



Course Syllabus: Introductory Biochemistry - B 101

Division	Biological and Environmental Sciences & Engineering Division
Course Number	B 101
Course Title	Introductory Biochemistry
Academic Semester	Spring
Academic Year	2017/2018
Semester Start Date	01/28/2018
Semester End Date	05/24/2018
Class Schedule (Days & Time)	09:30 AM - 11:00 AM Mon Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Michael Florian Mette	florian.mette@kaust.edu.sa	+966128082625		Office Bldg. 2, Level 4, Room 4327; any time during working hours, please fix an appointment by email;

Teaching Assistant(s)	
Name	Email

Course Information	
Comprehensive Course Description	<p>This class targets at students with entry-level background in Biochemistry. It serves as refreshment as well as boost course for those aiming to major in all disciplines in biology. The class starts with covering the chemistry principles that governs protein folding, mechanisms, kinetics and regulation. It then expands on these principles to introduce the structures and metabolisms of carbohydrates and lipids and further focuses on introducing the foundation behind membrane functions, energy conversion pathways and the key metabolic pathways.</p> <p>Upfront teaching in lectures will be combined with problem-based interactive approaches. Exemplary problems will be studied to further familiarize students with the essential concepts that will be built on in the advanced courses Cell Biology I B 224 and Cell Biology II B 213, Molecular and Cell Biology Lab B 241, as well as Biomolecule Structure and Function B 214. A central goal of the course is to make students aware of how deductive processes are applied in biological research for the advancement to new insight.</p>
Course Description from Program Guide	<p>This class targets at students with entry-level background in Biochemistry. It serves as refreshment as well as boost course for those aiming to major in all disciplines in biology. The class starts with covering the chemistry principles that governs protein folding, mechanisms, kinetics and regulation. It then expands on these principles to introduce the structures and metabolisms of carbohydrates and lipids. The second half of the course focuses on introducing the foundation behind membrane functions, energy conversion pathways and the key metabolic pathways.</p>
Goals and Objectives	<p>The course will provide insight to selected basic features of biochemistry. A particular focus will be on molecular processes essential for cell function in order to complement topics covered in Introductory Cell Biology B 102 and Introductory Molecular Biology B 104.</p>
Required Knowledge	<p>Basic understanding of general science, topics covered in courses B 102 Introductory Cell Biology and B 100 Basic Chemistry for Lifesciences;</p>

Reference Texts	Biochemistry: A Short Course Third Edition ©2016 John L. Tymoczko, Jeremy M. Berg, Lubert Stryer ISBN-13: 978-1-4641-2613-0; Language: English
Method of evaluation	100.00% - Tests
Nature of the assignments	Students will be required to perform solving of short text and calculation problems in home assignments. Submission of all assignments in acceptable form in writing is a requirement for passing the course. Solutions of problems will then be discussed in tutorial classes.
Course Policies	Attendance of and active participation in classes is mandatory. All assignments need to be delivered in due time. Any planned absence needs to be discussed with the course instructor and program chair.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Mon 01/29/2018 Wed 01/31/2018	Lecture - Principles of Biochemistry (Chap. 1 and 2) Lecture - Amino Acids and Protein Structure (Chap. 3 and 4)
2	Mon 02/05/2018 Wed 02/07/2018	Tutorial – Chap. 1, 2, 3, and 4 Lecture - Basic Concepts of Enzyme Action (Chap. 6)
3	Mon 02/12/2018 Wed 02/14/2018	Lecture - Enzyme Kinetics and Regulation (Chap. 7) Tutorial – Chap. 6 and 7
4	Mon 02/19/2018 Wed 02/21/2018	Lecture - Enzyme Mechanisms and Inhibitors (Chap. 8) Lecture – Hemoglobin, an Exemplary Allosteric Protein (Chap. 9)
5	Mon 02/26/2018 Wed 02/28/2018	Tutorial – Chap. 8 and 9 Exam Part A - Protein Function
6	Mon 03/05/2018 Wed 03/07/2018	Lecture - Metabolism: Basic Concepts and Design (Chap. 15) Lecture - Carbohydrates (Chap. 10)
7	Mon 03/12/2018 Wed 03/14/2018	Tutorial – Chap. 10 and 15 Lecture – Glycolysis (Chap. 16 and 18)
8	Mon 03/19/2018 Wed 03/21/2018	Lecture - Citric Acid Cycle (Chap. 19) Tutorial – Chap. 16, 18, and 19
9	Mon 03/26/2018 Wed 03/28/2018	Lecture – Mitochondrial Electron-Transport Chain (Chap. 20) Lecture - Proton-Motive Force and ATP Synthesis (Chap. 21)
10	Mon 04/02/2018 Wed 04/04/2018	Spring Break Spring Break
11	Mon 04/09/2018 Wed 04/11/2018	Tutorial – Chap. 21 and 22 Exam Part B - Central Energy Conversion Pathways
12	Mon 04/16/2018 Wed 04/18/2018	Lecture – The Light Reaction of Photosynthesis (Chap. 22) Lecture – The Calvin Cycle (Chap. 23)
13	Mon 04/23/2018 Wed 04/25/2018	Tutorial – Chap. 22 and 23 Lecture – Biochemistry of Lipids (Chap. 11)
14	Mon 04/30/2018 Wed 05/02/2018	Lecture – Fatty Acid Degradation (Chap. 27) Tutorial – Chap. 11 and 27
15	Mon 05/07/2018 Wed 05/09/2018	Lecture - Fatty Acid Synthesis (Chap. 28) Lecture – Synthesis of Phospholipids and Cholesterol (Chap. 29)
16	Mon 05/14/2018 Wed 05/16/2018	Tutorial – Chap. 28 and 29 Exam Part C - Exemplary Metabolic Pathways
17	Mon 05/21/2018 Wed 05/23/2018	No Class No Class
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Note

The instructor reserves the right to make changes to this syllabus as necessary.