Module Title **Analytical Chemistry** **Keywords** Atomic spectroscopy, molecular fluorescence, Raman spectroscopy, mass spectroscopy, chromatography, icp, ftir, gc, hplc.	Reference AS3040 SCQF SCQF Level 9 SCQF Points 15 ECTS Points 7.5 Created July 2002 Approved January 2005 Amended May 2011 Version No. 3

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

Students must be familiar with the fundamental concepts of analytical spectroscopy and chromatography (AS2040 and AS2041) or equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To enable students to develop a deeper understanding of the principles and applications of important analytical techniques.

Advanced chromatography; optimisation of separation including sample extraction (LLE, ASE, soxhlet, spe, spme and spde), derivatisation and the higher modes of CE (MEKE, CGE, CIEF and CEC).
Mass spectroscopy as a detection technique for chromatography; detail will include interfaces, tandem MS, TIC, SIM, SRM and the use of deuterated standards.
Mobile phase optimisation for LC-MS and examples.

Indicative Student Workload

Contact Hours	Full Time
Lectures	32
Tutorials/Case Studies	8

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1. Discuss the detailed principles, instrumentation and applications of advanced atomic and molecular spectroscopy techniques.
2. Explain the detailed principles of advanced chromatography and apply these to optimisation of separations.
3. Discuss and appraise mass spectroscopy as a detection technique for chromatographic analysis.

Indicative Module Content

Advanced Spectroscopy: advanced atomic spectroscopy: Interferences, optimisation and sample introduction. FTIR and associated sampling techniques, FTIR microscope. Molecular Fluorescence and Raman Spectroscopy and mass spectroscopy. Applications.

Directed Study

Directed Study	40

Private Study

Private Study	70

Mode of Delivery

This is a lecture-based course supplemented with tutorial sessions and case studies.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3

Component 1:- Closed book examination (2 hours).

Indicative Bibliography

1. NEGRUSZ, A., AND COOPER, G. *Clarke's Analytical Forensic Toxicology.* Current Edition. Pharmaceutical Press.
2. SKOOG, D.A., WEST, D.M., HOLLER, F.J. AND CROUCH, S.R. *Fundamentals of Analytical Chemistry.* Current Edition. Brooks/Cole/Cengage Learning