

**Information sheet for the course**  
**Degradation processes and limit conditions of materials**

<b>University:</b> <i>Alexander Dubček University of Trenčín</i>					
<b>Faculty:</b> <i>Faculty of special technology</i>					
<b>Course unit code:</b> <i>ŠST/I/3-15/d</i>			<b>Course unit title:</b> <i>Degradation processes and limit conditions of materials</i>		
<b>Type of course unit:</b> <i>compulsory</i>					
<b>Planned types, learning activities and teaching methods:</b> <i>Lectures - 2 hours weekly, laboratory seminars - 1 hours weekly face to face</i>					
<b>Number of credits:</b> <i>4</i>					
<b>Recommended semester:</b> <i>1<sup>st</sup> semester in the 1<sup>st</sup> year (full-time)</i> <i>1<sup>st</sup> semester in the 1<sup>st</sup> year (part-time)</i>					
<b>Degree of study:</b> <i>II. (engineer)</i>					
<b>Course prerequisites:</b> <i>ŠST/B/3-11/d Material Science I, ŠST/B/3-12/d Material Science II</i>					
<b>Assessment methods:</b> <i>100% attendance on seminars, 60 % attendance on lectures, successful submission of the seminar paper, proof of acquired knowledge from the subject with using oral and written examination</i>					
<b>Learning outcomes of the course unit:</b> <i>The student has knowledge of cross-department focusing on application usage at a level corresponding to the current state of knowledge, provide a comprehensive overview and basic understanding of the phenomenology of boundary states of materials, relationship of voltage, deformation and rupture.</i>					
<b>Course contents:</b> <i>Definition of limit state and degradation processes, systematics limiting states, deformation, strain hardening, anisotropy, heterogeneity and localization of deformation, deformation Macroplastic, a stress-deformation of nuclei formation of microcracks, fold overload mechanism of brittle fracture, linear fracture mechanics, ductile fracture and mechanism, elastic-plastic fracture mechanics, material transition from brittle to ductile state, quarry creep, creep mechanisms, fracture mechanisms, fold overload shocks, fracture of thermal deformation in shock, hampered fold, premature fracture, fatigue fracture, low and high cycle fatigue, mechanical fatigue, creep and fatigue damage volume parts, surface damage components, adhesion, abrasion, erosion, cavitation, fretting, corrosion.</i>					
<b>Recommended of required reading:</b> <i>HRIVŇÁK, I.: Fraktografia [skriptá], STUBratislava, MTF Trnava, 2009, 94 s.</i> <i>HAZLINGER, M. - MORAVČÍK, R.: Degradáčny procesy a predikcia životnosti, STUBratislava, MTF Trnava, 2007, 162 s., ISBN 978-80-8096-031-5</i> <i>MONOŠI, M. - VÁRKOLY, L.: Degradáčny únavový procesy konštrukčných materiálov, RVS FŠI ŽU Žilina, 1999</i> <i>VÁRKOLY, L. - ZUIDEMA, J. - VÁRKOLYOVÁ, B. - CHALUPOVÁ, M.: Únavový porušovanie materiálov, EDIS Žilina, 1998, 235 s.</i> <i>VÁRKOLY, L. a kol.: Únavový porušovanie materiálov - teória a riešené príklady, EDIS Žilina, 1997</i> <i>PUŠKÁR, A.: Medzné stavy materiálov a súčastí, VEDA Bratislava, 1989, 304 s. ISBN 80-224-0020-3</i> <i>PLUHÁŘ, J. a kol.: Fyzikální metalurgie a mezní stavy materiálů, SNTL Praha, 1987</i> <i>PUŠKÁR, A.: Mikroplastickosť a porušenie kovových materiálov, VEDA Bratislava, 1986</i>					
<b>Language:</b> <i>Slovak, English</i>					
<b>Remarks:</b>					
<b>Evaluation history:</b> <i>Total number of students being evaluated: 192</i>					
A	B	C	D	E	F

3,13	12,71	25,61	19,58	26,04	12,92
<b>Lecturers:</b> <i>Assoc. prof. Ing. Ondrej Híreš, CSc.</i> <i>Ing. Mária Ličková, PhD.</i>					
<b>Last modification:</b> <i>15.4.2014</i>					
<b>Supervisor:</b> <i>prof. Ing. Jiří Balla, CSc., guarantee of the study program “Special Mechanical Engineering Technology”</i>					