

Information sheet for the course Lab course II

University: <i>Alexander Dubček University of Trenčín</i>	
Faculty: <i>VILA – Joint Glass Centre</i>	
Course unit code: <i>LC II</i>	Course unit title: <i>Lab course II</i>
Type of course unit: <i>compulsory</i>	
Planned types, learning activities and teaching methods: <i>Lab course: 5h</i>	
Number of credits: <i>6</i>	
Recommended semester: <i>2. semester</i>	
Degree of study: <i>II. (engineer)</i>	
Course prerequisites: <i>none</i>	
Assesment methods: <i>Partial evaluation: demonstration of theoretical knowledge for LC II (e.g. short test) (2 points), individual active approach for solving lab task (2 points), elaboration of the lab report (6 points).</i> <i>Final evaluation: the minimum 6 points are obligatory to gain the credit for the LC II</i>	
Learning outcomes of the course unit: <i>Student acquires knowledge of the material research and technology through the practical lab experience. Student gains knowledge and practical skills required for preparation of the ceramic materials. He/she learns new experimental techniques and methods applied for preparation, characterization and testing of the inorganic materials. Based on acquired knowledge and skills student will be able to process, evaluate the experimental data to elaborate the accurate lab report.</i>	
Course contents: <ol style="list-style-type: none"> 1. <i>General principals for the work in the chemical laboratory (the chemical laboratory (ChL), materials used in the (ChL), safety at work).</i> 2. <i>Characterization of the raw materials and preparation of homogenous mixture.</i> 3. <i>Preparation of the raw compact ceramics using appropriate consolidation technique.</i> 4. <i>Determination of the critical humidity of the ceramic material (DTA analysis).</i> 5. <i>Sintering of selected ceramic material.</i> 6. <i>Characterization of sintered samples: Density determination, open and closed porosity.</i> 7. <i>Characterization of sintered samples: Preparation of the specimens for the microstructural analysis (sawing, grinding, polishing, etching).</i> 8. <i>Characterization of sintered samples: Microstructural analysis (SEM).</i> 9. <i>Characterization of sintered samples: Phase analysis (X-ray powder diffraction).</i> 10. <i>Determination of the coefficient of the thermal expansion for selected ceramic materials.</i> 11. <i>Determination of hardness and the fracture toughness for selected ceramic materials by nanoindentation method.</i> 12. <i>Corrosion test: specimen preparation and performing of the corrosion test.</i> 13. <i>Corrosion test: evaluation of the results from the corrosion test.</i> 	
Recommended of required reading: <i>F. Lofaj: Teória a technológia spracovania keramických materiálov, AlumniPress, Trnava, 2010</i> <i>J.Hlaváč: Základy technologie silikátů. SNTL, Praha 1988, 432-496 s.</i> <i>J.Gažo: Anorganická chémia, Laboratorne cvičenia a výpočty, Alfa Bratislava 1977</i> <i>J. Mailing: Technológia špeciálnych anorganických materiálov</i>	
Language: <i>Slovak</i>	
Remarks:	

Evaluation history:					
A	B	C	D	E	FX
Lectures: <i>Ing. Dagmar Galusková, PhD. , Ing. Jozef Kraxner, PhD., PhD student</i>					
Last modification: <i>31. 1. 2014</i>					
Supervisor:					