



COURSE INFORMATION FORM

Course Name	Course Code
CHEMISTRY	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	3	0	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
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Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To introduce the main subjects of chemistry, to give the fundamentals of chemistry to the engineering students.
Short Course Content	The properties of material and measurements, atoms and atomic theory, periodic table chemical compounds, chemical reactions stoichiometry, gases and gas mixtures, chemical thermodynamics.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Define, classify and explain the properties of materials,	1	1, 5, 10	A
2 Explain the concepts of atoms and atomic theory,	1	1, 5, 10	A
3 Explain and use the mole concepts and the Avogadro’s law,	2	1, 5, 10	A
4 Explain and classify the chemical compounds,	1, 2	1, 5, 10	A
5 Define, explain and use the relationship of the gaseous state, the properties of gases and gas laws,	5	1, 5, 10	A
6 Define the basic concepts of thermodynamics, explain the law of thermodynamics and use them in solving the thermochemistry problems.	4	1, 5, 10	A
7			
8			

*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

**Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

Main Textbook	Petrucci, H., Harwood, W. S., Herring, F. G., 2002 “Genel Kimya: İlkeler ve Modern Uygulamalar” (I. Cilt), Çeviri Editörleri: Uyar. T., Aksoy, S., Palme Yayıncılık, Ankara.
Supporting References	1. Mortimer, C. E. , 1988, Modern Üniversite Kimyası , I. ve II. Cilt, Çağlayan Kitabevi, İstanbul 2. Sienko, M. J., Plane, R. A., 1983, Temel Kimya , Savaş Yayınları, Ankara. 3. Erdik, E., Sarıkaya, Y., 1987, Temel Üniversite Kimyası , Hacettepe Taş Kitapçılık, Ankara.
Necessary Course Material	Board, projector

Course Schedule	
1	Matter-Its properties and measurement. The scope of chemistry, the scientific method, properties and classification of matter, measurements of matter, uncertainties in scientific measurements.
2	Atoms and the atomic theory, early chemical discoveries and the atomic theory, electrons and other discoveries in atomic physics, atomic masses, chemical elements.
3	Introduction to the periodic table, the concept of the mole, the Avogadro constant, using the mole concept in calculation.
4	Chemical compounds, types of chemical compounds and their formulas, the mole concept and chemical compounds, composition of chemical compounds.
5	Chemical compounds; oxidation states; A useful toll in describing chemical compounds, naming organic and inorganic compounds.
6	Chemical reactions and chemical equation, the chemical equation and stoichiometry, chemical reaction in solution.
7	Chemical reactions and chemical equation, Determining the limiting reactant, other practical matters.
8	Mid-Term Exam
9	Gases and Gases Mixers
10	Gases: Properties of gases; gas pressure, the simple gas laws
11	Gases: Application of the ideal gas equation.
12	Gases in chemical reaction, mixtures of gases, kinetic-molecular theory of gases, non-ideal gases.
13	Thermochemistry, getting started; some terminology, work, heat, and calorimetry.
14	Thermochemistry: The first law of thermodynamics, heats of reaction.
15	Thermochemistry: Hess’s law, standard enthalpies of formation,
16,17	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)			
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	20	20
Total workload			81
Total workload / 30			2.7
Course ECTS Credit			3

Evaluation	
Activity Type	%
Mid-term	40
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOME	Contribution
1	To possess sufficient knowledge in mathematics, science, and engineering subjects related to Metallurgical and Materials Engineering; the ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems.	3
2	The ability to identify, define, formulate, and solve complex engineering problems by selecting and applying appropriate analysis and modeling methods.	2
3	The ability to design a complex system, process, device, or product under realistic constraints and conditions to meet specific requirements by applying modern design methods.	
4	The ability to develop, select, and use modern techniques and tools necessary for engineering applications encountered as a Metallurgical and Materials Engineer; the ability to effectively use information technology.	1
5	The ability to design experiments, conduct experiments, collect data, analyze results, and interpret findings for the investigation of engineering problems.	1
6	The ability to work effectively individually, as well as within disciplinary and interdisciplinary teams.	
7	The ability to communicate effectively in Turkish, both verbally and in writing; knowledge of at least one foreign language.	
8	The awareness of the necessity for lifelong learning; the ability to access information, follow developments in science and technology, and continuously renew oneself.	
9	Awareness of professional and ethical responsibility.	
10	Knowledge about business practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.	
11	Knowledge about the universal and societal impacts of engineering applications on health, environment, and safety; awareness of the legal consequences of engineering solutions.	
12	Awareness of quality consciousness and sustainability in material selection, product development, and production processes in engineering applications; awareness of quality control.	
13	The ability to confidently approach problems encountered in engineering applications.	

LECTUTER(S)				
Prepared by	Faculty of Science Chemistry Department Faculty Members			
Signature(s)				

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