

### Summary Information

|                     |                                  |
|---------------------|----------------------------------|
| Module Code         | 5003PHASCI                       |
| Formal Module Title | Principles of Pharmacology       |
| Owning School       | Pharmacy & Biomolecular Sciences |
| Career              | Undergraduate                    |
| Credits             | 20                               |
| Academic level      | FHEQ Level 5                     |
| Grading Schema      | 40                               |

### Teaching Responsibility

|                                   |
|-----------------------------------|
| LJMU Schools involved in Delivery |
| Pharmacy & Biomolecular Sciences  |

### Learning Methods

| Learning Method Type | Hours |
|----------------------|-------|
| Lecture              | 30    |
| Practical            | 18    |
| Workshop             | 14    |

### Module Offering(s)

| Display Name | Location | Start Month | Duration Number Duration Unit |
|--------------|----------|-------------|-------------------------------|
| SEP-CTY      | CTY      | September   | 12 Weeks                      |

### Aims and Outcomes

|      |  |
|------|--|
| Aims | To develop knowledge of anatomical, physiological and pharmacological organisation of biological systems (respiratory, gastrointestinal, cardiovascular, hepatic and renal) and to support an understanding of therapeutic modes of drug action, and the pharmacokinetic determinants of dosing. |
|------|--|

**After completing the module the student should be able to:**

### Learning Outcomes

| Code | Number | Description   |
|------|--------|---|
| MLO1 | 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. |
| MLO2 | 2      | Demonstrate an understanding of the inter-relationships between those systems, in particular, how pathological changes in those systems affect the ADME of drugs.                                 |
| MLO3 | 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.                              |
| MLO4 | 4      | Perform a range of pharmacokinetic calculations and identify pharmaceutical significance of pharmacokinetic parameters.   |

### Module Content

|                        |  |
|------------------------|--|
| 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. |
| Module Overview        | The module aims to develop your knowledge of anatomical, physiological and pharmacological organisation of biological systems.   |
| Additional Information | This module builds upon the homeostatic principles introduced at Level 4 and introduces examples of the formulations used to deliver drugs and the bases for their toxicity, concepts that are advanced in associated modules at Levels 5 and 6.   |

### Assessments

| Assignment Category | Assessment Name | Weight | Exam/Test Length (hours) | Module Learning Outcome Mapping |
|---------------------|-----------------|--------|--------------------------|---------------------------------|
| Centralised Exam    | Exam            | 60     | 2                        | MLO1, MLO2, MLO3, MLO4          |

|           |                          |    |   |            |
|-----------|--------------------------|----|---|------------|
| Portfolio | Portfolio of Lab reports | 40 | 0 | MLO1, MLO3 |
|-----------|--------------------------|----|---|------------|

## Module Contacts

### Module Leader

| Contact Name  | Applies to all offerings | Offerings |
|---------------|--------------------------|-----------|
| James Downing | Yes                      | N/A       |

### Partner Module Team

| Contact Name | Applies to all offerings | Offerings |
|--------------|--------------------------|-----------|
|--------------|--------------------------|-----------|