Information sheet for the course
Chemistry of Materials

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *M-PV-2*	**Course unit title:** *Chemistry of Materials*
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *Lecture: 2 hours weekly/26 hours per semester of study; face to face* *Seminar: 2 hours weekly/26 hours per semester of study; face to face* *Laboratory tutorial: 0*	
Number of credits: *8*	
Recommended semester: *1st semester in the 1st year full-time* *1st semester in the 1st year part-time*	
Degree of study: *the 3rd degree of study (PhD. degree)*	
Course prerequisites: *none*	
Assessment methods: *PhD students will individually elaborate a project focused on a detailed analysis of the characteristics of the chemical nature of materials, which are objects of research within the dissertation. The drawing up the project is based on the current state of the problem, based on data from the literature and international scientific publications. Finished project each PhD student will present as a ppt presentation in front of the teacher and classmates and answer questions in discussion. After completion of all Lecturers and exercises on the subject, which are guided through discussion between the teacher and the students, PhD students will pass the written examination which will be focused on individual characteristics of the chemical nature of a specific materials examined in the dissertation and the principle of the methods that will be used to study the characteristics of the given material. The successful completion and defense of project and acquirement 60 % of points in minimum from written examination are minimum conditions for obtaining of credits.*	
Learning outcomes of the course unit: *PhD student has a profound knowledge of the chemical composition of the industrially important materials. He has detailed knowledge of the chemical composition of the material examined in the context of his dissertation and know the context and the relations between the chemical composition of the studied material and material characteristics of the final product. Perfectly means the principle of methods for the study of chemical properties and other relevant material characteristics of investigated materials. Is able to independently analyze and evaluate the problem to be solved, is able to predict the final properties of the studied material, by the change of chemical composition, and can to propose solutions for the development of new types of materials and composites with ecological composition.*	
Course contents: *The characteristics of chemical composition of the material examined in the dissertation - characteristic chemical elements - electron configuration, occurrence, binding properties, basic compounds, important chemical reactions, preparation. Characteristics of examined material (composite) - preparation (production), structure, relevant properties, relations between the chemical composition and properties of a particular material, possibility of affecting the important material characteristics of the final product by changing its chemical composition. The basic principles of the methods used to study the characteristics of the investigated material (methods of chemical analysis, structural analysis, spectral analysis, thermal analysis, dynamic mechanical analysis, the method of determining the physical and mechanical*	

properties, etc ...)

Recommended of required reading:

1. E. Jóna, D. Ondrušová, M. Pajtášová: Priemyselná anorganická chémia I. FPT Púchov TnU AD, 2007, ISBN 978-80-8075-237-8.

2. Rubber Components and their Influence on Rubber Properties and Environmental Aspects of Production / Darina Ondrušová & Mariana Pajtášová. – First Edition - Towarzystwo Słowaków w Polsce, Poland (2011), 166s. ISBN 978-83-7490-385-1.

3. M. Koman, M. Jamnický: Anorganické materiály. STU Bratislava 2007.

4. W. L. Jolly: Modern Inorganic Chemistry - Second Edition –McGraw-Hill, Inc., USA (1991), 655s. ISBN 0-07-032768-8.

5. J. B. Russell: General Chemistry - Second Edition –McGraw-Hill, Inc., USA (1992), 1027s. ISBN 0-07-054445-X.

6. K. Weissermel, H.-J. Arpe: Industrial Organic Chemistry ,VCH, Weinheim,2003, ISBN 3-527-26995-9.

7. The scientific literature and foreign scientific publications to the topic of dissertation

Language: *Slovak, English*

Remarks:

Evaluation history:

Number of evaluated students: *0*

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

Lecturers: *prof. Ing. Darina Ondrušová, PhD.*

Last modification: *30.04.2014*

Supervisor: *prof. Ing. Darina Ondrušová, PhD.*