COURSE INFORMATION FORM

Course Name	Course Code
PHYSICAL CHEMISTRY	**151912199**

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	4

Course Category (Credit)				
Basic Sciences	**Engineering Sciences**	**Design**	**General Education**	**Social**
✓				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The Physical Chemistry course aims to teach students basic gas laws and the fundamentals of thermodynamics to create the necessary knowledge in professional fields and enable students to use course skills in problem-solving.
Short Course Content	Gasses, liquids and solids. First, second and third law of thermodynamics.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learns the fundamentals of physical chemistry	1	1,5,10	A,B,K
2	Gain knowledge about gases and basic gas laws.	1	1,5,8,10	A,B,K
3	Explain the basic terms and definitions of thermodynamics	1	1,5	A,B,K
4	Calculate changes in enthalpy, entropy, and Gibbs free energy as a function of temperature and pressure.	1	1,5,8,10	A,B,K

***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:**Induvidual 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	Fizikokimya, P.W.Atkins, Bilim Yayıncılık,2001
Supporting References	Fizikokimya, Yüksel Sarıkaya, Gazi Kitapevi, 2008 Fizikokimya, Problem Çözümleri Y. Sarıkaya, Gazi Kitabevi, 2008 Fizikokimya, R.G Martinner, Palme Yayıncılık,2004
Necessary Course Material	

Course Schedule	
1	Fundamental Laws of Chemistry, System and State Variables, Matter and Energy
2	Properties of Gases
3	Ideal Gas Law
4	Ideal Gas Law, Ideal Gas Mixttures
5	Real Gases
6	The First Law of Thermodynamic;Work, Heat, Energy
7	The First Law of Thermodynamic;Work, Heat, Energy
8	Mid-Term Exam
9	The Second Law of Thermodynamics
10	Entalpy
11	Entalpy
12	Entropy
13	Entropy
14	Gibbs Free Energy
15	Chemical Equilibrium
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,….)	14	2	28
Homework			
Quiz Exam	2	1	2
Studying for Quiz Exam	2	4	8
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	1,5	1,5
Studying for Mid-Term Exam	1	10	10
Final Exam	1	1,5	1,5
Studying for Final Exam	1	20	20
		Total workload	**113**
		Total workload / 30	**3,76**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	35
Quiz	10
Quiz	10
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	45
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.	5
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.	1
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.	2
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.	2
7	The ability to communicate effectively in Turkish, both verbally and in writing; knowledge of at least one foreign language.	2
8	The awareness of the necessity for lifelong learning; the ability to access information, follow developments in science and technology, and continuously renew oneself.	2
9	Awareness of professional and ethical responsibility.	1
10	Knowledge about business practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.	1
11	Knowledge about the universal and societal impacts of engineering applications on health, environment, and safety; awareness of the legal consequences of engineering solutions.	1
12	Awareness of quality consciousness and sustainability in material selection, product development, and production processes in engineering applications; awareness of quality control.	1
13	The ability to confidently approach problems encountered in engineering applications.	2

LECTUTER(S)			
Prepared by	Dr. Öğr. Üy. Alanur BİNAL AYBAR		
Signature(s)			

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