

MODULE DESCRIPTOR

Module Title

Toxicology and Environmental Analysis

Reference	PL3054	Version	1
Created	October 2022	SCQF Level	SCQF 9
Approved	June 2023	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To provide students with knowledge in toxicological absorption, distribution, metabolism and excretion and the ability to assess the impact of polluting substances in ecological systems.

Learning Outcomes for Module

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

- 1 Discuss the principal sources, fate and behaviour of chemical pollutants in air, water and land.
- 2 Explain the features of cell and tissue injury.
- 3 Discuss biological responses to environmental pollutants including the effects on genetic material and cell growth.
- 4 Utilise relevant scientific principles, examples and underlying methodologies to solve a toxicological and analytical problem experimentally by working as a team.

Indicative Module Content

Pollution in the environment: review of natural and unnatural substances, xenobiotics, pollutants, degradation, persistence, accumulation, principle sources and behaviour of pollutants in air, water and land. Impact of pollutants on biological systems: cell and tissue injury caused by pollutants and their manifestations (in microorganisms, plants, animals, humans and ecosystems. Cellular recognition, immune response, defence mechanisms, biological indicators of pollution and epidemiological studies, Toxicity testing, definition of poisons and poisoning; study of the time-dose relationship and route of administration; distribution, phase 1 and phase 2 metabolism and elimination. Instrumental analysis of samples, eg. chromatographic and spectrophotometric; case studies interpretation of results and pharmacokinetics; report writing.

Module Delivery

Basic knowledge will be imparted through lectures, tutorials and practical workshops. Students will be expected to contribute through the retrieval and study of relevant 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
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Practical Exam	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	group oral presentation based on laboratory group work that is peer-reviewed.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Component 1 (CW1) 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
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 of the course or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 WRIGHT, D. and WELBOURN, P. *Environmental Toxicology*. Current Edition. Cambridge University Press.
- 2 PHILIPS, R.B. *Ecosystems and Human Health: Toxicology and Environmental Hazards*. Current Edition. CRC Press.
- 3 NEWMAN, M.C. and UNGER, M.A. *Fundamentals of Ecotoxicology*. Current Edition. CRC Press.