

PHYSICAL CHEMISTRY II

1	Course Title:	PHYSICAL CHEMISTRY II
2	Course Code:	KIM3002
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	4.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. ASIM OLGUN
15	Course Lecturers:	Prof. Dr. Ali KARA Doç. Dr. Beyhan ERDEM
16	Contact information of the Course Coordinator:	asimolgun@uludag.edu.tr 0 224 29 42 863 Uludağ Üniversitesi Fen-Edebiyat Fakültesi Kimya Bölümü Gorukle 16059 Bursa
17	Website:	
18	Objective of the Course:	To provide students with knowledge of the basic principles of chemical equilibrium, Equilibrium Electrochemistry, Statistical thermodynamics and Electric and magnetic properties of molecules
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	The students will discover the relationships between mathematical analysis and the physical and chemical properties of matter.
	2	The students will define the following for any given electrolyte: ionic strength, mean concentration, mean activity coefficient, mean activity
	3	The students will apply the Debye-Huckel theory to determine activity coefficients and mean activity coefficients from ionic concentrations of electrolytes for dilute solutions
	4	The students will calculate ionic strength, activities, and mean activities from concentration data for electrolytes and the Debye-Huckel theory.
	5	The students will write the proper electrochemical cell notation given the chemical reaction that takes place, or vice versa
	6	The student will calculate molecular partition function, and through that the thermodynamic functions, from spectroscopic data.
	7	The students will examine some of the electric and magnetic properties of molecules

		8	Students will be able to get enough knowledge about the kinetic theory of gases.		
		9			
		10			
21	Course Content:				
	Course Content:				
Week	Theoretical		Practice		
1	Changes of states: Spontaneous chemical reaction, The response of equilibria to the conditions				
2	Applications to selected systems				
3	Equilibrium electrochemistry, The thermodynamic properties of ions in solution				
4	Electrochemical cells				
5	Applications of reduction potentials				
6	Statistical thermodynamics, The thermodynamic functions, The partition function				
7	Mid-term exam				
8	Equilibrium constants Using statistical thermodynamics, Mean energies, Heat capacities, Residual entropy				
9	The electric and magnetic properties of molecules: Electric properties				
Activites			Number	Duration (hour)	Total Work Load (hour)
12	Macromolecules and colloids: Size and shapes, Conformation and configuration		14	4.00	56.00
Practicals/Labs			0	0.00	0.00
13	The kinetic theory of gases: The model and the kinetic theory of gases		14	3.00	42.00
Homeworks			6	9.00	54.00
14	Transport properties		0	0.00	0.00
Projects			0	0.00	0.00
Field Studies			0	0.00	0.00
Midterm exams	Materials:		2	15.00	15.00
Others			0	0.00	0.00
Final Exams			3	10.00	10.00
Total Work Load					177.00
Total work load/ 30 hr					5.90
22	Assessment				
ECTS Credit of the Course					6.00
TERM LEARNING ACTIVITIES		NUMBER	WEIGHT		
Midterm Exam		1	40.00		
Quiz		0	0.00		
Home work-project		0	0.00		
Final Exam		1	60.00		
Total		2	100.00		
Contribution of Term (Year) Learning Activities to Success Grade			40.00		
Contribution of Final Exam to Success Grade			60.00		
Total			100.00		
Measurement and Evaluation Techniques Used in the Course					

24	ECTS / WORK LOAD TABLE															
25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	2	2	3	4	4	3	4	1	4	0	0	0	0	0	0
ÖK2	3	2	2	3	4	4	3	4	1	4	0	0	0	0	0	0
ÖK3	4	3	3	4	5	5	4	5	1	5	0	0	0	0	0	0
ÖK4	5	4	5	4	4	5	4	5	1	5	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			