

Liverpool John Moores University

Title: DRUG EFFECTS AND TOXICOLOGY
Status: Definitive
Code: **5007BMBMOL** (101474)
Version Start Date: 01-08-2011

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
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Academic Level: FHEQ5 **Credit Value:** 12.00 **Total Delivered Hours:** 25.50
Total Learning Hours: 120 **Private Study:** 94

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	23.000
Workshop	1.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1		60.0	1.50
Report	AS2		40.0	

Aims

To provide an introduction to the interactions of foreign compounds with biological systems, including their absorption, distribution, metabolism and elimination.

To provide an introduction to molecular mechanisms of toxicity.

To provide an overview of the pathology associated with chemical-associated cell

injury and death.

To provide an introduction to forensic toxicology.

Learning Outcomes

After completing the module the student should be able to:

- 1 Explain the absorption, distribution and elimination of drugs and other xenobiotics.
- 2 Evaluate the significance of drug/xenobiotic biotransformation in toxicology, including the influence of species, sex, age and genetic differences.
- 3 Explain the major molecular mechanisms of toxicity, and describe and recognise significant cellular pathological changes associated with such toxicity.
- 4 Describe the fundamentals of forensic toxicology.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

EXAM	1	2	3	4
Data analysis	2	3		

Outline Syllabus

Principles of pharmacokinetics: Absorption, distribution, metabolism and excretion of drugs and other xenobiotics.

The significance of biotransformation in toxicology: Variations in response, effects of genetics, age, sex, species and disease.

Mechanisms of toxicity: Free radicals, lipid peroxidation and reversible and irreversible interactions of chemicals with cellular macromolecules. Protective agents; antioxidants and glutathione. Carcinogenicity.

Structural manifestations of toxicity: Pathological changes occurring in cells and tissues. Cell injury; degeneration, inflammation, cell death. Atrophy, hyperplasia, hypertrophy, metaplasia, dysplasia and neoplasia. Restructuring and repair of cells and tissues.

Introduction to forensic toxicology: Identification of drugs and poisons in biological samples.

Case studies: consideration of the pharmacokinetics, mechanism of toxicity, pathology and clinical relevance of selected drugs/chemicals.

Learning Activities

Lectures, practicals, workshops

References

Course Material	Book
Author	Timbrell, J.A.
Publishing Year	2002
Title	Introduction to Toxicology.
Subtitle	
Edition	3rd ed.
Publisher	Taylor and Francis.
ISBN	0415247632

Course Material	Book
Author	Lu, F.C. and Kacew, S.
Publishing Year	2002
Title	Lu's Basic Toxicology: Fundamentals, target organs and risk assessment.
Subtitle	
Edition	4th ed.
Publisher	Taylor and Francis
ISBN	0415248566

Course Material	Book
Author	Lakhani, S.R., Dilly, S.A., Finlayson, C.J.
Publishing Year	1998
Title	Basic Pathology.
Subtitle	An Introduction to the Mechanisms of Disease.
Edition	2nd ed.
Publisher	Edward Arnold.
ISBN	0340677872

Notes

To provide an introduction to the interactions of foreign compounds with biological systems, including their absorption, distribution, metabolism and elimination.

To provide an introduction to the molecular mechanisms of toxicity.

To provide an overview of the pathology associated with drug-associated cell injury and death.

To provide an overview of the procedures for assessing the potential toxicity of a novel chemical entity.