General Chemistry

Course Code:

CHEM 101

Course Period:

Autumn

Course Type:

Core

Credits:

4

Theoric:

4

Practice:

0

Laboratory Hour:

2

ECTS:

6

Course Language:

English

Course Objectives:

The aim of this course is to show the properties and behavior of the visible world in terms of the structure and arrangement of the component molecules and to create chemical knowledge for the solution of problems in the fields of science and engineering.

Course Content:

Atomic theory; Chemical Reactions; The stoichiometry; Gases; Properties of Solutions; Chemical Kinetic; Chemical Equilibrium and Selected 5 Experiments.

Course Methodology:

1: Lecture, 2: Question-Answer, 3: Laboratory 4: Simulation 5: Term paper

Course Evaluation Methods:

A: Exam, B: Experiment, C: Homework

Learning Outcomes of the Course	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Adequate knowledge in chemistry; To be able to apply theoretical and applied knowledge on chemistry to model and solve engineering problems. • Understanding the atomic and molecular structure of chemical reactions describing the matter and the metamorphosis of matter • Defining the subatomic structure of atoms and applying this information to the structure, bonds, shape and polarities of molecules and periodic relations • Understanding the periodic table as a chemical regulatory concept • Solving chemical problems using the concepts of balanced chemical reactions, stoichiometry, gas laws and thermochemistry	1, 6, 7	1, 2, 3	A, B, C

Week	Topics	Study Materials
1	Chemistry: Basic Science	Textbook
2	Atoms, Molecules and Ions / Quantum Theory	Textbook
3	Chemical Reactions and Reaction Stoichiometry Experiment: Solution Preparation	Textbook Laboratory Book
4	Aqueous Solution Reactions, General Properties of Aqueous Solutions Experiment: Solution Preparation	Textbook Laboratory Book
5	Thermochemistry Experiment: Resolution Rules: Collapse	Textbook Laboratory Book

6	Thermochemistry Experiment: Resolution Rules: Collapse	Textbook Laboratory Book
7	Periodic Relationships Between Elements Experiment: Factors affecting the resolution	Textbook
8	Chemical Bonds Experiment: Factors affecting the resolution MIDTERM	Textbook
9	Chemical Bonds Experiment: Standardization	Textbook Laboratory Book
10	YEDİTEPE UNIVERSITY PROMOTION WEEK	-
11	Gases Experiment: Standardization	Textbook Laboratory Book
12	Solids Experiment: Factors Affecting Reaction Speed	Textbook Laboratory Book
13	Aqueous Solution Reactions, General Properties of Aqueous Solutions Experiment: Factors Affecting Reaction Speed MIDTERM	Textbook Laboratory Book
14	Chemical Kinetic	Textbook
15	Chemical Kinetic	Textbook

Textbook	1. Chemistry-The Central Science, 13th Edition by T.L. Brown 2. Techniques and Experiments in General Chemistry by Z. Tuiebakhova, S. Bucak, D. Rende, N. Baysal (Lessons are given through the presentations the book provides.)
Additional Resources	-

Documents	The presentations in which the lesson is explained are shared with the students.
Homeworks	Homework related to each subject was given from the textbook website and graded automatically.
Exams	2 Midterms 1 Final Exam

IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Homeworks	7	10
Laboratory (5 Reports + Laboratory Final Exam)	5	20
Midterms	2	40
Total		70
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		30
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		70
Total		**100**

No	**Programın Öğrenme Çıktıları**	
1	**Adequate knowledge in mathematics, science and related engineering discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.**	√
2	Ability to identify, define, formulate, and solve complex engineering problems; ability to select and apply appropriate analysis and modeling methods for this purpose.	
3	Ability to design a complex system, process, device or product to meet certain requirements under realistic constraints and conditions; ability to apply modern design methods for this purpose.	
4	Ability to develop, select and use modern techniques and tools necessary for the analysis and solution of complex problems encountered in engineering applications; ability to use information technologies effectively.	
5	Ability to design and conduct experiments, collect data, analyze and interpret results for investigating complex engineering problems or discipline-specific research topics.	√
6	**Ability to work effectively in disciplinary and multidisciplinary teams; ability to work individually.**	√

7	**Ability to communicate effectively in Turkish, both orally and in writing; at least one foreign language knowledge; the ability to write effective reports and understand written reports,** to prepare design and production reports, to present effectively, to give and receive clear and understandable instructions.	√
8	Awareness of the necessity of lifelong learning; ability to access information, to follow developments in science and technology, and to constantly renew itself.	
9	Acting in accordance with ethical principles, awareness of professional and ethical responsibility; information about the standards used in engineering applications.	
10	Information about business life practices such as project management, risk management and change management; awareness of entrepreneurship, innovation; information on sustainable development.	
11	Information about the effects of engineering applications on health, environment and safety in universal and social dimensions and the problems reflected in the engineering field of the era; awareness of the legal consequences of engineering solutions.	

Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Exam week is included: 14x total lecture hours)	14	4	56+4 hour midterms
Hours for off-the-classroom study (Pre-study, practice)	14	4	56
Homework	7	2	14
Final Exam	1	3	3
Laboratory	5	2	10
Hours for off-the-laboratory study (Pre-study, answering questions and reports)	10	1	10
Total Work Load			153
Total Work Load / 25 (h)			6.12
ECTS Credit of the Course			6