Liverpool John Moores University

Title:	Chemical life processes
Status:	Definitive
Code:	**4005BCBMOL** (117138)
Version Start Date:	01-08-2014
Owning School/Faculty:	Pharmacy & Biomolecular Sciences
Teaching School/Faculty:	Pharmacy & Biomolecular Sciences

Team	Leader
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Academic Level:	FHEQ4	**Credit Value:**	24.00	**Total Delivered Hours:**	63.00
Total Learning Hours:	240	**Private Study:**	177		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	48.000
Practical	3.000
Workshop	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Prac	practical report	30.0	
Test	On-line	online test	20.0	
Exam	Exam	Exam	50.0	

Aims

The aim of this course is to provide an education in the metabolic chemical

processes which occur in the cell under both normal and stressed conditions. This will be underpinned by a through introduction into relevant biological chemical structures.

Learning Outcomes

After completing the module the student should be able to:

LO1	Demonstrate detailed knowledge of the molecular structure and chemical properties of biological molecules.
LO2	Explain the major metabolic pathways of cellular metabolism.
LO3	Identify the inter-relationships and links between the various metabolic pathways in health and disease.
LO4	Analyse and present basic biochemical data in the form of a practical report

Learning Outcomes of Assessments

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

Practical	LO 4	
test	LO 1	
exam	LO 2	LO 3

Outline Syllabus

The initial focus of this course will be to focus on the fundamental groups, structures and chemical reactions found in biochemistry.

Structures such as carbohydrates, lipids and the functional groups of amino acids will be covered.

A brief introduction to relevant thermodynamics will also be made.

Building upon this knowledge of fundamental groups and chemical reactions, students will then be introduced to cellular energy metabolism:

Gylcolysis and gluconeogenesis, glycogen metabolism, the citric acid cycle, oxidative phosphorylation, the Calvin cycle, fatty acid metabolism, amino acid catabolism, TCA cycle, respiration, clinical and commercial implications of these pathways.

Learning Activities

This course will consist of lectures, practicals and workshops. The workshops will be made as interactive as possible, and will give interactive feedback on the on-line course work, introduce the practical and aid exam preparation. The practicals will develop laboratory skills and re-inforce taught material.

References

Course Material	Book
Author	Stryer, L
Publishing Year	2007
Title	Biochemistry
Subtitle	
Edition	6
Publisher	WH Freeman
ISBN	

Course Material	Book
Author	Lehninger, AL
Publishing Year	2008
Title	Lehningers's Principles of Biochemistry
Subtitle	
Edition	5
Publisher	WH Freeman
ISBN	9781429208925

Course Material	Book
Author	Timberlake KC
Publishing Year	2009
Title	Chemistry:an introduction to general, organic and biological chemistry
Subtitle	
Edition	10
Publisher	Pearson Prentice Hall
ISBN	9780135025987

Course Material	Book
Author	Timberlake KC
Publishing Year	2010
Title	General, organic and biological chemistry
Subtitle	
Edition	3
Publisher	Prentice Hall
ISBN	9780135079379

Course Material	Book
Author	McMurry J
Publishing Year	2007

Title	Organic chemistry:a biological approach
Subtitle	
Edition	
Publisher	Thomson Brooks/Cole
ISBN	9780495111276

Notes

The aim of this course is to provide an education in the metabolic chemical processes which occur in the cell under both normal and stressed conditions. This will be underpinned by a through introduction into relevant biological chemical structures.

In the first semester an on-line MCQ sessions will be made available to students to test their knowledge on chemical structures and reactions relevant to biochemistry. This sessions will be done in the student's own time and will be open book. After a defined closing date for the session, feedback will be given in-class to addresses common areas on which the students underperformed.

Each student will also do one three hour practical which will consider enzyme kinetics. An interactive lecture session will be held before the start of the lab sessions to allow the students to explore the design of the practical. During this session students will be directed to investigate enzyme kinetics for themselves through the use of directed reading. Knowledge and comprehension questions will accompany a through write-up of the practical. This may include things like being asked to plot the provided data. These data will be derived from competitive/non-competitive inhibition studies and they will then be asked questions relating to the data. The students will also be given a workshop to feedback to them on their practical write-ups.