



SUBJECT DATASHEET

Semester:	2010/11/1
Subject:	Program Solving Practice In Physical Chemistry II.
Code:	VEMKFK2122V
Responsible department:	Department of Physical Chemistry
Responsible department code:	MKFK
Responsible lecturer:	dr. Mónika Valiskó

Educational objectives:

Teach physical chemistry via numerical examples.

Detailed content of the subject:

Phase law for one component systems. Liquid-vapour equilibrium. Saturated vapour, saturated liquid, ratio of vapour phase. Clausius-Clapeyron-equation, Antoine-equation. Phase diagrams. Solid-liquid and solid-solid equilibrium. Phase equilibria in multi-component systems. Liquid-vapour equilibrium in binary mixtures: Raoult-law, Henry-law, Nernst distribution. Colligative properties: freezing point depression, boiling point elevation, osmotic pressure Surface tension. Gas-liquid interface, tension of a curved surface, capillary rise and depression. Adsorption. Gibbs adsorption equation, surfactants. The Langmuir- and BET-equation. Chemical equilibrium. Standard free energy change of the reaction. Mass action law. Heterogeneous equilibria. Dissociation equilibria in electrolyte solutions. The change of the equilibrium constant by the temperature and by the pressure. Electric potential. Electrode of first and second kind, reference electrodes, gas electrodes, redox electrodes. Concentration cells. Thermodynamics of galvanic cells. Introduction to reaction kinetics. The rate of the reaction, the order of the reaction, rate equations. Simple reactions, the first order rate law, the second order rate law. Half life The rate constant, the Arrhenius-equation. Activation energy of the reactions. Kinetics of electrode reactions.

Requirements:

The attendance of the practices and the solution of a test at the end of the semester are obligatory.

Required and suggested references:

1. Liszi, J.: Fizikai kémia, Veszprém, 1993. Kézirat. 2. Liszi, J., Ruff, I., Schiller, R., Varsányi, Gy.: Bevezetés a fizikai kémiába, Műszaki Könyvkiadó, Budapest, 1993. 3. Atkins, W., P.: Fizikai Kémia I-III., Tankönyvkiadó, Budapest, 1990. 4. Tanszéki munkaközösség: Fizikai kémiai példatár I-II. Veszprém, 1995.