Liverpool John Moores University

Title:	PHARMACEUTICAL CHEMISTRY
Status:	Definitive
Code:	**4000MCPHAR** (113310)
Version Start Date:	01-08-2014
Owning School/Faculty:	Pharmacy & Biomolecular Sciences
Teaching School/Faculty:	Pharmacy & Biomolecular Sciences

Team	Leader
Melissa Russell	Y
Linda Seton	
Fyaz Ismail	
Raymond Fox	
Mark Cronin	
Gillian Hutcheon	
Barry Nicholls	
Ian Bradshaw	
Judith Madden	
Christopher Rostron	

Academic Level:	FHEQ4	**Credit Value:**	24.00	**Total Delivered Hours:**	95.00
Total Learning Hours:	240	**Private Study:**	145		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	56.000
Practical	30.000
Workshop	6.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	1 x 3 hours	70.0	3.00
Report	AS2	Practical reports	15.0	
Test	AS3	Test	15.0	

Aims

To further emphasise those chemical properties which are significant with respect to the involvement of drugs in both biochemical transformations and the interactions between drugs and body chemistry. To develop further in the student an ability to gather, evaluate and communicate scientific information. To facilitate the application of information presented in this module to the solution of practice-based problems

Learning Outcomes

After completing the module the student should be able to:

1	demonstrate a basic knowledge of functional group chemistry as applied to pharmaceutical and biochemical molecules and also describe the fundamental chemical mechanisms involved in interactions between drugs and body chemistry.
2	explain the principles underlying a variety of analytical processes in common pharmaceutical usage and describe the basic structures and functions of any instrumentation employed in the application of these analytical processes.
3	interpret qualitative and quantitative data obtained by application of these processes to specific analytical situations and describe the limitations of these analytical processes.
4	demonstrate a basic knowledge of heterocyclic chemistry as applied to pharmaceutical and biochemical molecules.
5	explain the essential similarities between chemical and biochemical transformations and demonstrate a basic knowledge of the properties of biologically significant molecules.
6	demonstrate an ability to gather, evaluate and communicate information relevant to the module and apply this information to the solution of practice-based problems.

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5	6
Practical Reports	1	3	4	5		
Test	1	2	3	5		

Outline Syllabus

Review of general mechanistic chemistry including inductive and mesomeric effects, acidity and basicity, nucleophilic and electrophilic substitution, addition, elimination, free radical reactions, structural and stereoisomerism.
Review of functional group chemistry with particular reference to biologically and pharmaceutically significant molecules.
Qualitative and quantitative methods as applied to pharmaceutical quality control processes. Methods covered include volumetric analysis, simple instrumental

analysis, functional group analysis, spectral interpretation and limit tests.
Review of heterocyclic chemistry with particular reference to biologically and pharmaceutically significant molecules.
Nomenclature, structure, properties and analysis of the following groups of biologically significant molecules: carbohydrates, lipids, amino-acids and proteins, steroids, nucleic acids.

Learning Activities

Lectures. Practical exercises and associated report writing. Computer-assisted learning and assessment. Problem solving tutorials. Directed reading.

References

Course Material	Book
Author	McMurry, J.
Publishing Year	2007
Title	Fundamentals of Organic Chemistry
Subtitle	
Edition	5th
Publisher	Thomson Brooks Cole
ISBN	0495125903

Course Material	Book
Author	Brown, W.H.
Publishing Year	1987
Title	Introduction to Organic and Biochemistry
Subtitle	
Edition	4th
Publisher	Brooks Cole
ISBN	0-534-07386-7

Course Material	Book
Author	Gilchrist, T.L.
Publishing Year	1997
Title	Heterocyclic Chemistry
Subtitle	
Edition	
Publisher	Longman
ISBN	0582278432

Course Material	Book
Author	Murray, RK et al
Publishing Year	2006
Title	Harper's Illustrated Biochemistry
Subtitle	
Edition	27th

Publisher	Lange McGraw Hill
ISBN	0071461973

Course Material	Book
Author	Montgomery et al
Publishing Year	1990
Title	Biochemistry - A Case Orientated Approach
Subtitle	
Edition	5th
Publisher	C.V. Mosby
ISBN	0-8385-3649-7

Course Material	Book
Author	Sykes, P.
Publishing Year	1995
Title	Primer to Mechansm in Organic Chemistry
Subtitle	
Edition	
Publisher	Longman
ISBN	0-582-26644-0

Course Material	Book
Author	Beckett, A.H. and Stenlake, J.B.
Publishing Year	1988
Title	Practical Pharmaceutical Chemistry
Subtitle	
Edition	4th
Publisher	Athlone
ISBN	0-485-11323-6

Course Material	Book
Author	Cairns, D.
Publishing Year	2008
Title	Essentials of Pharmaceutical Chemistry
Subtitle	
Edition	
Publisher	Pharmaceutical Press
ISBN	0853697450

Course Material	Book
Author	Watson, D.G.,
Publishing Year	2005
Title	Pharmaceutical Analysis
Subtitle	A Textbook for Pharmacy Students and Pharmaceutical Chemists
Edition	
Publisher	Elseveir Churchill Livingstone

ISBN	0443074453

Notes

This module provides an overview of functional group and analytical chemistry, the chemistry of biologically important molecules and heterocyclic chemistry, with particular emphasis on those aspects which are significant with respect to the properties of drugs and their actions in the body