MODULE DESCRIPTOR

Module Title

Professional Skills And Techniques

Reference	ASM001	Version	6
Created	August 2021	SCQF Level	SCQF 11
Approved	December 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To problem solve, critically evaluate data and develop skills in a range of techniques fundamental to the professional practice of an analytical scientist.

Learning Outcomes for Module

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

1	Validate a suitable quality assurance and control system for an analytical laboratory.
2	Critically appraise and evaluate chemometrically derived statistical data.

Indicative Module Content

Experimental design: techniques for optimisation of multiple experimental parameters. Multivariate data analysis: principal components analysis, cluster analysis. Quality assurance: principles, procedures, test methods, records, reporting, auditing. Standards. Control charts. Laboratory accreditation and accreditation regimes. Communication: principles and practices of report writing, group interaction including problem-solving and decision making, and oral presentations. Information technology; identification of the primary sources of information relevant to analytical science, accessing this range of sources, retrieval techniques, use of bibliographic tools and electronic databases.

Module Delivery

Computer based tutorials will be used for experimental design. A study visit will be made to a local analytical laboratory to study and critically evaluate the quality assurance and quality control procedures and further material will be delivered by a visiting specialist. Most material will be delivered by lectures.

Module Ref:	ASM001 v6

Indicative Student Workload	Full Time	Part Time
Contact Hours	45	45
Non-Contact Hours	105	105
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
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:	Coursework	Weighting:	100%	Outcomes Assessed:	1
Description:	Quality Assurance Report.				

Component 2

Type:	Practical Exam	Weighting:	0%	Outcomes Assessed:	2
Description:	Problem Solving Chemometric Exercise with a 50% pass mark.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Component 1 (CW1) comprises 100% of the module grade. C2 (PE1) is assessed on a pass/unsuccessful basis. A minimum of a Grade D in(CW1) and P in (PE1) is required to pass the module. Non-submission of either component will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
A	C1: A C2: P
B	C1: B C2: P
C	C1: C C2: P
D	C1: D C2: P
E	C1: E C2: P; C1 A-D C2: U
F	C1: F C2: U
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	SKOOG, D.A., HOLLER, F.J and S. CROUCH. Principles of Instrumental Analysis. Current Edition. Brookes Cole.
2	MILLER, J.C. and MILLER, J.N. Statistics and Chemometrics for Analytical Chemistry. Current Edition. Prentice Hall.
3	MORGAN, E. Chemometrics: Experimental Design. Current Edition. ACOL: Wiley.
4	PRICHARD, E. Quality in the Analytical Chemistry Laboratory. Current Edition. ACOL: Wiley.
5	PRICHARD, E., and BARWICK, V. Quality in Analytical Chemistry. Current Edition. Wiley.