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MODULE DESCRIPTOR

Module Title

Analytical Chemistry

Reference	AS3040	Version	5
Created	August 2021	SCQF Level	SCQF 9
Approved	January 2005	SCQF Points	15
Amended	August 2021	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 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 spectrometry. Applications. 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 spectrometry 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.

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		

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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 (EX1) comprises 100% of the module grade. A minimum of a Grade D is required to pass the module.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A: a score of 70% or above is required
B	B: a score of between 60-69% is required
C	C: a score of between 50-59% is required
D	D: a score of between 40-49% is required
E	E: a score of between 35-39% is required
F	F: a score of less than 35% is required
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 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