

Faculty	Faculty of Engineering	
Program	B.Sc. in Civil Engineering	Required
	B.Sc. in Electrical-Electronics Engineering	Elective
	B.Sc. in Mechanical Engineering	Required
	B.Sc. in Computer Engineering	Elective
	B.Sc. in Industrial Engineering	Elective

Course Code	CHEM 101			
Course Title in English	General Chemistry			
Course Title in Turkish	Genel Kimya			
Language of Instruction	English			
Type of Course	Lecture			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science 100	Basic Engineering -	Engineering Design -	General Education -
Semester Offered	Fall			
Contact Hours per Week	Lecture: 3 hours	Recitation: -	Lab:-	Other:-
Estimated Student Workload	125 hours			
Number of Credits	5 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	None			
Co-requisites	CHEM 101L			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To learn the basic principles of chemistry and how to integrate these principles to everyday observations, acquire chemical knowledge to form a basis for the engineering applications, learn to apply scientific method to solve problems, and develop awareness of environmental issues.			
Course Description	This course covers the fundamental chemistry topics, including a brief introduction to atoms, elements, atomic theories and contemporary atomic theory. Periodic table, chemical compounds, chemical reactions, gases, thermochemistry, chemical bonding, liquids, solids, chemical equilibrium, acids and bases will be covered within this course.			
Course Description in Turkish	Bu ders atom, element, atom teorileri ve çağdaş atom teorisini içeren temel kimya konularını kapsamaktadır. Periyodik tablo, kimyasal bileşikler, kimyasal tepkimeler, gazlar, termokimya, kimyasal bağlanma, sıvılar, katılar, kimyasal denge, asitler ve bazlar da bu ders kapsamındadır.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: <ol style="list-style-type: none"> 1. demonstrate knowledge in the electronic structure of atoms and the properties of elements in periodic table; 2. name chemical compounds, balance chemical equations and perform calculations by making use of stoichiometry in chemical reactions; 3. solve problems on thermodynamics, concentration, chemical equilibrium and acid-base concepts; 4. determine 3D structures of molecules, crystal structures of solids, properties of liquids and solids and differentiate between types of bonds. 			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1,2,3,4	Exams, Quizzes
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors			
(3) an ability to communicate effectively with a range of audiences			
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts			
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies			
Prepared by and Date	Dr. Çimen Özgüç Önal / September 2020		
Semester	Fall 2020-2021		
Name of Instructor	Dr. Çimen Özgüç Önal		
Course Contents	Week	Topic	
	1.	Matter and its Properties, Atomic Theory	
	2.	Electronic Structure of Atom, Periodic Table	
	3.	Chemical Compounds, Chemical Reactions	
	4.	Reactions in Aqueous Solutions	
	5.	Gases	
	6.	Problem Session	
	7.	Thermochemistry	
	8.	Thermochemistry	
	9.	Chemical Bonding – I	
	10.	Chemical Bonding – II	
	11.	Problem Session	
	12.	Liquids, Solids and Intermolecular Forces	
	13.	Solutions and Their Physical Properties	
	14.	Solutions and Their Physical Properties	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
Required/Recommended Readings	Textbook is Chemistry, Raymond Chang, McGraw Hill, 2016 Online sources of the book's website will be utilized. Any general chemistry book can be used as complimentary source.		
Teaching Methods	100% of this course will be in lecture format. The instructor will be present to guide the students in their learning efforts.		
Homework and Projects	-		
Laboratory Work	-		

Computer Use	-															
Other Activities	-															
Assessment Methods	<table border="1"> <thead> <tr> <th>Types of assessment</th> <th>Number</th> <th>Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exams</td> <td>2</td> <td>50 (each contributing 25%)</td> </tr> <tr> <td>Quizzes</td> <td>3</td> <td>10</td> </tr> <tr> <td>Final Exam</td> <td>1</td> <td>40</td> </tr> <tr> <td>Total</td> <td></td> <td>100</td> </tr> </tbody> </table>	Types of assessment	Number	Ratio (%)	Midterm Exams	2	50 (each contributing 25%)	Quizzes	3	10	Final Exam	1	40	Total		100
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Final Exam	1	40														
Total		100														
Course Administration	<p>Instructor's office and phone number: A Block 3rd floor office hours: email address: Rules for attendance: Minimum of 70% attendance required. Missing a midterm: One make-up exam will be given at the end of the semester for those who miss an exam due to a legitimate excuse accepted by the instructor. Missing a final: Faculty regulations. A reminder of proper classroom behavior, code of student conduct: YÖK Regulations Statement on plagiarism: YÖK Regulations</p>															

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lectures	14	1	3		56	A*(B+C+D)
	Midterms	2	12	2		28	A*(B+C+D)
	Quizzes	3	5			15	A*(B+C+D)
	Final Exam	1	24	2		26	A*(B+C+D)
	Total Workload					125	
	Total Workload/25					5	
	ECTS					5	