Information sheet for the course
Inorganic Chemistry of Materials

University: *Alexander Dubček University of Trenčín*

Faculty: *Faculty of Industrial Technologies in Púchov*

Course unit code: *MI-P-2*

Course unit title: *Inorganic Chemistry of Materials*

Type of course unit: *compulsory*

Planned types, learning activities and teaching methods:

Lecture: 2 hours weekly/26 hours per semester of study
Seminar: 2 hours weekly/26 hours per semester of study
Laboratory tutorial: 2 hours weekly/26 hours per semester of study

Number of credits: *6*

Recommended semester: *1st semester in the 1st year full-time*
1st semester in the 1st year part-time

Degree of study: *the 1st degree of study (Bachelor's degree)*

Course prerequisites: *none*

Assessment methods:
Evaluation of course includes partial evaluation; basic charakteristic of static of chemical sulstanls, chemical reaction (thermodynamic and kinetic aspects), kind of chemical bond, physical properties of inorganic substances

Learning outcomes of the course unit:
Student profits the survey on the inorganic chemistry and materials.

Course contents:

1. *States of chemical substances – basic charakteristic*
2. *Chemical thermodynamic: Enthalpy, free energy, Entropy, Gibbs energy*
3. *Chemical equilibrium, equilibrium constant*
4. *Kinetics: rate laws*
5. *The effect of concentration, temperature and catalyst on reaction rate*
6. *Acids and basis (Arrhenins, Bronsted and Lewis theory)*
7. *Protolytic reactions: neutralization and hydrolysis*
8. *Precipitation reactions: product of solubility*
9. *Redox reactions: reducing and oxidizing agents, redox potential*
10. *Reactions of complex formation: complex, chromophore*
11. *Wave mechanics: wave function, atomic orbitals, electron configurations (the aufbau principle, Hunds rule, the Pauli principle)*
12. *Physical essence of chemical bond*
13. *Kinds of chemical bonds*
14. *Electic, magnetic, optical and thermal properties of inorganic substances*

Recommended of required reading:

1. *Jóna E., Ondrušová D., Pajtášová M.: Priemyselná anorganická chémia I: Všeobecná časť, 2007*
2. *Garaj J.: Chémia učebné texty pre mechanické odbory, Trenčín,*

Language: *Slovak*

Remarks: none

Evaluation history:

A	B	C	D	E	FX

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Lecturers: *prof. Ing. Eugen Jóna, DrSc., prof. Ing. Darina Ondrušová, PhD.*					
Last modification: *31.03.2014*					
Supervisor: *prof. Ing. Darina Ondrušová, PhD.*					