BSc. Program, Department of Biomedical Engineering

Course Unit Title	General Chemistry for Biological Sciences and Engineering
Course Unit Code	CHEM 104
Type of Course Unit	Compulsory
Level of Course Unit	Bachelor of Science, First Year
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/biweekly)	2
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	Assist. Prof. Dr. Süleyman Aşır
Name of Lecturer (s)	Assist. Prof. Dr. Süleyman Aşır
Name of Assistant (s)	Şerife Kaba
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	-

Course description:

Atoms, Compounds and Chemical Bonding, Molecular Interactions, Organic Compounds, Biological Macromolecules, Molecular Shape and Structure, Isomerism, Chemical Analyses, Energy, Kinetics, Equilibria, and Acids and Bases.

Objectives of the Course:

- Understand and realize the integration of chemistry in life sciences and engineering.
- Function effectively in a medically and biologically oriented problem-solving environment.
- Develop scientific inquiry, complexity, critical thinking, mathematical and quantitative reasoning.
- Formulate meaningful conclusions according to scientific inquiry by collecting, analysing, summarizing and interpreting laboratory data.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Predict physical and chemical properties of compounds based on chemical bonding, geometry and intermolecular interactions.	1
2	Predict the outcome of reactions, including those involving acids and bases and their applications.	1, 5
3	Identify and apply recent knowledge, and analyse and solve problems in the life sciences, and understand the relationship between the life sciences, chemistry and engineering.	1, 5
4	Succeed in qualitative and quantitative problem solving skills.	1, 5
5	Recognize the need for lifelong learning.	

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program		
		CL
1	Apply knowledge of mathematics, natural science with relevant to life science and multidisciplinary context of engineering science.	5
2	Analyse, design and conduct experiments, as well as to analyse and interpret data.	4
3	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	3
4	Function on multidisciplinary teams.	4
5	Control in design work, by using simulation, modelling and tests and integration in a problem solving oriented way.	1
6	Display an understanding of professional and ethical responsibility.	3
7	Communicate effectively aware of the non-technical effects of engineering.	3
8	Search technical literature and other information sources.	1
9	Recognize of the need for, and an ability to engage in life-long learning.	2
10	Exhibit a knowledge of contemporary issues.	2
11	Use the techniques, skills and modern engineering tools necessary for engineering practice to develop marketable products for the global market.	1
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)		

Course Contents

Week	Chapter	Topics	Exam
1	1	Atoms	
2	1,2	Compounds and Chemical Bonding	
3	2	Molecular Interactions	
4	3	Organic Compounds	
5	5	Biological Macromolecules	
6	5	Molecular Shape and Structure	
7	6	Isomerism	
8			Midterm
9	7	Chemical Analyses	
10	8	Energy	
11	8	Kinetics	
12	9	Equilibria	
13	9	Acids and Bases	
14	13		
15			Final

Recommended Sources

Textbook:

Chemistry Principles and Reactions (7th edition, 2012) by William L. Masterton and Cecile N. Hurley, Brooks/Cole Cengage Learning.

Chemistry for the Biosciences, The essential concepts (3rd edition, 2014) by Jonathan Crowe,

Tony Bradshaw, Oxford University Press.

Assessment

Attendance	5%	
Laboratory	10%	
Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

1. Attendance to the course is mandatory.
2. Students may use calculators during the exam.
3. Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	3	48
Labs and Tutorials	6	2	12
Assignment	-	-	-
Project/Presentation/Report	5	2	10
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self-Study	14	5	70
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6