

Information sheet for the course Inorganic materials and their production technologies

University: <i>Alexander Dubček University of Trenčín</i>	
Faculty: <i>VILA - Joint Glass Centre</i>	
Course unit code: <i>AMaTV</i>	Course unit title: <i>Inorganic materials and their production technologies</i>
Type of course unit: <i>compulsory</i>	
Planned types, learning activities and teaching methods: <i>Lecture: 4 hours weekly/52 hours per semester of study; face to face</i> <i>Seminar: -</i>	
Number of credits: <i>15</i>	
Recommended semester: <i>1. and 2. semester in the 1st year (full-time)</i> <i>3. semester in the 2nd year (part-time)</i>	
Degree of study: <i>III. (PhD)</i>	
Course prerequisites: <i>none</i>	
Assesment methods: <i>Participation at all lectures</i> <i>Passing the final oral exam</i>	
Learning outcomes of the course unit: <i>Student acquires complex information and overview of the state of the art in the most important inorganic non-metallic materials used in common technical praxis and engineering, and on the state of the art technologies of their production. Student has knowledge on the newest trends in the area of research and development of advanced inorganic non-metallic materials, the ways, extent, and limitations of their use, the newest trends in their development, and the ways and methods of their characterization.</i>	
Course contents: <ol style="list-style-type: none"> <i>1. Materials: natural and synthetic materials, raw materials, taxonomy, utilization, structure, and microstructure</i> <i>2. Methods and technologies for production of materials.</i> <i>3. Technological steps in production of materials: I synthesis, treatment and characterization of raw materials.</i> <i>4. Technological steps in production of materials II: consolidation techniques.</i> <i>5. Technological steps in production of materials III: sintering.</i> <i>6. Key properties of materials I: mechanical properties and methods of their determination.</i> <i>7. Key properties of materials II: functional properties and methods of their determination.</i> <i>8. Inorganic adhesives: taxonomy and methods of their production.</i> <i>9. Refractories.</i> <i>10. Ceramic materials: taxonomy and properties of traditional ceramics.</i> <i>11. Ceramic materials: taxonomy and properties of advanced ceramics.</i> <i>12. Glass: types of glass, properties.</i> <i>13. Glass: technology of production.</i> 	
Recommended of required reading: <i>W.D. Kingery, H.K. Bowen, D.R. Uhlmann: Introduction to Ceramics, 2nd edition, John Wiley & Sons, 1976, ISBN 9812-53-141-6.</i> <i>Materials Science and Technology. A Comprehensive Treatment., Vol. 5, Phase Transformation in Materials. P.Haasen (Editor). Verlags-gesellschaft mbH, 1991.</i> <i>Materials Science and Technology. A Comprehensive Treatment, Vol. 11, Structure and Properties of Ceramics: M. Swain (Editor). Verlags-gesellschaft mbH, 1994.</i> <i>Materials Science and Technology. A Comprehensive Treatment, Vol. 17A, Processing of</i>	

<i>Ceramics, Part I.</i>					
Language: <i>Slovak</i>					
Remarks:					
Evaluation history:					
A	B	C	D	E	FX
Lecturers: <i>prof. Dušan Galusek, DSc.</i>					
Last modification: <i>31. 1. 2014</i>					
Supervisor: <i>prof. Marek Liška, DSc.</i>					