

KHAZAR UNIVERSITY
School of Architecture, Engineering
and Applied Sciences

COURSE SYLLABUS

CHEMISTRY 2

CHEMISTRY 2

Identification

Term	Spring 2010
Department	Chemistry
Subject	Chemistry 2 (CHEM 112)
Credit units	3
Instructor	professor ZIYAFADDIN ASADOV
Office	Room 303
Phone	(+99412) 4211093
E-mail	zasadov@khazar.org

Prerequisites Chemistry 1 (CHEM 111)

Textbooks and Materials

Core Textbooks

1. Essentials of Physical Chemistry. Authors: B.S. Bahl, G.D. Tuli, Arun Bahl., 2004. S.Chang&Comp. Ltd. Ram Nagor, New Delhi .
2. Textbook of Physical Chemistry. Author: S. Glasstone. 1990. D.Van Nostrand Comp., Inc. Toronto-New-York-London

Internet sites: www.chemistry.coach.com/high.htm
www.chemweb.com

For class presentations and discussion, a student should utilize journal and Internet materials. More over, the course does not limit the use of learning materials available at the library of Khazar University.

Objectives.

General Objective of the Course:

To meet curriculum requirements of the School of Engineering and Applied Sciences

Specific Objectives of the Course:

- To support students academically, to improve their chances of realizing their potential;
- To encourage students participation and interaction as well as fostering atmosphere of tolerance and respect;
- To develop understanding the fundamentals of physical chemistry;
- To build background for the student's further studying special disciplines on oil engineering.
-

Outline.

Thermodynamics. Thermochemistry. Regularities and particularities of structure of gases, liquids and solids. Correlations between physical properties and chemical constitution of matter. Theory of solution.

Properties of colloidal solutions. Chemical equilibrium. Distribution, phase rule. Chemical kinetics. Catalysis. Photochemistry. Adsorption. Electrolysis. Electric conductance. Galvanic element. Electromotive force. Corrosion.

Outcomes.

By the end of the course the students should be able to:

- Know and apply main principles and laws of thermodynamics and thermo chemistry;
- Know properties of three aggregate states of matter and solutions;
- Know and apply principles of chemical equilibrium, distribution law and phase rule;
- Know the foundations of kinetics, catalysis, adsorption and photochemistry;
- Understand and apply principles and laws of electrochemistry.
-

Developed skills.

- Analytical thinking;
- Critical reasoning;
- Presentation.

Evaluation.

Participation and Activity	– 10%
Paper	– 10%
Practicals	– 10%
Midterm Exam (written)	– 30%
Final Exam (written)	– 40%
Total	100%

Learning and teaching Methods

This course considers active learning process rather than passive one. Lectures and practicals including laboratory works and solution of problems are practised.

Weeks	Topics	Hours		References
		Lectures	Practicals	
1	Introduction to Physical Chemistry. Its subject, aims and parts.	2		[1], p. 3-5 [2], p.11-13
	Thermodynamics. The 1 st law of Thermodynamics.	2		[1], p. 171-195
2	Thermochemistry. Heat effect. Hess law.	2	2	[1], p. 198-218
	The 2 nd law of Thermodynamics.	2		[1], p. 223-252
3	The gaseous state of matter. The gas laws.	2		[1], p. 255-296
	Subject of Physical Chemistry. Laws of thermodynamics. Thermochemistry..	4		[1], p. 195-197, p. 218-222, p. 252-254
4	The liquid state of matter.	2		[1], p. 301-319

	The solid state of matter.	2	2	[1], p. 322-345
5	Physical properties and chemical constitution of matter.	2		[1], p. 347-375
	The gaseous, liquid and solid states of matter.	2		[1], p. 296-300, p. 320-321, p. 345-346
6	Solutions, their types, concentration and properties	2		[1], p. 378-398
	Dilute solutions, their properties	2	2	[1], p. 402-425
7	Chemical equilibrium. Le-Chatelier principle. Equilibrium constant.	2		[1], p. 452-488
	Physical properties and chemical constitution of matter.	2		[1], p. 375-377
8	Midterm Examination			
9	Distribution law	2		[1], p. 487-505
	Phase rule	2		[1], p. 509-534
10	Chemical kinetics.	4		[1], p. 538-567
	Solutions. Dilute solutions.		2	[1], p. 398-401, p. 425-426, p. 449-454
11	Catalysis.	2		[1], p. 572-588
	Photochemistry.	2		[1], p. 780-791
12	Colloidal solutions, their types, properties and particularities.	4		[1], p. 590-617
	Chemical equilibrium. Distribution law. Phase law.		2	[1], p. 483-486, p. 505-508, p. 534-537
13	Adsorption, its types and main regularities	2		[1], p. 620-629
	Chemical kinetics.	2		[1], p. 567-571
14	Electrolysis. Faraday laws.	2		[1], p. 631-639
	Catalysis. Photochemistry.	2	2	[1], p. 589, p. 791-793
15	Electric conductance, its types.	2		[1], p. 640-645
	Colloidal solutions.	2		[1], p. 617-619
16	Galvanic element. Electromotive force. Standard electrode potentials. Corrosion, its types and regularities. Protection from it.	2		[1], p. 740-760 [1], p. 761-775
	Adsorption. Electrolysis. Faraday laws. Solution of problems. Electric conductance. Galvanic element. Electromotive force. Standard electrode potentials. Corrosion.	2	2	[1], p. 645-647 [1], p. 775-779
	Final Examination			