**This Version is No Longer Current**
The latest version of this module is available here

## MODULE DESCRIPTOR

### Module Title

Pharmacology for Drug Design

| Reference | ASM042 | Version | 1 |
|---|---|---|---|
| Created | January 2019 | SCQF Level | SCQF 11 |
| Approved | May 2019 | SCQF Points | 15 |
| Amended | | ECTS Points | 7.5 |

### Aims of Module

To develop the student's understanding of how chemical and biological sciences integrate to produce pharmacological effects, so as to enable them to critically discuss and evaluate the role of pharmacology in drug design and delivery.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

| 1 | Demonstrate a critical understanding of principle drug targets, drug interaction with targets and how drugs produce pharmacotherapeutic effects at a biochemical and physiological level (pharmacodynamics). |
|---|---|
| 2 | Critically discuss and appraise sources of pharmacological agents and the routes of administration which will optimise absorption, distribution, metabolism and excretion (ADME) of drugs (pharmokinetics). |
| 3 | Demonstrate critical understanding and application of mathematical and graphical models used in the interpretation and representation of pharmacological data. |

### Indicative Module Content

Pharmaceutical chemistry and biology. Pharmacodynamics: drug classifications - full/partial/inverse agonists and antagonists; drug targets - receptors, enzymes, channels and transporters; drug specificity and selectivity; mechanisms of drug action. Pharmacokinetics: drug administration - single dose, multiple dose, delivery route; absorption, distribution, metabolism and excretion (ADME); pharmacokinetic parameters - bioavailability (F), salt factor (S) volume of distribution (Vd), extraction ratio (E), absorption and elimination rate constants (Ka & Ke), clearance (Cl); zero and first-order elimination. Quantitative analysis of pharmacodynamic and pharmacokinetic effects; drug target binding, blood drug concentration/ time relationship, pharmacokinetic formulae. Pharmacotherapeutics: drug efficacy; adverse drug reactions and interactions.

### Module Delivery

The module is delivered by lectures, tutorials, coursework and online learning activites.

## Indicative Student Workload

| Indicative Student Workload | Full Time | Part Time |
|---|---|---|
| Contact Hours | 30 | N/A |
| Non-Contact Hours | 120 | N/A |
| Placement/Work-Based Learning Experience [Notional] Hours | N/A | N/A |
| TOTAL | 150 | N/A |
| *Actual Placement hours for professional, statutory or regulatory body* | | |

## ASSESSMENT PLAN

*If a major/minor model is used and box is ticked, % weightings below are indicative only.*

### Component 1

| Type: | Coursework | Weighting: | 100% | Outcomes Assessed: | 1, 2, 3 |
|---|---|---|---|---|---|

Description: A critical review of literature pertaining to the pharmacodynamic, pharmacokinetic and pharmacotherapeutic profile of a given drug compound.

## MODULE PERFORMANCE DESCRIPTOR

### Explanatory Text

To pass this module the student must achieve a grade D or better. The grading criteria are:

| Module Grade | Minimum Requirements to achieve Module Grade: |
|---|---|
| **A** | C1 must be a minimum of 70% |
| **B** | C1 must be a minimum of 60% |
| **C** | C1 must be a minimum of 50% |
| **D** | C1 must be a minimum of 40% |
| **E** | C1 must be a minimum of 35% |
| **F** | C1 is less than or equal to 34% |
| **NS** | Non-submission of work by published deadline or non-attendance for examination |

## Module Requirements

| Prerequisites for Module | None, in addition to course entry requirements. |
|---|---|
| Corequisites for module | None. |
| Precluded Modules | None. |

## INDICATIVE BIBLIOGRAPHY

1   Rang, H. P., Ritter, J. M., Flower, R. J., Henderson, G. (2016). 'Rang and Dale's Pharmacology', 8th edition, Elsevier.

2   Kenakin, T. P. (2017). 'Pharmacology in drug discovery and development: understanding drug response', 2nd edition, Academic Press.

3   Loftsson, T. (2015). Essential pharmacokinetics: a primer for pharmaceutical scientists', Elsevier Academic Press.

4   Talevi, A., Quiroga, P.A.M. (2018). 'ADME Processes in pharmaceutical sciences: dosage, design and pharmacotherapy success', Springer.