



Philadelphia University
Faculty of Science
Department of Biotechnology and Genetic Engineering
First semester, academic year (2011/2012)

Course syllabus

Course title: Biochemistry I	Course code: 240343
Course level: Third Year	Course prerequisite (s) and/or corequisite (s): Organic Chemistry (212243) and Cell Biology (240233)
Lecture time: 11:10-12:00	Credit hours: Three

Academic Staff Specifics

Name	Rank	Office #	Office hours	E-mail address
Dr. Sameer	Associate	S817	10-11 (S, Tu, Th)	smasoud@philadelphia.edu.jo
Masoud	Professor		12-13 (M, W)	

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 will be developed by encouraging student participation in discussion and asking questions.

<u>Allocation of Marks</u>	
First examination	20%
Second examination	20%

Final examination:	40%
Quizzes and homework	20%
Total	100%

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, pentose 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	

Expected workload: On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

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 the relevant college/faculty 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.

Other References: 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, Harvey R, and Farrier D, 2005, Publisher: Lippincott Willioams.

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>)