

## Liverpool John Moores University

Title: CHEMISTRY FOR BIOMOLECULAR SCIENCE  
Status: Definitive  
Code: **4003GNBMOL** (101556)  
Version Start Date: 01-08-2011

Owning School/Faculty: Pharmacy & Biomolecular Sciences  
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
Amanda Reid	Y
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**Academic Level:** FHEQ4      **Credit Value:** 12.00      **Total Delivered Hours:** 37.00  
**Total Learning Hours:** 120      **Private Study:** 83

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	36.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Coursework	40.0	
Exam	AS2	Exam - Multiple choice & short answer questions	60.0	1.00

### Aims

*To provide core material in chemistry sufficient to allow study and understanding of related modules offered within some of the programmes in the School of Pharmacy and Biomolecular Sciences.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate a basic knowledge of atomic and molecular structure and biological macromolecular structures, with particular emphasis on bonding found within macromolecules.
- 2 Describe the properties of important functional groups in biochemical reactions and recognise how stereochemistry is important in these reactions.
- 3 Apply the laws of basic thermodynamics and kinetics and be able to describe reactions important in biochemistry.

### Learning Outcomes of Assessments

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

CW	1	2	3
EXAM	1	2	3

### Outline Syllabus

*Atomic & molecular structure, electronegativity, intermolecular attractions - hydrogen bonding, van der Waals forces, the hydrophobic effect.*

*Organic functional groups (amines, alcohols, thiols, carboxyl, aldehydes, esters, ethers, delocalised electrons, aromatics). Nucleophiles & electrophiles.*

*Biological chemistry (structure of carbohydrates, lipids, nucleic acids and proteins)*

*Stereochemistry, isomers, anomers, different structural representations (eg monosaccharides linear, cyclic)*

*Basic thermodynamics & kinetics - exo & endothermic reactions, rates of reaction, activation energy, catalysts.*

*Reactions - oxidation/reduction, hydrolysis/condensation, group addition/elimination.*

### Learning Activities

This module is heavily lecture orientated, however, worksheets will be provided for each of the topics.

### References

<b>Course Material</b>	Book
<b>Author</b>	Timberlake, K.C.
<b>Publishing Year</b>	2007
<b>Title</b>	Chemistry: An introduction to General, Organic & Biological Chemistry
<b>Subtitle</b>	
<b>Edition</b>	9th

<b>Publisher</b>	Pearson Benjamin Cummings
<b>ISBN</b>	0805377565

<b>Course Material</b>	Book
<b>Author</b>	Timberlake, K.C.
<b>Publishing Year</b>	2009
<b>Title</b>	General, Organic & Biological Chemistry
<b>Subtitle</b>	
<b>Edition</b>	3rd
<b>Publisher</b>	
<b>ISBN</b>	0135079373

<b>Course Material</b>	Book
<b>Author</b>	Crowe, J., Bradshaw, T. & Monk,P.
<b>Publishing Year</b>	2006
<b>Title</b>	Chemistry for the Biosciences
<b>Subtitle</b>	The Essential Concepts
<b>Edition</b>	1st
<b>Publisher</b>	Oxford University Press
<b>ISBN</b>	0199280975

<b>Course Material</b>	Book
<b>Author</b>	Lewis, R. & Evans, W.
<b>Publishing Year</b>	2006
<b>Title</b>	Chemistry
<b>Subtitle</b>	
<b>Edition</b>	3rd
<b>Publisher</b>	Palgrave
<b>ISBN</b>	0230000117

<b>Course Material</b>	Book
<b>Author</b>	McMurry, J.
<b>Publishing Year</b>	2007
<b>Title</b>	Organic Chemistry
<b>Subtitle</b>	A Biological Approach
<b>Edition</b>	1st
<b>Publisher</b>	Thomson Brook/Cole
<b>ISBN</b>	0495111276

<b>Course Material</b>	Book
<b>Author</b>	Dewick, P.M.
<b>Publishing Year</b>	2006
<b>Title</b>	Essentials of Organic Chemistry
<b>Subtitle</b>	For Students of Pharmacy, Medicinal Chemistry & Biological Chemistry
<b>Edition</b>	1st
<b>Publisher</b>	Wiley

<b>ISBN</b>	0470016663
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<b>Course Material</b>	Book
<b>Author</b>	Vollhardt, K.P.C.
<b>Publishing Year</b>	2007
<b>Title</b>	Organic Chemistry
<b>Subtitle</b>	Structure & Function
<b>Edition</b>	5th
<b>Publisher</b>	W.H. Freeman
<b>ISBN</b>	0716772353

<b>Course Material</b>	Book
<b>Author</b>	Hein, M.
<b>Publishing Year</b>	2009
<b>Title</b>	Introduction to General, Organic & Biochemistry
<b>Subtitle</b>	
<b>Edition</b>	9th
<b>Publisher</b>	Wiley
<b>ISBN</b>	0470129255

<b>Course Material</b>	Book
<b>Author</b>	Cambell, M.K. & Farrell, S.O.
<b>Publishing Year</b>	2008
<b>Title</b>	Biochemistry
<b>Subtitle</b>	
<b>Edition</b>	6th
<b>Publisher</b>	Brooks/Cole
<b>ISBN</b>	0495390461

<b>Course Material</b>	Book
<b>Author</b>	Branden, C. & Tooze, J.
<b>Publishing Year</b>	1999
<b>Title</b>	Introduction to Protein Structure
<b>Subtitle</b>	
<b>Edition</b>	2nd
<b>Publisher</b>	Garland
<b>ISBN</b>	0815323050

<b>Course Material</b>	Book
<b>Author</b>	Petsko, G.A. & Ringe, D.
<b>Publishing Year</b>	2003
<b>Title</b>	Protein Structure & Function
<b>Subtitle</b>	
<b>Edition</b>	1st
<b>Publisher</b>	Blackwell
<b>ISBN</b>	1405119225

## Notes

This module aims to provide core material in chemistry sufficient to allow study and understanding of related modules offered within some of the programmes in the School of Pharmacy & Biomolecular Sciences.