

Information sheet for the course
Properties and structure of glass and other inorganic materials: research methods.

University: Alexander Dubček University of Trenčín	
Faculty: VILA – Joint Glass Centre	
Course unit code: SSVSAM	Course unit title: Properties and structure of glass and other inorganic materials: research methods.
Type of course unit: optional	
Planned types, learning activities and teaching methods: Lecture: 2 hours weekly	
Number of credits: 3	
Recommended semester: 2. semester in the 1 st year (full-time)	
Degree of study: II. (engineer)	
Course prerequisites: none	
Assesment methods: Written test, student must get at least 50% of points otherwise no credits will be awarded.	
Learning outcomes of the course unit: Student will learn principles of instrumental methods which allow to study structure and properties of inorganic materials. Included are spectral methods (such as atomic emission and absorption spectroscopy, molecular absorption spectroscopy, infrared spectroscopy, roentgen diffraction, X-ray fluorescence spectroscopy), thermal methods (such as differential thermal analysis, thermogravimetric analysis, differential scanning calorimetry, thermomechanic analysis) and other measurements such as chemical resistance, thermal expansion and viscosity of glass.	
Course contents: <ol style="list-style-type: none"> 1. Atomic emission and absorption spectroscopy 2. Molecular absorption spectroscopy (UV/VIS spectroscopy) 3. Infrared and raman spectroscopy 4. X-ray diffraction 5. X-ray fluorescence spectroscopy 6. Differential thermal analysis 7. Thermogravimetric analysis 8. Differential scanning calorimetry 9. Thermomechanic analysis 10. Thermal expansion 11. Viscosity of glass 12. Impedance spectroscopy 13. Electric conductivity 	
Recommended of required reading: Hlaváč, J.: Základy technologie silikátů. Praha : SNTL, 1988. Křesťan, V. a kol.: Analýza skelných materiálů a surovin pro jejich výrobu. Praha : PRÁH, 2001. Šašek, L. a kol.: Laboratorní metody v oboru silikátů. Praha : SNTL, 1981. Fanderlík, I.: Vlastnosti skel. Praha : Informatorium, 1996. Garaj, J., Bustin, D., Hladký, Z.: Analytická chemia. Bratislava : ALFA, Praha : SNTL, 1987. Klouda, P.: Moderní analytické metody. 2. dopl. vyd. Ostrava : Nakladatelství P. Klouda, 2003.	
Language: Slovak	
Remarks:	

Evaluation history:					
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>FX</i>
Lectures: <i>Mgr. Peter Švančarek, PhD.</i>					
Last modification: <i>31. 1. 2014</i>					
Supervisor: <i>prof. Ing. Marek Liška, DrSc.</i>					