Information sheet for the course
Selected Chapters from Computer Modelling in Materials Engineering

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *MI-I-PV-46*	**Course unit title:** *Selected Chapters from Computer Modelling in Materials Engineering*
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *Teaching method:* - *face to face method.* *This subject represents one of the subjects relating to the final state exam.*	
Number of credits: *2*	
Recommended semester: *the 4th semester in the 2nd year of the full-time form of study,* *the 6th semester in the 3rd year of the part-time form of study.*	
Degree of study: *the 2nd degree of study (Engineering degree)*	
Course prerequisites: *accomplishment of all compulsory and optional subjects relating to study programme including MI-I-P-2 (Computer Modelling in Materials Engineering I), MI-I-P-9 (Computer Modelling in Materials Engineering II).*	
Assessment methods: *In relation to successful accomplishment of the given subject, students have to show the creative work during the seminar lessons as well as creative approach during the solution of the determined or specified tasks because this subject is one of the other subjects which are closely connected with successful accomplishment of the final state exam.*	
Learning outcomes of the course unit: *Student has acquired and is familiar with practical aspects of computer modelling based on finite element method and the evidence about student's knowledge enhancement is connected with the successful accomplishment of the final state exam.*	
Course contents: *Computer modelling by help of finite element method and general principles, hypotheses.* *General post-processing. Types of finite elements (biaxial state of stress, biaxial deformation or strain, axially symmetric solid bodies). 3-D finite elements. Flat plates, shells and solid bodies. Materials properties: isotropic, orthotropic, and anisotropic. Static and geometric boundary or critical conditions. Symmetry and asymmetry. Creation of the model. Volume modelling and direct generation. Boolean modelling operations. Attributes of individual elements. Import of the volume models in relation to the CAD systems.* *Input data. Pos-processing. Analyses of 2-D and 3-D constructions. Special features and elements. Features and elements of fracture mechanics. Concentration of stresses. Dynamic analysis of constructions. Harmonic analysis and transient analysis. Analysis of constructions with bumped or absorbed vibrations. .*	
Recommended or required literature: 1. *Spyrakos, C.C.: Finite Element Modeling Engineering Practice. Algor, Inc., 1994.* 2. *Kolář, V.- Němec, V.- Kanický, V.: FEM Princípy a praxe Metódy konečných prvků. Computer Press Brno 1997.* 3. *Žmindák, M. - Grajciar, I., Nozdrovický, J.: Modelovanie a výpočty v metóde konečných prvkov. Žilina, 2004, ISBN 80-968823-5-X.*	
Language: *Slovak*	
Remarks: —	
Evaluation history: /Grading system/	

A	B	C	D	E	FX
Excellent	*Laudable*	*Good*	*Accepted results*	*Pass*	*Fail*
Lecturers: *prof. Ing. Ján Vavro, PhD.*					
Last modification: *31.03.2014*					
Supervisor: *prof. Ing. Darina Ondrušová, PhD.*					