



Module Specification

Pharmacology and Toxicology

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Part 1: Information

Module title: Pharmacology and Toxicology

Module code: USSKBX-15-3

Level: Level 6

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisites:

Students must have taken 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

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: 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.

Assessing toxicity to organisms by standard bioassay methods and the use of biomarkers to monitor physiological response.

The use of model compounds and spectroscopic methods to study the essential and toxic roles of drugs.

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 metallodrugs in biology and medicine.

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:

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 cis-platin – 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.

Part 3: Teaching and learning methods

Teaching and learning methods: 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, for example, Toxicology and Applied

Pharmacology, Metallomics, Toxicology Research. 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.

Technology enhanced learning will be embedded within teaching materials via links to supplementary electronic online resources of the textbook and other relevant information portals, for example, <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.

Independent learning will take the following forms with an approximate indication of time required for each:

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

This module will run in semester 1. The contact hours (36) are distributed as follows:
21 hours of lectures,
3 hours of workshops,
12 hours of laboratory practicals.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Describe in detail the signs and symptoms of different types of poisoning (toxidromes).

MO2 Provide and rationalise different medicinal strategies for detoxification and therapy following poisoning.

MO3 Compare and contrast the human toxicology of a range of metals and their compounds.

MO4 Critically evaluate current research utilising metallodrugs as therapeutic agents.

MO5 Synthesise model compounds and interpret experimental data and spectroscopic information based on medicines or poisons.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/usskbx-15-3.html) via the following link <https://uwe.rl.talis.com/modules/usskbx-15-3.html>

Part 4: Assessment

Assessment strategy: 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.

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.

The online examination (with a 24hr window for submission) will assess the students' knowledge acquired during lectures, workshops and practical classes, and from their own directed, independent learning

Assessment tasks:

Examination (Online) (First Sit)

Description: Online examination (24 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio (First Sit)

Description: Portfolio of worksheets

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4, MO5

Examination (Online) (Resit)

Description: Online examination (24 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio (Resit)

Description: Portfolio of worksheets

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Biomedical Science [Sep][FT][Frenchay][4yrs] MSci 2021-22

Applied Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Forensic Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Forensic Science [Sep][FT][Frenchay][4yrs] MSci 2021-22

Forensic Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][SW][Frenchay][5yrs] MSci 2020-21

Biomedical Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Biomedical Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2020-21

Forensic Science [Sep][SW][Frenchay][5yrs] MSci 2020-21

Forensic Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2020-21

Forensic Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Forensic Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2019-20

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2019-20

Biomedical Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20

Biomedical Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2019-20

Forensic Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2019-20