Liverpool John Moores University

Title:	Pharmaceutical Chemistry
Status:	Definitive
Code:	**4000MCACAP** (117490)
Version Start Date:	01-08-2012
Owning School/Faculty:	Pharmacy & Biomolecular Sciences
Teaching School/Faculty:	Pharmacy & Biomolecular Sciences

Team	Leader
Melissa Russell	Y
Steve Enoch	
Linda Seton	
Fyaz Ismail	
Mark Cronin	
Barry Nicholls	
Ian Bradshaw	

Academic Level:	FHEQ4	**Credit Value:**	36.00	**Total Delivered Hours:**	100.00
Total Learning Hours:	360	**Private Study:**	260		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	56.000
Practical	30.000
Tutorial	5.000
Workshop	6.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	ASS1	Section A - MCQ, section B - 4 from 6 questions	70.0	3.00
Test	ASS2	End of Semester 1 Test	15.0	
Report	ASS3	Extended Laboratory Report in Semester 2	15.0	

Aims

To 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 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:

LO1	Demonstrate a basic knowledge of functional group chemistry as applied to pharmaceutical and bochemical molecules, and describe the fundamental chemical mechanisms involved in interactions between drugs and body chemistry
LO2	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 processes.
LO3	Interpret qualitative and quantitative data obtained in specific analytical situations and describe the limitations of these analytical processes.
LO4	Demonstrate a basic knowledge of heterocyclic chemistry as applied to pharmaceutical and biochemical molecules.
LO5	Explain the essential similarities between chemical and biochemical transformations and demonstrate a basic knowledge of the properties of biologically significant molecules.
LO6	Demonstrate an ability to gather, evaluate and communicate information relevant to the module and apply that information to the solution of practice-based problems.

Learning Outcomes of Assessments

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

Closed Book Examination	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
End of Semester Test	LO 1	LO 2	LO 3	LO 6		
Extended Laboratory Report	LO 1	LO 2	LO 3	LO 5	LO 6	

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 important molecules.
Nomenclature, structure, proerties 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 workshops, directed reading.

References

Course Material	Book
Author	J. McMurry
Publishing Year	2010
Title	Fundamentals of Organic Chemistry
Subtitle	
Edition	International
Publisher	Delmar Learning
ISBN	1-439-04973-4

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

Course Material	Book
Author	T.L.Gilchrist
Publishing Year	1997
Title	Heterocyclic chemistry
Subtitle	
Edition	3rd
Publisher	Pitman
ISBN	0-582-27843-0

Course Material	Book
Author	Martin et al
Publishing Year	1991

Title	Harper's Review of Biochemistry
Subtitle	
Edition	26th
Publisher	Lange
ISBN	0-8385-3648-4

Course Material	Book
Author	Montgomery et al
Publishing Year	1990
Title	Biochemistry - a case oriented approach
Subtitle	
Edition	5th
Publisher	C V Mosby
ISBN	0-8385-3649-7

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

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

Course Material	Book
Author	D Cairns
Publishing Year	2003
Title	Essentials of Pharmaceutical Chemistry
Subtitle	
Edition	2nd
Publisher	Pharmaceutical Press
ISBN	0-85369-570-9

Course Material	Book
Author	D G Watson
Publishing Year	1999
Title	Pharmaceutical Analysis
Subtitle	A textbook for pharmacy students and pharmaceutical

	chemists
Edition	
Publisher	Churchill Livingstone
ISBN	0-443-05986-1

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 proerties of drugs and their actions within the body.