



Philadelphia University

Faculty of Science

Department of Biotechnology and Genetic Engineering

Second Semester, 2009/2010

Course Syllabus

Course Title: Biochemistry I	Course code: 240343
Course Level: 3 ^{ed} year	Course prerequisite (s) and/or corequisite (s): Organic Chemistry (212243) and Cell Biology (240233)
Lecture Time: 11:10-12:00 (S, Tu and Th)	Credit hours: Three

Academic Staff Specifics

Name	Rank	Office Number	Office Hours	E-mail Address
Dr. Sameer Masoud	Associate Professor	S817	10-11 (S, Tu, Th) 11:15-1:00 (M, W)	smasoud@philadelphia.edu.jo

Course module description:

This module is required for all students in the major "Biotechnology and Genetic Engineering". It is a 300 level and will be taught to third year biotechnology students.

Course module objectives:

This will enable the students to understand how the living cell works at the molecular level. How the cell degrades and synthesizes its molecules as well as the link and regulation between the different molecules.

Course/ module components

- **Text Book:** Title: Biochemistry, Author(s)/Editor(s): Campbell and Farrell, 2008, Publisher: Thompson, Sixth Edition

Teaching methods:

Each week three lectures (3 X 50-minutes). Student questions and student participation in discussions are encouraged.

Learning outcomes:

- Knowledge and understanding of the basic principles in biochemistry including solvents and buffers of biochemical reactions, the chemical composition of the cell (carbohydrates, proteins, lipids and nucleic acids), the metabolic reactions of the carbohydrates, proteins, lipids and nucleic acids with some practical connections to every day life.
- Gain thinking and analysis skills in biochemistry of simple text book experiments. This should be useful to utilize in other modules and after graduation and future career.
- Communication skills well be developed by encouraging student participation in discussion and asking questions.

Assessment instruments

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
First examination	20 %
Second examination	20 %
Final examination: 50 marks	50 %
Quizzes and Home works	10 %
Total	100 %

Expected workload:

On average students need to spend 6 hours of study and preparation each week.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of Faculty of Science shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Course/module academic calendar

week	Basic and support material to be covered	Text book reading (Chapter number)
(1)	Water, electrolytes, acid base balance and buffers	2
(2)	Amino acids and peptides	3
(3)	Enzymes: catalysis, types, function and inhibition	6
(4)	Lipids: definition, chemical nature, function	8
(5)	Nucleic acids: nucleotides, DNA, RNA	9
(6)	Continue previous subjects and * First Examination	
(7)	Carbohydrates: monosaccharides, disaccharides, polysaccharides and glycoproteins	16
(8)	Glycolysis: reactions and energy produced Storage mechanisms and control; glycogen, gluconeogenesis, penose pathway	17
(9)	Citric acid cycle	19
(10)	Electron transport and oxidative phosphorylation	20
(11)	Lipid anabolism: catabolism, ketone bodies, beta-oxidation Cholesterol, sphigolipids, degradation and synthesis	21
(12)	Continue previous subjects and * Second Examination	
(13)	Metabolism of amino acids: synthesis and degradation, essential and nonessential amino acids	23
(14)	Purines and Pyrimidines: synthesis and degradation	23
(15)	Integration of metabolism	24
(16)	* Final Examination	

Module references

Other Books: Several excellent Biochemistry books are also available in the university library under the Call Number (572), for example

Title: Lippincott Illustrated Biochemistry
 Author(s)/Editor(s): Champe PC, Harvy R, and Farrier D, 2005
 Publisher: Lippincott Willioams
 ISBN: 0534 40521-5

Journals: Scientific journal in the subject biochemistry are numerous in number but many are more advance than the course level. Students are encouraged searching for such journals in the internet.

Website: Several animations in biochemistry are available in the internet for example:

Biology Animations: Movies & Interactive Tutorial Links
<http://science.nhmccd.edu/BioL/bio1int.htm#protein>