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MODULE DESCRIPTOR

Module Title

Toxicology and Environmental Analysis

Reference	AS3054	Version	5
Created	October 2017	SCQF Level	SCQF 9
Approved	May 2011	SCQF Points	15
Amended	July 2018	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 pollutant 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.

Module Ref:	AS3054 v5

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:	70%	Outcomes Assessed:	1, 2, 3
Description:	Unseen, closed book examination				

Component 2

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	4
Description:	Written scientific report				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

This module is assessed using the two components of assessment as detailed in the Assessment Plan. To pass this module, candidates must achieve a Module Grade of D or better.

Module Grade	Minimum Requirements to achieve Module Grade:
A	Final aggregate mark of 70% or greater and a minimum of 35% in C1 and C2
B	Final aggregate mark of between 60-69% and a minimum of 35% in C1 and C2
C	Final aggregate mark of between 50-59% and a minimum of 35% in C1 and C2
D	Final aggregate mark of between 40-49% and a minimum of 35% in C1 and C2
E	MARGINAL FAIL. Final aggregate of between 35-39% and a minimum of 35% in C1
F	FAIL. Final aggregate of less than 35% in either component
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.