic concepts of fundamental liquid chromatography. It then explores the most widely used liquid chromatographic instrumental techniques: Solid Phase extraction (SPE), HPLC/UV/PDA/MS, Ionic chromatography and Capillary Electrophoresis. For each technique, the principles, instrumentation, limitations and typical applications are presented. For SPE, HPLC/UV/PDA and Ionic Chromatography laboratory practical applications are executed for qualitative and quantitative proposes. Chromatographic results are critically interpreted.

Transferable Skills Taught:*Communication:*

Writing chemical analysis reports

Information Technology:

Hardware and software programming for analytical instrumentation.

Assessment Methods:

1. Laboratory reports (80%).
2. Practical laboratory attitude and expertise (20%)

Assessment Criteria:

Threshold

Good

Excellent

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.

"Contemporary Instrumental Analysis", K. Rubinson, J. Rubinson, M. Otto, 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.

Pre-Requisites:

Module AM0903