

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

2023 - 2024 Academic Year

GENERAL CHEMISTRY

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
GENERAL CHEMISTRY	IND1110757	Fall Semester	3+0	3	5
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Required				
Course Coordinator	Prof.Dr. Yasemin YÜKSEL DURMAZ				
Name of Lecturer(s)	Prof.Dr. Yasemin YÜKSEL DURMAZ				
Assistant(s)	Teaching Assistant				
Aim	This course 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,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	
Remembers main subjects of general chemistry with updated knowledge			12, 14, 9	A, E, G	
Predict chemical compounds, their reactions and the role of the compound in the reaction			12, 14, 9	A, E, G	
Evaluate the gas laws			12, 14, 9	A, E, G	
Recognize the interactions between atoms and molecules			12, 14, 9	A, E, G	
Asses the solution properties and solution components			12, 14, 9	A, E, G	
Interpret the temperature, heat and work relation in chemical reactions			12, 14, 9	A, E, G	
Evaluates the bond theories			12, 14, 9	A, E, G	
Recognizes the acids and bases reactions			12, 14, 9	A, E, G	
Evaluates the chemical equilibrium conditions			12, 14, 9	A, E, G	
Teaching Methods	12: Problem Solving Method, 14: Self Study Method, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam, E: Homework, G: Quiz				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Matter, Atom and Atomic Theory	Going through course materials			
2	Chemical Compounds	Going through course materials			
3	Chemical Reactions	Going through course materials			
4	Reaction In Aqueous Solution	Going through course materials			
5	Gases	Going through course materials			
6	Thermochemistry	Going through course materials			
7	Electron in Atom	Going through course materials			
8	The Periodic Table and Same Atomic Properties	Going through course materials			
9	Chemical Bonding I-Basic Concepts	Going through course materials			
10	Chemical Bonding II-Additional Aspects	Going through course materials			
11	Intermolecular Forces	Going through course materials			
12	Solutions and Their Physical Properties	Going through course materials			
13	Principles of Chemical Equilibrium	Going through course materials			
14	Acids and Bases	Going through course materials			
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			
Resources					
General Chemistry Principles and Modern Applications (Ralph H. Petrucci, 11th edition)Lecture notes presentation					