



Course Syllabus: Basic Chemistry for Life Sciences - B 100

Division	Biological and Environmental Sciences & Engineering Division
Course Number	B 100
Course Title	Basic Chemistry for Life Sciences
Academic Semester	Fall
Academic Year	2018/2019
Semester Start Date	08/26/2018
Semester End Date	12/11/2018
Class Schedule (Days & Time)	09:30 AM - 11:00 AM Tue , 05:30 PM - 07:00 PM Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Michael Florian Mette	florian.mette@kaust.edu.sa	+966128082625		Anytime during office hours upon appointment, please send an email.

Teaching Assistant(s)	
Name	Email

Course Information	
Comprehensive Course Description	<p>This class will provide the essential basic chemistry knowledge for those aiming to major in all disciplines of life sciences. It targets bioscience students with entry-level background in general and organic chemistry. First, the very principles of chemical bonds, states of matter, chemical reactions, and the related calculations will be introduced as far as they are of importance for biological studies. Further, the properties and basic reactions of organic compounds most relevant to the life sciences, such as alcohols, aldehydes, carboxylic acids, amines, and amino acids, will be covered.</p> <p>In addition to upfront teaching, problem-based learning, analytical thinking and quantitative skills of students will be strengthened by home-assignments and tutorials.</p> <p>The course will cover the basic knowledge in chemistry required for multiple courses of the BESE division, including Introductory Biochemistry B101 and Introductory Cell Biology B102 as well as courses Cell Biology I and II, B213 and B224, Molecular and Cell Biology Lab B241, Bimolecular Structure and Function B214 and Biochemistry and Metabolic Engineering PS302.</p>
Course Description from Program Guide	The course will cover the essential foundations of general chemistry and organic chemistry relevant for all life science studies.
Goals and Objectives	This course aims to provide students with solid theoretical foundations in general and organic chemistry relevant to the life sciences in order to prepare them for more advanced classes. It is particularly designed to accompany and complement the Introductory Cell Biology B102 course as well as to prepare for the Introductory Biochemistry B101 course.
Required Knowledge	Basic understanding of general science
Reference Texts	<p>Textbook: General, Organic, and Biochemistry, 9th Edition ©2017 (International Edition); Authors: Katherine J. Denniston, Joseph J. Topping, Danaè R. Quirk Dorr, Robert L. Caret; Publisher: McGraw Hill Education, ISBN-13: 978-1-259-25339-3;</p> <p>Chapter numbers in the course schedule refer to this book.</p>

Method of evaluation	25.00% - Active participation 75.00% - Tests
Nature of the assignments	There will be two interim and one final exam, together accounting for 75% of the grade. Further, students will be expected to prepare for the course based on assigned readings, contribute actively in class, and to perform solving of short text and calculation problems in home-assignments, together accounting for 25% of the grade.
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	Tue 08/28/2018 Wed 08/29/2018	Lecture - Matter & Atoms (Chap. 1.2, 2.1, 2.2, 2.3, 2.5;) Lecture - PToE & Ionic Compounds (Chap. 2.4, 2.6, 2.7, 3.1, 3.2, 3.3;)
2	Tue 09/04/2018 Wed 09/05/2018	Lecture - Covalent Bonds & Molecule Geometry (Chap. 3.3, 3.4, 3.5;) Lecture - Intermol. Forces & States of Matter (Chap. 1.5, 1.6, 3.5, 5.2, 5.3;)
3	Tue 09/11/2018 Wed 09/12/2018	Tutorial 1 Lecture - Chemical Equations & Calculations (Chap. 1.4, 4.1, 4.2, 4.3, 4.4;)
4	Tue 09/18/2018 Wed 09/19/2018	Lecture - Gas Theory & Reaction Types (Chap. 4.6, 4.7, 4.8, 4.9, 5.1;) Tutorial 2
5	Tue 09/25/2018 Wed 09/26/2018	Exam Part A Lecture - Solutions (Chap. 3.5, 6.1, 6.2, 6.3, 6.5;)
6	Tue 10/02/2018 Wed 10/03/2018	Lecture - Energy and Rate (Chap. 7.1, 7.2, 7.3) Tutorial 3
7	Tue 10/09/2018 Wed 10/10/2018	Lecture - Energy and Equilibrium (Chap. 7.4) Lecture - Redox Reactions (Chap. 4.8)
8	Tue 10/16/2018 Wed 10/17/2018	Tutorial 4 Lecture - Acids and Bases: Chemistry (Chap. 4.7, 8.1, 8.3)
9	Tue 10/23/2018 Wed 10/24/2018	Lecture - Acids and Bases: Calculations (Chap. 8.2, 8.4) Tutorial 5
10	Tue 10/30/2018 Wed 10/31/2018	Exam Part B Lecture - Saturated Hydrocarbons (Chap. 10)
11	Tue 11/06/2018 Wed 11/07/2018	Lecture - Unsaturated Hydrocarbons (Chap. 11) Tutorial 6
12	Tue 11/13/2018 Wed 11/14/2018	Lecture - Alcohols, Phenols, Thiols, and Ethers (Chap. 12) Lecture - Aldehydes and Ketones (Chap. 13)
13	Tue 11/20/2018 Wed 11/21/2018	Tutorial 7 Lecture - Carboxylic Acids and Derivatives (Chap. 14)
14	Tue 11/27/2018 Wed 11/28/2018	Lecture - Amines and Amides (Chap. 15) Tutorial 8
15	Tue 12/04/2018 Wed 12/05/2018	No class Exam Part C
16	Tue 12/11/2018	No class

Note

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