

## Liverpool John Moores University

Title: PRINCIPLES OF PHARMACOLOGY  
Status: Definitive  
Code: **5003PHASCI** (122595)  
Version Start Date: 01-08-2019

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

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**Academic Level:** FHEQ5      **Credit Value:** 20      **Total Delivered Hours:** 65  
**Total Learning Hours:** 200      **Private Study:** 135

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	30
Practical	18
Workshop	15

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	60	2
Portfolio	Lab report	Lab reports	40	

### Aims

*The module aims to build upon homeostatic principles established at Level 4, developing knowledge of anatomical, physiological and pharmacological organisation of biological systems (respiratory, gastrointestinal, cardiovascular, hepatic and renal). It supports an understanding of therapeutic modes of drug action, and the pharmacokinetic determinants of dosing. It introduces examples of the formulations used to deliver drugs and the bases for their toxicity, concepts that are advanced in associated modules at L5 and 6.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Demonstrate a knowledge of the functional organisation of the organ systems covered; physiological principles underlying diagnostic tests and therapeutic approaches to disorders in each system.
- 2 Demonstrate an understanding of the inter-relationships between those systems, in particular, how pathological changes in those systems affect the ADME of drugs.
- 3 Demonstrate a knowledge of the pharmacology, interactions and side-effects of the major groups of drugs which are used therapeutically for each of the five systems.
- 4 Perform a range of pharmacokinetic calculations and identify pharmaceutical significance of pharmacokinetic parameters.

## **Learning Outcomes of Assessments**

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

Exam	1	2	3	4
Portfolio of Lab reports	1	3		

## **Outline Syllabus**

*Basic functional organisation (anatomy, physiology and pharmacology) of the respiratory, gastrointestinal, cardiovascular, hepatic and renal systems. An introduction to the major pathologies of those systems and to the principal drug treatments thereof.*

*The structure/function of the respiratory tract; physiological control of respiration - central rhythm generator; central and peripheral chemoreceptor; reflexes; respiratory control of acid-base balance. An introduction to the pharmacology of the principal groups of drugs used in the treatment of asthma and chronic obstructive pulmonary disease (COPD).*

*The structure of the hepatic and biliary systems, workings of the liver acinus, causes and consequences of hepatic insufficiency; liver function tests; pathology and therapeutics of hepatitis, cholestasis and dyslipidaemia.*

*The structure of the kidney, workings of the nephron, causes and consequences of insufficiency, diagnostic test of kidney function, basis for therapeutics to control oedema and hypertension.*

*Review of the anatomy and function of the gastrointestinal tract; digestive, motility and malabsorption disorders, and the basis for treatment of peptic ulcers, constipation, diarrhoea and emesis.*

*Organisation of the systemic and pulmonary vascular supply. Structure of the heart. Control of heart rate, rhythm and blood pressure. Therapeutic approaches to hypertension and arrhythmias.*

*Pharmacokinetics: Drug absorption. Volume of distribution. Absorption and elimination rate constants. Half-life. Extraction ratio. Bioavailability. Clearance. Compartments. Single iv bolus injection into one and two compartment systems. Extravascular administration. Constant infusion. Multiple dosing. Non-linear regression for fitting experimental data.*

## **Learning Activities**

Lectures: Deliver outline of the anatomical, physiological and pharmacological organisation of biological systems (respiratory, gastrointestinal, cardiovascular, hepatic and renal) in normal and diseased states; and the basis for the use of therapeutic drug classes applied to disorders.

Practicals: Demonstrate physiological and diagnostic principles (respiratory and cardiovascular); pharmacodynamic principles (gastrointestinal and cardiovascular organ bioassay) and pharmacokinetic dose regimen calculations.

Tutorials and workshops: Provide formative exercise at interpreting and reporting pharmacological evidence and pharmaceutical calculations.

## **Notes**

Pre-requisites: Principles of Human Biology.

Co-requisites: Drug Delivery Systems & Integrated approaches to Therapeutics.