

Principles of Analytical Science

Module Code:	LIS6005-B
Academic Year:	2018-19
Credit Rating:	20
School:	Life Sciences (Faculty-wide)
Subject Area:	Life Sciences (Faculty-wide)
FHEQ Level:	FHEQ Level 6
Module Leader:	Dr Benjamin Stern

Additional Tutors:
Dr Philip Drake

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	36
Directed Study	162
Examinations DO NOT USE	2

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims

This module comprises two main components:

The first will provide fundamental knowledge concerning strategies for Sampling, Data Analysis, Reporting, Quality Assurance and Quality Control, Numerical and IT skills, and Safety in relation to analytical science.

The second will provide the general introductory principles and a theoretical understanding

of a range of instrumental analytical techniques and their applications. The module aims to provide the background knowledge needed for an understanding of the various principles discussed in greater detail in the other modules.

Outline Syllabus

Course philosophy and rationale. Fundamental principles of analytical science and introduction to chemical metrology: Introduction, Data analysis, Reporting, Numerical and IT skills, Health and Safety, Sampling, Chemometrics, Sample preparation, Quality assurance and Quality control.

General introductory principles fundamental to a wide range of analytical techniques: Classical methods, The interaction of electromagnetic radiation and matter, Mass spectrometry, Imaging, Compound and molecule specific analysis, Separation in analytical science, Surface and Trace Analysis, Other methods.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Analyse, interpret, manipulate and present analytical data using Numerical, Statistical and IT skills to solve structural/compositional problems.
- 2 Relate the key principles of a range of analytical techniques and select appropriate techniques to address specific analytical applications.
- 3 Apply enhanced analytical and problem-solving skills.
- 4 Explain to non-specialists how analytical chemistry can provide information relating to multidisciplinary subject areas.
- 5 Apply safety legislation and best practice with regards to chemical and biological samples (including human material).
- 6 Be familiar with different formats for reporting scientific results.

Learning, Teaching and Assessment Strategy

This module will be presented as a series of lectures and structured workshops sessions.

Lectures will be used to introduce key principles and generic skills. These will be followed by workshop sessions which will be used to develop case studies and problem solving skills.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	A formal exam covering the whole syllabus .	2 hours	50%	No

		Short questions followed by longer 'essay type' questions.			
Summative	Coursework	This will consist of a number of short questions followed by longer 'essay type' questions. (2000 words)	0 hours	50%	No

Legacy Code (if applicable)

LIF3004D

Reading List

To view Reading List, please go to [rebus:list](#).