

Liverpool John Moores University

Title: Intermediate Chemistry
Status: Definitive
Code: **5050CHACAP** (118940)
Version Start Date: 01-08-2012

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

Team	Leader
Ian Bradshaw	Y

Academic Level: FHEQ5 **Credit Value:** 24.00 **Total Delivered Hours:** 57.00

Total Learning Hours: 240 **Private Study:** 183

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	30.000
Practical	16.000
Workshop	8.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	exam		60.0	3.00
Practice	Prac		20.0	
Essay	Essay		20.0	

Aims

To develop knowledge and applications of chemistry to BSc (Hons.) level 5

Learning Outcomes

After completing the module the student should be able to:

- 1 Derive and formulate thermodynamic quantities and formulations
- 10 Identify the composition and properties of food, and the chemical changes that food undergoes during handling, processing and storage and evaluate the role of water and its influence on the stability of food component
- 2 Predict the phase transformation of matter which is governed by factors such as temperature, pressure and composition of the matter and explore how the chemical potential of a substance is used to describe the physical properties of a mixture.
- 3 Evaluate the behaviour of ionic solutions and reactions involved solid-liquid interfaces using the concepts of thermodynamics
- 4 Describe the nature of the chemical bonding on a theoretical basis, and analyse the structural, magnetic, reactivity and spectral properties of complexes.
- 5 Select and employ instrumental techniques to characterize complexes and propose mechanistic pathways for reactions of metal complexes, and interpret experimental data on reaction kinetics.
- 6 Acquire the necessary knowledge to appreciate and evaluate the importance of transition metal compounds in practical applications
- 7 Apply the spectroscopic techniques (UV, IR, NMR, MS) in the structure elucidation of organic compounds
- 8 Describe the chemical reaction mechanisms of aromatic compounds and apply the retro-synthetic analysis in solving the organic synthesis problems
- 9 Interpret the scientific principles behind various industrial processes.

Learning Outcomes of Assessments

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

Closed book examination	2	4	7	8	10
Practical	3	5	6		
Assignment	1	9			

Outline Syllabus

The module provides the students with the foundation of the thermodynamics of ideal and non-ideal solutions, phase equilibria and transformations of matter. The treatment of electrolyte solutions is used as a basis for the general appreciation of the principles of electrochemistry.

The module also covers a broad knowledge of the properties of transition elements and their compounds as well as the study of bioinorganic chemistry. Discussion will involve isomerism, ligands and bonding, synthesis and separation, and catalysis.

The module introduces the use of molecular spectroscopy to elucidate the structure of organic molecules. As a foundation for studying organic synthesis, the formation of carbon-carbon bonds is discussed together with the chemistry of aromatic compounds.

The module is designed to make the students aware of the origins and methods of manufacture of many of the chemicals encountered in daily life. Topics discussed

are selected from oils and fats chemistry and technology, agrochemistry, dyes and pigments chemistry, food chemistry and natural products. Examples will be given of how beneficial effects are often associated with undesirable properties.

Learning Activities

Lectures, practicals and workshops

References

Course Material	Book
Author	Atkins PW
Publishing Year	2006
Title	Physical Chemistry
Subtitle	
Edition	8th
Publisher	McGraw Hill
ISBN	

Course Material	Book
Author	Shriver DF & Atkins PW
Publishing Year	2006
Title	Inorganic Chemistry
Subtitle	
Edition	4th
Publisher	Oxford University Press
ISBN	

Course Material	Book
Author	
Publishing Year	2005
Title	Organic Chemistry
Subtitle	
Edition	5th
Publisher	Pearson
ISBN	

Course Material	Book
Author	
Publishing Year	2003
Title	Industrial Organic Chemistry
Subtitle	
Edition	4th
Publisher	Wiley

ISBN	
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Notes

Intermediate Chemistry course