

Information sheet for the course Optimization of Material Properties in Technological Practice

University: <i>Alexander Dubček University of Trenčín</i>					
Faculty: <i>Faculty of Industrial Technologies in Púchov</i>					
Course unit code: <i>PP-P-32</i>			Course unit title: <i>Optimization of Material Properties in Technological Practice</i>		
Type of course unit: <i>optional</i>					
Planned types, learning activities and teaching methods: <i>Lecture: 2 hours weekly/26 hours per semester of study; face to face</i> <i>Seminar: 2 hours weekly/26 hours per semester of study; face to face</i>					
Number of credits: <i>5</i>					
Recommended semester: <i>5th semester in the 3rd year full-time</i> <i>7th semester in the 4th year part-time</i>					
Degree of study: <i>the 1st degree of study (Bachelor's degree)</i>					
Course prerequisites: <i>none</i>					
Assessment methods: <i>Active participation in the seminars. Creation and presentation of semester task.</i>					
Learning outcomes of the course unit: <i>The student knows optimization methods and can apply them in practice in the field of metallic and non-metallic materials such as composites.</i>					
Course contents: <i>Summary of the properties of materials. Material parameters of materials in terms of their optimization. Analytical and numerical approaches to optimization. Methods of optimization. Sensitivity analysis. Approach to optimization of composites. Planning of experiments. Proposal of parameters for optimum strength, minimum weight of products etc. Experiments to verify the results of the simulations. Methods of verification.</i>					
Recommended of required reading: <i>1. Mukai, U., Morii, T.: Flexible Composites: Tire and Belt. Comprehensive Composite Materials. Elsevier Science: 2000, roč. 2, č. 6, s. 625-644. ISSN 0-080429939 (č. 6: ISBN 0-080437249).</i> <i>2. Aktuálna literatúra zaoberajúca sa optimalizáciou materiálov.</i> <i>3. Janiček, P., Vlk, M., Pešlová, F., Fuis, V.: Mezní stavy technických objektů v soudobém pojetí. Materiálové inžinierstvo. 2002, roč. 9, č. 4, s. 59-74.</i> <i>4. Barbero Ever J.: CADEC software.</i> <i>5. Barbero Ever J.: Introduction to composite materials design. Boca Raton: Taylor & Francis. 2010. 520 p. ISBN 978-1-4200-7915-9.</i>					
Language: <i>Slovak</i>					
Remarks:					
Evaluation history:					
A	B	C	D	E	FX
Lecturers: <i>doc. Ing. Jan Krmela, PhD.</i>					
Last modification: <i>31.03.2015</i>					
Supervisor: <i>doc. Ing. Ján Vavro, PhD.</i>					

