Liverpool John Moores University

Title:	DRUG DESIGN AND DISCOVERY
Status:	Definitive
Code:	**6000MCPHAR** (113328)
Version Start Date:	01-08-2011
Owning School/Faculty:	Pharmacy & Biomolecular Sciences
Teaching School/Faculty:	Pharmacy & Biomolecular Sciences

Team	Leader
Fyaz Ismail	Y
Mark Wainwright	
Raymond Fox	
Mark Cronin	
Christopher Rostron	

Academic Level:	FHEQ6	**Credit Value:**	12.00	**Total Delivered Hours:**	26.00
Total Learning Hours:	120	**Private Study:**	94		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	20.000
Workshop	4.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	100.0	2.00

Aims

To impart an understanding of modern approaches to the identification and structural optimisation of compounds with potential as drug substances.

Learning Outcomes

After completing the module the student should be able to:

1 comprehend the interaction of drug molecules with drug target sites.
2 identify molecular features capable of controlling pharmacokinetic and pharmacodynamic properties.
3 Describe instances of ab initio design of drug structures.
4 Suggest processes for the optimisation of drug molecules.
5 Utilise the research literature and on-line databases to obtain information about the development of specific drugs.
6 Appreciate aspects of current anti-imflammatory research
7 Appreciate aspects of current anti-microbial drug discovery and development.
8 Appreciate aspects of current anti-malarial drug discovery and development.
9 Understand the replicative life cycle of pathogens and utilise unique pathways within them for selective drug targeting.

Learning Outcomes of Assessments

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

Exam long ans q 3 from 5	1	2	3	4	5	6	7	8	9

Outline Syllabus

The syllabus will be determined by current practice as represented in the research literature. The material discussed will consequently vary to reflect recent developments. Core material concerning drug discovery and structural design will normally be presented with variation in the examples cited as appropriate. Additional material may vary considerably depending on current research interest and expertise. Student presentation of material from the literature will form a significant component of the delivery. The following syllabus may be taken as representative. Molecular modelling and computation visualisation of molecules; computational chemistry and its role in drug discovery and optimisation; computer-aided drug design; Lipinski rule of 5; docking; database searching; 3D-QSAR. Development of NSAIDs with improved properties. Aspects of anti-inflammatory research. Antimalarial Drugs in current use: The use of the life cycle to target drugs. quinolines & peroxides in current clinical use. Experimental drugs. Antimalarial drug targets. Haem catabolism as a unique drug target. Development of new antimalarial drug prototypes. Nitric Oxide (NO) pharmaceuticals: classes of drugs being developed from this type of work. There are constant headlines concerning problems caused by increases in drug-resistant bacteria. Many more people are dying in our hospitals now due to bacterial and fungal infections, and there seems to be few alternative drugs available for their treatment. How are new anti-bacterials and anti-fungals being developed? What is involved in the drug development process? What are the prospects for the control of microbial disease in the 21st century?

Learning Activities

Lectures, seminars, evaluation workshops, literature searching.

References

Course Material	Book
Author	Journals recommended
Publishing Year	0
Title	Journal of Medicinal Chemistry, European Journal of Medicinal Chemistry, Journal of Natural Products, Phytochemistry.
Subtitle	
Edition	
Publisher	
ISBN	

Notes

Current topics involving chemistry in the discovery and development of drugs will be presented and discussed. Introductory material will be delivered by lectures. Subsequent material will be presented by students-centred workshop sessions which will involve the use of research sources. For instance,
reviews and original papers taken from:
Journals recommended 'Journal of Medicinal Chemistry, European Journal of Medicinal Chemistry, Journal of Natural Products, Phytochemistry.'