



**AYDIN ADNAN MENDERES UNIVERSITY**  
**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**  
**MATHEMATICS AND SCIENCE EDUCATION**  
**SCIENCE EDUCATION**  
**SCIENCE EDUCATION MASTER**  
**COURSE INFORMATION FORM**

Course Title	General Chemistry I								
Course Code	İFB513		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Examine the behaviour of atoms and molecules.								
Course Content	Chemistry and properties of matter, atomic structure and atomic theory, chemical compounds, chemical reactions in aqueous solution, reactions, gases, thermochemistry, atomic orbitals with the placement of electrons, the periodic table, chemical bonding, liquids, solids and intermolecular forces								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

#### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

#### Recommended or Required Reading

1	Mortimer, C. E. 1993; Modern Üniversite Kimyası, Çağlayan Basımevi, İstanbul
2	R.H.Petrucci, W.S.Harwood, F.G.Herring "General Chemistry Principles and Modern Applications", Prentice Hall 2002
3	Atasoy, Basri. "Genel Kimya". Gündüz Eğitim ve Yayıncılık, Ankara, 2000

Week	Weekly Detailed Course Contents	
1	Theoretical	Chemistry definition, scope, importance, influence our lives and a brief overview of the historical development of chemistry
	Preparation Work	
2	Theoretical	Elektronic structure of the atom and atomic nucleus, protons, neutrons and electrons, atomic theories
	Preparation Work	
3	Theoretical	Modern atom theory
	Preparation Work	
4	Theoretical	Introduction to periodic table of chemical elements in the periodic classification and characteristics
	Preparation Work	
5	Theoretical	Ionization energy, electronegativity, atomic size, electron affinity
	Preparation Work	
6	Theoretical	Introduction of chemical bonds, Lewis formulas of molecules, formal charge
	Preparation Work	
7	Preparation Work	
8	Intermediate Exam	MIDTERM
9	Theoretical	Molecular geometry, Hybridization and hybrid orbitals
	Preparation Work	
10	Theoretical	Dipole moment, Theories of Covalent Bonds, bond length, multiple bonds
	Preparation Work	
11	Theoretical	Dipole moment, Theories of Covalent Bonds, bond length, multiple bonds
	Preparation Work	
12	Theoretical	Chemical reactions and equations, reaction types
	Preparation Work	
13	Theoretical	Oxidation-reduction reactions and balancing equations, mole and chemical calculations
	Preparation Work	
14	Theoretical	Gases and their properties
	Preparation Work	



15	Theoretical	Gases and their properties
	Preparation Work	
16	Final Exam	TERM

**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70
Assignment	5	10	0	50
Reading	5	9	0	45
Midterm Examination	1	10	2	12
Final Examination	1	20	3	23
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	To be able to understand the importance of science in chemistry.
2	To be able to define the concepts of atomic number, mass number and isotopes.
3	To be able to place the periodic table of elements and detect metals, nonmetals and semi-metals.
4	To be able to identify and calculate the energy associated with different types of energy reactions
5	To be able to understand the formation of chemical bonds and molecular geometry
6	To be able to acquire the properties of gases.

**Programme Outcomes (Science Education Master)**

1	To be able to have an expert theoretical knowledge within the field of science education.
2	To be able to transfer expert knowledge gained in science education into various instructional environment.
3	To be able to integrate science education knowledge with the other disciplines and product functional knowledge
4	To be able to use information and communication technologies efficiently in conceptual learning
5	To be able to find scientific solutions to the problems in the field of science education
6	To be able to evaluate the knowledge critically in the field
7	To be able to participate in team projects in the science education field
8	To be able to adopt lifelong learning strategies to his/her studies
9	To be able to use at least one foreign language efficiently in oral and verbal communication
10	To be able to share national and international data in the field of science education
11	To be able to comprehend and evaluate science-technology-society and environment interactions
12	To be able to comprehend science under the ethical values and take account of ethical considerations
13	To be able to use scientific information in the other domains that is gained in the masters field and have the transfer skills
14	To be able to follow the current development in the science education field
15	To be able to develop strategical plans and evaluate them in the context of quality processes

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

	L1	L2	L3	L4	L5	L6
P1	5	5	5	5	5	5
P2	3	3	3	3	3	3
P6	3	3	3	4	3	4
P7	2		2			
P8	3	3	3	3	3	3
P14	4					

