Module Title:
Gas Chromatography

Module Code:
AM0919

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 Strategy:
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 Gas chromatography
2. To introduce laboratory contact with analytical techniques of Gas chromatography.

Learning Outcomes:

At the end of the module the learner is expected to be able to:

1. Correctly identify and describe the principles and instrumentation in the gas chromatographic techniques, namely GC/FID and GC/MS.
2. Correctly manipulate a gas chromatographer apparatus taking in account the specificities of the different kinds of gas chromatographer technologies (practical application: GC/FID and GC/MS).
3. Correctly develop and optimise a gas chromatography analytical method (practical application: GC-MS).
4. Correctly manipulate the software tools to obtain an acceptable, qualitative and quantitative, analytical cromatoghraphic result (practical application GC/FID and GC/MS).
5. Critically analyse and evaluate a gas chromatographic analytical result (practical application: GC-MS).

Summary of Course Content:

This module reviews basic concepts of fundamental gas chromatography. It then explores the most widely used gas chromatographic instrumental techniques: GC/FID/NPD/ECD/CD and GC/MS. How to choose the best column and stationary phase. For each technique, the principles, instrumentation, limitations and typical applications are presented. For GC/FID and GC/MS 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 programing for analytical instrumentation.

Assessment Methods:

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

Assessment Criteria:

Treshold

Good

Excellent

Resource Implications of Proposal and Proposed Solutions:

Lecture notes will be available for students.
Recommended reading:
"Quantitative Chemical Analisys", 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