Module Specification

Module Title	Drug Design			Module Code	BMD358
Credit Value	15	Level	6	Mode of Delivery	On campus	Semester 2
Module Organiser	Dr Rayomond Khambata and Dr Peter McCormick				

Pre-requisite modules	Co-requisite modules	Overlapping modules

1) Content Description

Provide a description of the module, as it will appear in the Module Directory and on the Student Information System (approx. 70-80 words).

Students will be given a perspective on the history of drug discovery to the present challenges in drug design. The medicinal chemistry content will provide students with an understanding of the complex biological and chemical problems that are involved in the design and synthesis of novel therapeutic agents. They will be given an in-depth analysis of the principles of identifying new compounds with the potential to be drugs, and their development for therapeutic use. Students will also be given an understanding of preclinical testing of drugs including the use of animal models for safety testing, intra and inter-species variations, detecting carcinogenicity in experimental systems and man, strategies of new initiatives in pharmaceutical development and risk assessment of pharmaceuticals.

Introductory lectures will be followed by lectures in specialized areas of the subject given by experts in their field. In addition to formal lectures and interactive seminars, the course will provide tutorials with opportunities to critically-evaluate research papers. We will offer workshop sessions to reinforce the lectures.

2) Module Aims

Specify the aims of the module, i.e. the broad educational purposes for offering this module.

This module will aim to provide the critical knowledge and understanding of the principles and concepts that are involved in the design of novel drugs.
To provide understanding of drug categories such as small molecules and biologics, gene therapy and drug screening technologies.
To provide understanding into rational drug design strategies including target identification and validation.
Students will also be exposed to transgenic model approaches to drug discovery.

3) Learning Outcomes

Identify the learning outcomes for this module, i.e. knowledge, skills and attributes to be developed through completion of this module. Outcomes should be referenced to the relevant QAA benchmark statements and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008). The SEEC Credit Level Descriptors for Further and Higher Education 2003 and Queen Mary Statement of Graduate Attributes should also be used as a guiding framework for curriculum design.

Academic Content:

A 1	Gain a critical understanding into how pharmaceutical industry develops new drugs, drug screening technologies
A 2	Evaluate the nature of drug targets for both classical and biological agents.
A 3	Analysis of the methods for drug target discovery and validation: drug targets and their assessment of efficacy in the laboratory and in the clinic
A4	Critique the role of pharmacogenetics in drug discovery and development and the use of animals in drug discovery and development
A5	Evaluate and discuss drug-receptor interactions and the analysis and interpretation of those interactions

Disciplinary skills - able to:	
B 1	Apply pharmacology knowledge and principles together with problem solving skills in a wide range of theoritical and practical situations.
B 2	Prepare scientific/technical reports
B3	Critically evaluate scientific data including the methodology by which they were obtained, statistical analysis used and evaluate and interpret the results of controlled experiments.
B4	Communicate to a variety of audiences using a range of formats and appropriate scientific language including appropriate acknowledgement of sources and avoiding plagiarism.

Attributes:	
C1	Identify study goals and perform in a manner appropriate to achieving those goals.
C2	Evaluate individual performance.
C3	Recognise and respect the views and opinions of others.
C4	Able to participate constructively as a member of a group/team, with skills to influence, negotiate and lead.
C5	Demonstrate skills for self-managed and lifelong learning, including working independently, adaptive working, time management, organisation and motivational skills.
C6	Communicate effectively by written and verbal means.
C7	Use information for evidence-based decision-making and creative thinking.
C8	Awareness of the role and impact of science in society, including the global perspective.

4) Reading List

Provide an indicative reading list for the module. This should include key texts and/or journals but should not be an exhaustive list of materials.

Principles of early drug discovery. Hughes et al 2011, Br J Pharmacol 162, 1239-49

Textbook of drug design and discovery, Fourth Edition, Edited by Povl Krogsgaard-Larsen, Kristian Stromgaard and Ulf Madsen, CRC Press

Teaching and Learning Profile

Provide details of the method of delivery (lectures, seminars, fieldwork, practical classes, etc.) used to enable the achievement of learning outcomes and an indicative number of hours for each activity to give an overall picture of the workload a student taking the module would be expected to undertake. This information will form the Key Information Set for each undergraduate programme and will be used to populate the KIS widget found on the QMUL programme information pages. More information can be found online about KIS. You may also wish to refer to the QAA guidance on contact hours when completing this section.

Activity Type	KIS Category	Time Spent (in hours)
Practical Classes and workshops	Scheduled	8
Lecture	Scheduled	20
Tutorial	Scheduled	4
Guided Independent Study	Scheduled	118
	Total	150

Specify the total module notional study hours. This should be a total of the hours given for each activity. The notional study hours for each academic credit point is 10. A 15 credit point module therefore represents 150 notional study hours.

Activity Type	Total Time Spent (in hours)	Percentage of Time Spent
Scheduled learning and teaching	32	21
Work-based learning	0	0
Independent Study	118	79
Total	150	100

Use the information provided in the box above to specify the total time spent and the percentage time spent in each category of teaching and learning activity.

Assessment Profile

Provide details of the assessment methods used to assess the achievement of learning outcomes.

Description of Assessment	Assessment Type	KIS Category	Duration / Length	Percentage Weighting	Final element of assessment?	Qualifying Mark
Coursework	Essay	Coursework		30%	No	
Coursework	Oral presentation	Coursework	15 mins	20%	No	
Examination	Written Exam	Written	3 hours	50%	Yes	

Qualifying mark: A specified minimum mark that must be obtained in one or more elements of assessment in order to pass a module. This is in addition to, and distinct from, the requirement to achieve a pass in the module mark to pass the module.

Reassessment

Provide details of the reassessment methods used, specifying whether reassessment is either standard reassessment or synoptic reassessment.

○ Standard Reassessment ◉ Synoptic Reassessment

Synoptic reassessment details (if you have indicated synoptic reassessment above, please give details)		
Brief Description of Assessment	Assessment Type	Duration / Length of Examination / Coursework
Resit Exam	Written Exam	3 hours