



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	2019/2020
Semester Start Date	08/25/2019
Semester End Date	12/10/2019
Class Schedule (Days & Time)	09:30 AM - 11:00 AM Tue , 01:00 PM - 02:30 PM Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Michael Florian Mette	florian.mette@kaust.edu.sa	+966128082625		Anytime during work hours in Bldg. 2, Level 4, Room 4327 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	Textbook: General, Organic, and Biochemistry, 10th Edition ©2020; Authors: Katherine J. Denniston, Joseph J. Topping, Danaè R. Quirk Dorr; Publisher: McGraw Hill Education, ISBN-13: 9781260148954;

Method of evaluation	25.00% - Homework /Assignments 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 08/27/2019 Wed 08/28/2019	Lecture 1 - Matter and Energy Lecture 2 - Atoms and Periodic Table of Elements
2	Tue 09/03/2019 Wed 09/04/2019	Lecture 3 - Compounds and Chemical Bonds Lecture 4 - Covalent Bonds and Molecule Geometry
3	Tue 09/10/2019 Wed 09/11/2019	Lecture 5 - Attractive Forces and Physical Properties Tutorial 1 - Lectures 1 to 5
4	Tue 09/17/2019 Wed 09/18/2019	Lecture 6 - Chemical Equations and The Mole Concept Lecture 7 - Solutions Part I: Definitions and Calculations
5	Tue 09/24/2019 Wed 09/25/2019	Lecture 8 - Solutions Part II: Properties Tutorial 2 - Lectures 6 to 8
6	Tue 10/01/2019 Wed 10/02/2019	Exam Part A - Lectures 1 to 8, Tutorials 1 and 2 - 25% of grade Lecture 9 - Equilibrium Processes
7	Tue 10/08/2019 Wed 10/09/2019	Lecture 10 - Acids and Bases Lecture 11 - Buffers
8	Tue 10/15/2019 Wed 10/16/2019	Tutorial 3 - Lectures 9 to 11 Lecture 12 - Enthalpy, Entropy, and Gibbs Free Energy
9	Tue 10/22/2019 Wed 10/23/2019	Lecture 13 - Redox Reactions Lecture 14 - Reaction Kinetics
10	Tue 10/29/2019 Wed 10/30/2019	Lecture 15 - Saturated Hydrocarbons Tutorial 4 - Lectures 12 to 14
11	Tue 11/05/2019 Wed 11/06/2019	Exam Part B - Lectures 9 to 14, Tutorials 3 and 4 - 25% of grade Lecture 16 - Unsaturated Hydrocarbons
12	Tue 11/12/2019 Wed 11/13/2019	Lecture 17 - Alcohols, Ethers, and Thiols Lecture 18 - Aldehydes and Ketones
13	Tue 11/19/2019 Wed 11/20/2019	Tutorial 5 - Lectures 15 to 18 Lecture 19 - Carboxylic Acids and Derivatives
14	Tue 11/26/2019 Wed 11/27/2019	Lecture 20 - Amines and Amides Tutorial 6 - Lectures 19 to 20
15	Tue 12/03/2019 Wed 12/04/2019	Exam Part C - Lectures 15 to 20, Tutorials 5 and 6 - 25% of grade No class
16	Tue 12/10/2019	No class

Note

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