



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Pharmacology and Toxicology				
Module Code	USSKBX-15-3	Level	3	Version	1
Owning Faculty	Health and Applied Sciences	Field	Biological, Biomedical and Applied Sciences		
Contributes towards	BSc Forensic Science, BSc Forensic Science (Chemistry), BSc Forensic Science (Biology), BSc Biomedical Science				
UWE Credit Rating	15	ECTS Credit Rating	7.5	Module Type	Standard
Pre-requisites	USSJRT-30-1 Chemistry in Context or USSKC5-30-1 Chemistry for Forensic Science and Data Analysis or USSKA4-30-1 Cell Biochemistry and Genetics	Co- requisites	None		
Excluded Combinations	None	Module Entry requirements	N/A		
Valid From	September 2014	Valid to	September 2020		

CAP Approval Date	28/03/2014
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Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> describe in detail the signs and symptoms of different types of poisoning (toxidromes) (A1) provide and rationalise different medicinal strategies for detoxification and therapy following poisoning (component A1) compare and contrast the human toxicology of a range of metals and their compounds (component A1). critically evaluate current research utilising metallodrugs as therapeutic agents (components A1, B1). synthesise model compounds and interpret experimental data and spectroscopic information based on medicines or poisons (component B1).
Syllabus Outline	<p>Medical toxicology – Classes and actions of important toxins and drugs of abuse. Signs and symptoms of poisoning (types of toxidrome), laboratory and bedside tests. Methods of decontamination and antidotes. Case studies.</p> <p>Assessing toxicity to organisms by standard bioassay methods and the use of</p>

	<p>biomarkers to monitor physiological response.</p> <p>The use of model compounds and spectroscopic methods to study the essential and toxic roles of drugs.</p> <p>Natural uptake and detoxification of metals by metabolic processes. Mechanisms of metal transport and storage. The treatment of metal overload, and removal of toxic metals by chelation therapy. Predicting formation, stability and efficacy of metallo drugs in biology and medicine.</p> <p>To illustrate important current topics in this field, and to highlight aspects of both pharmacology and toxicology, a selection of the following will be discussed in detail as case studies:</p> <ul style="list-style-type: none"> • Anxiolytics and hypnotics – barbiturates and benzodiazepines. • Antipsychotic drugs – treatment of schizophrenia. • Organomercurials - toxicology and uses in medicine. • Lead and cadmium - origins and symptoms of poisoning, methods of treatment. • Platinum and <i>cis-platin</i> – design and development of anti-cancer drugs. • Arthritis and aurofin - historical and contemporary medicinal uses of gold. • Radioactive isotopes -uptake and removal of metal contamination.
Contact Hours	<p>This module will run in semester 1. The contact hours (36) are distributed as follows:</p> <p>21 hours of lectures,</p> <p>3 hours of workshops,</p> <p>12 hours of laboratory practicals.</p>
Teaching and Learning Methods	<p>The material will be delivered using a combination of lectures, workshops and laboratory work. Lectures will be augmented by directed reading in the recommended text and other appropriate scientific literature, including selected journals e.g. <i>Toxicology and Applied Pharmacology</i>, <i>Metallomics</i>, <i>Toxicology Research</i>. The topics selected for delivery by workshops and practical work will be designed to enhance problem solving skills and to provide experience of relevant laboratory techniques.</p> <p>Technology enhanced learning will be embedded within teaching materials via links to supplementary electronic online resources of the textbook and other relevant information portals, e.g. http://www.chemspider.com Use will also be made of various in-house electronic resources and flash videos in chemistry for biologists available at http://calcscience.uwe.ac.uk. Student learning will be further supported through a variety of materials posted on the University's E-Learning Environment, Blackboard.</p> <p>Independent learning will take the following forms with an approximate indication of time required for each:</p> <ul style="list-style-type: none"> • Essential reading to support acquisition of knowledge and completion of problem solving skills exercises relating to lectures, workshops and practical classes – 40 hours • Preparation and submission of coursework 1 – 37 hours • Revision and preparation for exams – 37 hours
Key Information Sets Information	<p>Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are</p>

Key Information Set - Module data

Number of credits for this module

15

Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
150	36	114	0	150



The table below indicates as a percentage the total assessment of the module which constitutes a -

Written Exam: One unseen written exam

Coursework: One portfolio of workshop and laboratory worksheets

Total assessment of the module:	
Written exam assessment percentage	60%
Coursework assessment percentage	40%
Practical exam assessment percentage	0%
	100%

Reading Strategy

All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module leader.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

Indicative Reading List

There is no single core text for this module. Instead students will be guided towards essential reading which may take the form of parts of book chapters (e-books wherever possible) or open access reviews and research articles.

The following are representative of texts for required or further reading:

True, B-L, Dreisbach, R.A. (2001) *Handbook of Poisoning: prevention, diagnosis and treatment*. 13th edn. Boca Raton: Parthenon.

Rang, H.P. Dale, M.M. Ritter, J.M., Flower, R. & Henderson, G. (2012) *Pharmacology*, 7th ed. Edinburgh: Elsevier Churchill Livingstone.

	<p>Dabrowiak, J. (2009) <i>Metals in Medicine</i>, Oxford: Wiley-Blackwell.</p> <p>Timbrell, J A. (2009) <i>Principles of Biochemical Toxicology</i>, 4th ed. New York: Informa Healthcare.</p> <p>Duffus, J. H. and Worth, H. G. J. (2006) <i>Fundamental Toxicology</i>, Cambridge: Royal Society of Chemistry.</p> <p>Additional useful texts can be accessed at shelf marks 615.1 and 615.9.</p> <p>Journals for further reading include; <i>International Journal of Toxicology</i>, <i>Journal of Applied Toxicology</i>, <i>BioMetals</i>.</p>
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Part 3: Assessment

Assessment Strategy	<p>Students will undertake practical work and workshops based on synthesis and characterisation of selected metal complexes and drug models and on the principles of metal pharmacology and toxicology.</p> <p>The assessed worksheets will contain questions and responses for students to complete during these timetabled sessions and further questions for students to research in their own time.</p> <p>The examination will assess the students' knowledge acquired during lectures, workshops and practical classes, and from their own directed, independent learning.</p>
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Identify final assessment component and element		
% weighting between components A and B (Standard modules only)	A:	B:
	60	40
First Sit		
Component A (controlled conditions) Description of each element	Element weighting (as % of component)	
1. 3 hour written examination	100%	
2.		
Component B Description of each element	Element weighting (as % of component)	
1. Portfolio of worksheets	100%	
2.		

Resit (further attendance at taught classes is not required)		
Component A (controlled conditions) Description of each element	Element weighting (as % of component)	
1. 3 hour written examination	100%	
2.		
Component B Description of each element	Element weighting (as % of component)	
1. Portfolio of worksheets	100%	
2.		

If a student is permitted an **EXCEPTIONAL RETAKE** of the module the assessment will be that indicated by the Module Description at the time that retake commences.