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	
10	Macromolecules and colloids: Size and shapes, Conformation and configuration	
11	The kinetic theory of gases: The model and [illegible]	
12	Transport properties	
13	Study and interpretation	
14		
15		
16		

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	4.00	56.00
Practicals/Labs	0	0.00	0.00
Seminars	14	3.00	42.00
Homeworks	6	9.00	54.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	15.00	15.00
Others	0	0.00	0.00
Final Exams	1	10.00	10.00
Total Work Load			177.00
Total work load/ 30 hr			5.90
ECTS Credit of the Course			6.00

22 Assessment

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		

23 Materials:

1. Kılıç,E., Bilim, Yayıncılık, Ankara, 2001.
2. Yüksel SARIKAYA, Fizikokimya, Baskı, Ankara, Gazi
3. Alberty, R.A., Silbey, R.J., Physical Chemistry, Wiley, Massachusetts.

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**						