

Module Specification

Module Summary Information

1	Module Title	BMS5004 Fundamental Principles of Pharmacology and Drug Development
2	Module Credits	20
3	Module Level	5
4	Module Code	BMS5004

5	Module Overview
<p>Rationale:</p> <p>Pharmacology examines how drugs exert their effects on living systems; including where and how they function and how they are metabolised. Pharmacology is a broad discipline which applies molecular biology, chemistry and physiology knowledge to the development of new drugs to treat existing and emerging disease conditions. The application of pharmacological knowledge is vitally important for the pharmaceutical industry, which is a major contributor to the UK and global economies; the global pharmaceutical market is worth ~ £1000 billion annually¹ with approximately 73,000 people directly employed in the UK alone².</p> <p>This module will build on the knowledge and skills developed at level 4 and will explore the scientific foundations of pharmacology. You will use this underpinning knowledge to examine how the pharmaceutical industry designs and develops novel drug entities to treat the underlying pathophysiology of common diseases.</p> <p>Alignment with Course Philosophy and Aims:</p> <p>In line with the overall course philosophy, this module will develop your knowledge and provide you with flexible skills to enable you succeed in the dynamic employment environment of the 21st century. The topics discussed will reflect the latest concepts in Pharmacological theory and as such will provide opportunity to enhance your ability to develop your critical analysis skills and defend a particular standpoint. This module will build upon the fundamental principles that you acquired during the Level 4 Biochemistry and Introduction to Human Physiology modules and will feed forward into the Level 6 Applied Toxicology and Neuroscience modules.</p> <p>Learning and Teaching Strategy:</p> <p>This module will use a blended approach to facilitate your learning. Lectures will introduce fundamental pharmacological knowledge, which will be supported by online resources provided via Moodle to prepare for practical sessions, facilitated discussions and small group tutorials. This site will also provide opportunities to test your understanding of the taught concepts through quizzes, exemplar short answer questions and worked drug calculations. Sessions will include the use of technology such as polling software that will test your understanding of concepts and allow for real time feedback to allow your skillset to be enhanced.</p> <p>Practical sessions will be tailored to develop experimental skills and data handling & manipulation skills. Facilitated discussions will focus on a particular aspect of the application of pharmacological</p>	

knowledge to contemporary issues impacting the pharmaceutical industry. Tutorials will develop numerical skills through worked examples of case studies examining drug pharmacokinetics.

Active and informed participation through pre- & post-sessional work will be an integral component of the module. Such engagement will allow for the development of learning communities to enhance the learning experience of you and your peers.

To achieve the required 20 credits for this module, you will need to dedicate at least 200 hours studying the module material. For this module, the time is broken down in an approximately 75:125 ratio (directed:self-directed). The scheduled learning activities will include lectures, tutorials, practical sessions and facilitated discussions

Assessment Strategy

The written assignment task, a laboratory report (30% of module weight) will allow you to develop analytical, research and time management skills. The end of module exam (70% of module weight) will be based on the material covered in the lectures, practical classes and tutorials. Self-directed study using the supporting online resources will provide the opportunity to effectively prepare for this examination.

References

- 1) <http://www.imshealth.com/files/web/Corporate/News/Top-Line%20Market%20Data/2014/World%20figures%202014.pdf>
- 2) EFPIA (2014) The Pharmaceutical Industry in figures. <http://www.efpia.eu/mediaroom/177/44/The-Pharmaceutical-Industry-in-figures-Edition-2014>

6	Indicative Content
	Pharmacodynamics 1 Quantitative receptor binding lab Pharmacodynamics 2 Flow cytometry lab Journal club: Pharmacodynamics Pharmacodynamics 3: excitability Virtual lab on ion channels Pharmacokinetics 1: absorption and distribution Pharmacokinetics 2: metabolism and elimination Pharmacokinetics: Quantitative workshop Pharmacokinetics 3: Pharmacokinetic models Journal club: Pharmacokinetic modelling Agonist and antagonist worm intestine practical Methods and measurement Preclinical testing of drugs Drug design and development Clinical trials Journal club: Randomised trial Personalised medicine, pharmacogenetics and pharmacogenomics

7		Module Learning Outcomes On successful completion of the module, students will be able to:
	1	Perform experimental procedures in basic pharmacology, collate data, interpret results and write scientific reports.
	2	Demonstrates an awareness of basic concepts of pharmacodynamics and an ability to apply these to therapeutic approaches.
	3	Illustrate, for a variety of drugs, how pharmacokinetics determines their clinical action and dosage.
	4	Outline and critically appraise the key stages in the drug development.

8		Module Assessment		
Learning Outcome		Coursework	Exam	In-Person
1		X		
2,3,4			X	

9		Breakdown Learning and Teaching Activities	
Learning Activities		Hours	
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable		50	
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE		25	
Private Study (PS) includes preparation for exams		125	
Total Study Hours:		200	