

MODULE DESCRIPTOR

Module Title

Analytical Chemistry

Reference	AS3040	Version	6
Created	April 2023	SCQF Level	SCQF 9
Approved	January 2005	SCQF Points	15
Amended	September 2023	ECTS Points	7.5

Aims of Module

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

Learning Outcomes for Module

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

- 1 Discuss the principles of spectroscopic, chromatographic, and mass spectrometry techniques used in forensic and analytical science.
- 2 Demonstrate problem solving skills in the application of spectroscopic, chromatographic, and mass spectrometry techniques used in forensic and analytical science.
- 3 Interpret spectral and chromatographic data obtained in forensic and analytical science applications.

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

Module Delivery

This is a lecture based module supplemented with tutorials and case studies.

Indicative Student Workload

Full Time Part Time

Contact Hours

40

N/A

Non-Contact Hours

110

N/A

Placement/Work-Based Learning Experience [Notional] Hours

N/A

N/A

TOTAL

150

N/A

*Actual Placement hours for professional, statutory or regulatory body***ASSESSMENT PLAN***If a major/minor model is used and box is ticked, % weightings below are indicative only.***Component 1**

Type: Examination Weighting: 100% Outcomes Assessed: 1, 2, 3

Description: Closed book written examination.

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Component 1 (Examination) comprises 100%. A minimum of a Grade D is required to pass the module.

Module Grade

Minimum Requirements to achieve Module Grade:

A

A

B

B

C

C

D

D

E

E

F

F

NS

Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module

Successful completion of Stage 2 Forensic and Analytical Science or equivalent.

Corequisites for module

None.

Precluded Modules

None.

INDICATIVE BIBLIOGRAPHY1 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