Information sheet for the course
Seminar in Physical Chemistry of Materials

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *MI-PV-9*	**Course unit title:** *Seminar in Physical Chemistry of Materials*
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *Lecture:* *Seminar: 2 hours weekly/26 hours per semester of study; face to face* *Laboratory tutorial:*	
Number of credits: *2*	
Recommended semester: *3rd semester in the 1st year full-time* *3rd semester in the 1st year part-time*	
Degree of study: *the 1st degree of study (Bachelor's degree)*	
Course prerequisites: *none*	
Assessment methods: *Students will write control tests which must be obtained at least 60% scoring, at each seminar*	
Learning outcomes of the course unit: *Student after completing the subject is familiar with the physical laws governing chemical processes in materials. He shall demonstrate understanding of the structure and description of state of matter can explain the ongoing physicochemical and chemical processes. He understudies of basis of chemical equilibrium and power lines in electrolyte solutions. He is able to apply the chemical kinetics for various chemical reactions.*	
Course contents: *Status and using process variables. Characteristics of phase states. Ideal gas and real gas. Thermodynamics. Heat, work, internal energy and thermodynamic 1.Zákon. Enthalpy. Heat capacity. Adiabatic. The second law of thermodynamics. Carnot cycle. Entropia. Thermodynamic potentials. Fugacity and activity of gases. Multicomponent and multiphase systems. Chemical potential, Gibbs phase law. Clausius - Clapeyron equation. Raoult's law. Henry's law. Koligatívne properties. Chemical equilibrium. The equilibrium constant. The dependence of the equilibrium constant on temperature and pressure. Electrolytes and electrolytic dissociation. Thermodynamics of electrolytes. Medium activity, activity and standard states. Chemical equilibrium in electrolyte solutions. Dissociation of weak acids and bases. Hydrolysis of salts. The product of solubility. Conduction of electricity in an electrolyte solution. Faraday's law. Primary cells. Electrode potential and electromotive force. Thermodynamics of primary cells. Types of electrodes. Concentration articles. Chemical kinetics. Simple and elementary reactions. The reactions of the first, second, third and fractional orders. Composite reactions - Counter, parallel, sequential reactions. The effect of temperature on the reaction rate. Theory of active precipitation. The theory of absolute reaction rates.*	
Recommended of required reading: *1. V. KELLÖ, A. TKÁČ: Fyzikálna chémia, ALFA, Bratislava 1977.* *2. V. ADAMČÍK A KOL.: Fyzikálna chémia, laboratórne cvičenia z fyzikálnej chémie, ALFA, Bratislava 1990.* *3. P. V. ATKINS: Fyzikálna chémia, Vyd. STU Bratislava 1999, ISBN: 8022712388* *4. J. M. LISÝ, L. VALKO: Príklady a úlohy z fyzikálnej chémie, ALFA,Bratislava 1979* *5. L. ULICKÝ: FYZIKÁLNA CHÉMIA I, STU, BRATISLAVA 1996.* *6. J.NOVÁK a kol.: Fysikální chemie, Bakalářský kurs, VŠCHT Praha, 2005, ISBN 80-7080-559-5*	
Language: *Slovak*	
Remarks:	

Evaluation history: *The total number of students assessed*: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Lecturers: *Mgr. Jana Šulcová, PhD.*	
Last modification: *31.03.2014*	
Supervisor: *prof. Ing. Darina Ondrušová, PhD.*	