

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	Academic Year			Semester
CHE111	1			1
Title	T	A	L	ECTS
Chemistry I	2	1	2	6
Language	German			
Level	Undergraduate	X	Graduate	Postgraduate
Department / Program	Materials Science and Technology			
Forms of Teaching and Learning				
Course Type	Compulsory	X	Elective	
Objectives	The students develop a basic understanding of the principles and methods in chemistry. They are able to apply these general chemical principles to fundamental chemical phenomena and to recognize chemical relationships. They have the ability to independently solve arithmetic problems in the field of general chemistry. They are also able to use the knowledge they have acquired to take part in further courses in chemistry.			
Content	Atomic structure, periodic table of the elements, valence and bonding theories, molecular structure, crystal lattice / solids, solutions, electrolytes, general laws, chemical equilibrium, redox reactions, electrochemistry, acid-base reactions, thermochemistry, thermodynamics and kinetics of reactions.			
Prerequisites	-			
Coordinator	Asist. Prof. Dr. Sibel Özenler			
Lecturer(s)	Asist. Prof. Dr. Sibel Özenler			
Assistant(s)				
Work Placement				
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	General Chemistry, Principles & Modern Applications, R. H. Petrucci, W.S. Harwood, Herring, Prentice Hall International, Inc., 2002, 8th Ed. and all General Chemistry Text Books			
Additional Course Material				
Documents				
Assignments				
Exams				

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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	40	
Quiz	-	-	
Assignments	-	-	
Attendance	-	-	
Recitations	-	-	
Projects	-	-	
Final Exam	1	60	
Total			100
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	5	15	75
Assignments	1	30	30
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			179
ECTS Points (Total Work Load / Hours)			6
Learning Outcomes			
1	The students are able to understand the connection between the properties of chemical elements or chemical processes in linguistic description and in the chemical formulation.		
2	They can independently work out the creation of chemical reaction equations on the basis of stoichiometric principles and the law of mass action and use the necessary units of measurement correctly.		

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3	They understand the structure of atoms and can distinguish between the properties of the atomic nucleus and the electron shell.
4	They have the ability to understand the different types of chemical bonds on the basis of basic physical and chemical knowledge and to develop the ability to judge which types of bonds are present in which compounds or elements.
5	They have understood the structural principle of the periodic table of the elements and can derive simple properties of elements from it.
6	In conjunction with specialist knowledge, they are able to work on exercises and larger content-related questions/connections.

Weekly Content

1	Electronic Structure of Atom,
2	Periodic Table,
3	Chemical Bonds
4	Liquids, Solids, and Intermolecular Forces
5	Reactions in Aqueous Solutions, Solutions and Their Physical Properties
6	Gases
7	Laws of general chemistry
8	Chemical Equilibrium
9	Redoxreactions
10	Electrochemistry
11	Acids and Bases,
12	Termodinamik
13	Termodinamik
14	Thermodynamics
15	Thermodynamics

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

	P1	P2	P3	P4	P5	P6	P7	P8
1	1	4	4	3	1	2	1	2
2	4	4	4	3	2	4	3	1
3	3	2	1	1	1	1	1	1
4	3	1	1	1	1	1	1	1
5	1	2	1	1	1	1	1	1
6	4	4	4	4	3	4	3	3

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

<https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=207>

Compiled by: Asist. Prof. Dr. Sibel Özenler

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