

Information sheet for the course Flexibility and Strength I

University: <i>Alexander Dubček University of Trenčín</i>					
Faculty: <i>Faculty of special technology</i>					
Course unit code: <i>SaOA/B/4-26/d</i>			Course unit title: <i>Flexibility and Strength I</i>		
Type of course unit: <i>compulsory</i>					
Planned types, learning activities and teaching methods: <i>2 lecture hours and 2 hour seminars per week, attendance teaching method.</i>					
Number of credits: 5					
Recommended semester: <i>3rd semester in the 2st year (full-time)</i> <i>4th semester in the 2st year (part-time)</i>					
Degree of study: <i>I. (bachelor)</i>					
Course prerequisites: <i>none</i>					
Assessment methods: <i>100% participation in exercises, fulfilling the objectives set exercises, min. 60% attendance at lectures, demonstrate knowledge of subject content in written and oral examination</i>					
Learning outcomes of the course unit: <i>The student will acquire a comprehensive overview of the basic issues of flexibility and strength especially metal materials, understand the nature of each type of material stress, learn to use basic formulas, calculations and assumptions in the modes of stress machine parts. Give the foundation for successful management of specialized subjects related mainly to the construction of machinery for the second stage of the study.</i>					
Course contents: <i>The basic concepts of strength of materials. Types of strength calculations. Stress and deformation. Deadweight effects. Basic units. Types of stress and their characteristics. Tensile stress and pressure. Hooke's law. Normal and shear stresses. Castigliano theorem. Relative deformation. Poisson's ratio. Allowable stress and margin of safety. Voltage resulting from the temperature change. Thin-walled vessels with internal overpressure. Statically indeterminate problems under pressure. The pressure on the contact surfaces. Shearing, torsion and bending. Uniaxial, biaxial, triaxial and spatial tightness. Mohr's circle. Potential energy of stress. Hypotheses strength. Quadratic and polar moments of the cross section. Strained for buckling. Cyclic stress, fatigue and Metal Fatigue. Experimental Methods flexibility and strength.</i>					
Recommended of required reading: <i>TREBUŇA, F., ŠIMČÁK, F., JURICA, V.: Pružnosť a pevnosť I. I. vydanie VIENALA KOŠICE 2000, ISBN 80-7099-477-0, II. vydanie VIENALA KOŠICE 2001, ISBN 80-7099-736-2.</i> <i>TREBUŇA, F., JURICA V, ŠIMČÁK, F.,: Pružnosť a pevnosť II. I. vydanie VIENALA KOŠICE 2000 , ISBN 80-7099-478-9, II. vydanie, Vydavateľstvo M. VAŠKA PREŠOV 2002, ISBN 80-7165-364-0.</i> <i>TREBUŇA, F., ŠIMČÁK, F., JURICA, V.: Príklady a úlohy z pružnosti a pevnosti I. I. vydanie, VIENALA KOŠICE 2000, II. vydanie Vydavateľstva M. VAŠKA, PREŠOV, 2002, ISBN 80-7099-593-9.</i> <i>TREBUŇA, F., BURŠÁK, M.: Medzné stavy – lomy, GRAFOTLAČ PREŠOV 2002, ISBN 80-7165-362-4.</i> <i>TREBUŇA, F., ŠIMČÁK, F., JURICA, V.: Pružnosť a pevnosť. ELFA KOŠICE 2005 ISBN 80 – 8073-228-0.</i>					
Language: <i>Slovak</i>					
Remarks: <i>The subject is provided in the winter semester of the second year of full-time study. Compulsory subject.</i>					
Evaluation history: <i>Total number of students being evaluated: 286</i>					
A	B	C	D	E	FX
3,04	3,85	13,40	20,28	48,25	11,18

Lecturers: *Dr.h.c. Asooc. prof. Ing. Oto Barborák, CSc. – lecturer*
Ing. Peter Čelko, PhD. - assistant instructor

Last modification: *15.4.2014*

Supervisor: *prof. Ing. Alexej Chovanec, PhD., guarantee of the study program “Vehicles Maintenance and Repair”.*