DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details								
Code					**Academic Year**			**Semester**
CHE111					1			Fall
Title					**T**	**A**	**L**	**ECTS**
Chemistry 1					2	1	2	6

Language	German							
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**			
Department / Program	Energy Science and Technology							
Forms of Teaching and Learning	Face-to-face							
Course Type	**Compulsory**	**X**	**Elective**					
Objectives	The goal is for students to develop a fundamental understanding of the principles and methods in chemistry, apply these general chemical principles to basic chemical phenomena, and recognize chemical relationships. They will also acquire the ability to independently solve arithmetic problems in the field of general chemistry. Furthermore, the aim is for them to use the knowledge they have gained to engage in advanced courses in chemistry.							
Content	The course content includes topics such as atomic structure, the periodic table of elements, valence and bonding theories, molecular structure, crystal lattice/solids, solutions, electrolytes, general laws, chemical equilibrium, redox reactions, electrochemistry, acid-base reactions, thermochemistry, thermodynamics of reactions, kinetics, and more.							
Prerequisites	None							
Coordinator	Dr. SAMİRA FATMA KURTOĞLU ÖZTULUM							
Lecturer(s)	Dr. SAMİRA FATMA KURTOĞLU ÖZTULUM							
Assistant(s)	None							
Work Placement	None							

Recommended or Required Reading	
Books / Lecture Notes	R.H. Petrucci, W.S. Harwood, F.G. Herring, J.F. Madura,, 2007, General (Textbook) Chemistry, Principles and Modern Applications, Pearson Prentice Hall, ISBN:0-13-198825-. N.J.Tro, 2008, Chemistry-A Molecular Approach, Pearson Prentice Hall, ISBN:0-13-233250-. T.L. Brown, H.E. LeMay, B.E.Bursten, C.J. Murphy, 2009, Chemistry-The Central Science, Pearson Prentice Hall, ISBN:0-13-235849-.
Other Sources	-

Additional Course Material	
Documents	Lecture notes
Assignments	-

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Exams	1 Midterm, 1 Final Exam

Course Composition

Mathematics und Basic Sciences	50	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	50	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz	-	
Assignments	-	
Attendance	-	
Recitations	1	25
Projects	-	
Final Exam	1	45
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	5	15	75
Assignments	1	19	19
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	14	2	28
Projects			
Final Exam	1	2	2
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Students will gain the knowledge to recognize the connection between the properties of chemical elements or chemical processes in both linguistic descriptions and chemical formulations.

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

2	Students will be able to independently solve the formation of chemical reaction equations based on stoichiometric principles and the law of mass action, and will possess the ability to use the appropriate units correctly.
3	Students will understand the structure of atoms and be able to distinguish between the properties of the atomic nucleus and electron shells.
4	They will develop the ability to comprehend different types of chemical bonds based on fundamental physical and chemical knowledge, as well as the skill to judge which types of bonds are found in specific compounds or elements.
5	They will grasp the structural principles of the periodic table and be able to derive simple properties of elements from it.
6	In connection with their specialized knowledge, they will be able to work on broader questions and connections related to exercises and content.
Weekly Content	
1	Atomic Structure
2	Periodic Table
3	Valence and Bonding Theories / Chemical Compounds
4	Molecular Structure - Crystal Structure
5	Solutions, Electrolytes
6	Gases
7	Fundamental Laws
8	Midterm Exam
9	Chemical Equilibrium
10	Redox Reactions
11	Electrochemistry
12	Acid-Base Reactions
13	Thermochemistry
14	Thermochemistry
15	Thermodynamics and Reaction Kinetics
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7	P8	P9
Ö1	5	4							
Ö2	5	5							
Ö3	5	5							
Ö4	5	4							
Ö5	5	4							
Ö6	5	4							

Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Compiled by:	Res Asst. Kevser Celep
Date of Compilation:	27.01.2025