AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Chemistry I								
Course Code	KMY141		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	6	Workload	150 *(Hours)*	Theory	4	Practice	0	Laboratory	0
Objectives of the Course	To provide the ability to comprehend and interpret the chemical properties of atomic, molecular and ionic substances, chemical reactions and chemical reaction mechanisms, and solution chemistry, as well as to apply them to the solution of chemical problems. To provide the ability to use the knowledge and skills gained in this course in upper-grade courses.								
Course Content	Chemistry is a branch of science that studies matter, its properties and changes; it covers a wide range of topics from the structure of the atom to the periodic table, chemical bonds, gases, solutions, energy changes and organic compounds. Basic concepts such as concentration calculations, the concept of the mole, chemical reactions, bond types and quantum theory are reinforced with problem solving and experimental calculations. Throughout the semester, students learn both theoretical information and computational applications, grasping the basic building blocks of chemistry.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Problem Solving								
Name of Lecturer(s)	Assoc. Prof. Semiha KUNDAKCI								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Genel Kimya-Temel Kavramlar, 4. baskı, Raymond Chang (Çeviri Editörleri: Tahsin Uyar, Serpil Aksoy, Recai İnam), Palme Yayıncılık (2009-Ankara)
2	Genel Kimya-İlkeler ve Modern Uygulamalar,, 8.Baskı; Petrucci, Harwood, Herring (Çeviri Editörleri: Tahsin Uyar, Serpil Aksoy), Palme Yayıncılık (2010-Ankara)

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction, field of study of chemistry, Scientific method, Classification of matter, Physical and chemical properties of matter, Measurement, Use of numbers, Dimensional analysis in problem solving
2	Theoretical	Atomic theory, Structure of the atom, Atomic number, Mass number and isotopes
3	Theoretical	Periodic table, Molecules and ions, Chemical formulas, Naming of compounds
4	Theoretical	Atomic mass, Avogadro's number and molar masses of elements, Molecular mass, Percentage composition of compounds, Experimental determination of rough formulas
5	Theoretical	Chemical reactions and Chemical equations, Amounts of reactants and products, Limiting components and Reaction efficiency
6	Theoretical	General properties of aqueous solutions, Precipitation reactions, Acid-Base reactions, Oxidation-reduction reactions, Solution concentrations, Solution stoichiometry
7	Theoretical	Gaseous substances, Gas pressure, Gas laws, Ideal gas equation, Dalton's law of partial pressures
8	Theoretical & Practice	Problem solving (Midterm Exam)
9	Theoretical	Energy in chemical reactions, Introduction to thermodynamics, Enthalpies of chemical reactions, Calorimetry, Standard enthalpy of formation and Reaction
10	Theoretical	Electron structure of atoms, From classical physics to quantum theory, Photoelectric effect, Bohr hydrogen atom theory, Quantum mechanics, Quantum numbers, Atomic orbitals, Electron distribution
11	Theoretical	Periodic table, Periodic classification of elements, Ionization energy
12	Theoretical	Chemical bonding, Lewis dot symbols, Covalent bond, Electronegativity, Writing Lewis structures, Formal charge and Lewis structure, Resonance concept
13	Theoretical	Chemical bonds, Molecular geometry, Dipole moments, Valence bond theory

14	Theoretical	Introduction to organic chemistry, Naming organic compounds, Aliphatic hydrocarbons, Aromatic hydrocarbons, Functional groups

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	4	84
Midterm Examination	1	31	2	33
Final Examination	1	31	2	33
			Total Workload (Hours)	150
			[Total Workload (Hours) / 25*] = **ECTS**	6
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Knows the states of matter, the structures that form matter, the chemical behaviors of atoms, molecules, and ionic substances in homogeneous and heterogeneous environments, lists the relevant theories, uses dimensional analysis in problem solving.
2	Explains chemical reactions, knows the chemical elements, the periodic table, and the concept of mole, determines the oxidation state, and performs stoichiometric calculations by determining the limiting component in chemical equations.
3	Knows the electron structure of the atom, determines quantum theory and quantum numbers, performs electron configuration, understands how chemical bonds are formed using this information, knows Lewis structure and chemical bond theories.
4	Knows the properties of substances in the gaseous state, knows gas pressure, gas laws, the ideal gas equation, Dalton's partial pressure law, and solves relevant problems.
5	Knows the general properties of aqueous solutions, solution concentrations, and performs calculations related to solution stoichiometry.
6	Knows the concepts of energy in chemical reactions, enthalpies of chemical reactions, standard enthalpy of formation, thermodynamics, calorimetry, gives examples from daily life and makes relevant calculations.
7	Knows the naming of organic compounds, recognizes functional groups.
8	Uses chemistry knowledge correctly in classes and laboratories in the following years, understands the applications of chemistry in daily life.

Programme Outcomes *(Physics)*	
1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies
18	To be able to tell the relations between symmetry and conservation laws in laws of physics

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	3	4	5	5	5
P3	3	4	4	4	5
P5	3	4	4	4	5
P8		2	4	2	4
P9				2	2
P10	5	5	5	5	5
P11	4	4	5	4	4
P12	2	2	3	3	3
P13	4	4	4	4	4