School of Engineering and Natural Sciences / Computer Engineering (English)

2022 - 2023 Academic Year

GENERAL CHEMISTRY

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
GENERAL CHEMISTRY	COE1110757	Fall Semester	3+0	3	5

Prerequisites Courses	
Recommended Elective Courses	
Language of Instruction	English
Course Level	First Cycle (Bachelor's Degree)
Course Type	Elective
Course Coordinator	Prof.Dr. Yasemin YÜKSEL DURMAZ
Name of Lecturer(s)	Prof.Dr. Yasemin YÜKSEL DURMAZ
Assistant(s)	
Aim	This course offered in the fall semester, lays the foundation for all subsequent study in chemistry. During the semester, we will focus on the key chemical themes of structure and equilibrium. We start with a quick review of basic concepts like matter, atom, molecules, and ionic compounds, writing equations to describe chemical reactions, particularly, in solution, mass and mole relationship and stereochemistry. We will review the basic of ideal gas behavior as well. The rest of the semester fleshes out the theme of structure and equilibrium. First we introduce key concepts about light and quantum mechanics and use them to explain the properties of atom and the structure of periodic table. Next, we develop a set of powerful model that explains how atom forms chemical bonds, and three-dimensional structure of organic and inorganic molecules. We conclude with physical properties of solutions, chemical equilibrium and the solution phase reactions of acid and bases.
Course Content	This course contains; Matter, Atom and Atomic Theory,Chemical Compounds,Chemical Reactions,Introduction to Reaction In Aqueous Solution,Gases,Thermochemistry,Electron in Atom,The Periodic Table and Same Atomic Properties,Chemical Bonding I-Basic Concepts,Chemical Bonding II-Additional Aspects,Intermolecular Forces,Solutions and Their Physical Properties,Principles of Chemical Equilibrium,Acids and Bases.

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
1) Repeat main subjects of general chemistry with updated knowledge	1, 13, 14, 15	A, C, E
2) Define the chemical compounds and interpret their reactions and their role in reactions	1, 13, 14, 15	A, C
3) Evaluate the gas laws	1, 13, 14, 15	A, C
4) Recognize the interactions between atoms and molecules	1, 13, 14, 15	A, C
5) Asses the solution properties and solution components	1, 13, 14, 15	A, C
6) Interpret the temperature, heat and work relation in chemical reactions	1, 13, 14, 15	A, C
7) Evaluates the bond theories	1, 14, 15	A, C
8)Recognizes the acids and bases reactions	1, 13	A, C
9) Evaluates the chemical equilibrium conditions	1, 13, 14	A, C

Teaching Methods	1: Lecture, 13: Experiment / Laboratory, 14: Self-Study, 15: Problem solving
Assessment Methods	A: Written Exam, C: Homework, E: Quiz

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Matter, Atom and Atomic Theory	
2	Chemical Compounds	
3	Chemical Reactions	
4	Introduction to Reaction In Aqueous Solution	
5	Gases	
6	Thermochemistry	
7	Electron in Atom	
8	The Periodic Table and Same Atomic Properties	
9	Chemical Bonding I-Basic Concepts	
10	Chemical Bonding II-Additional Aspects	
11	Intermolecular Forces	
12	Solutions and Their Physical Properties	
13	Principles of Chemical Equilibrium	
14	Acids and Bases	

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

Resources
General Chemistry Principles and Modern Applications (Ralph H. Petrucci, 11th edition)