Information sheet for the course
Computer - Aided Materials Engineering I

University: *Alexander Dubček University of Trenčín*

Faculty: *Faculty of Industrial Technologies in Púchov*

Course unit code: *MI-P-24* | **Course unit title:** *Computer - Aided Materials Engineering I*

Type of course unit: *compulsory*

Planned types, learning activities and teaching methods:
Lecture: *0*
Seminar: 0
Laboratory tutorial: 2 hours weekly/26 hours per semester of study; face to face

Number of credits: *2*

Recommended semester:
the 4th semester in the 2nd year of the full-time form of study,
the 4th semester in the 2nd year of the part-time form of study.

Degree of study: *the 1st degree of study (Bachelor's degree)*

Course prerequisites: *none*

Assessment methods:
To accomplish the given subject, student is obliged to be present at the lessons with the reference to specifications introduced in the study rules for the given study programme. He/she is also obliged to prepare and defend the project which is closely connected with utilisation of numerical method which is used for solution of two tasks involving beam under the static loading and bar construction under the static loading.

Learning outcomes of the course unit:
Student is able to solve the simple specific tasks with utilisation of the commercial software, which is commonly used in the field of statics and the given software is based on the finite element method (FEM).

Course contents:
Computer modelling by help of finite element method (FEM) and general specifications. The types of the finite elements (biaxial state of stress, biaxial deformation or strain, axially symmetric solid bodies). 3-D finite elements. Flat plates, shells and solid bodies or entities. Materials properties. Static and geometric boundary or critical conditions. Creation of the model. Volume modelling and direct generation. Boolean modelling operations. Attributes of individual elements. Import of the volume models in relation to CAD systems.

Recommended or required literature:
Manual Books relating to ADINA 2.8.6
IVANČO, V. - KUBÍN, K. - KOSTOLNÝ, K.: Metóda konečných prvkov I. Košice, Elfa, 1994
BITNÁR, Z.: Metoda konečných prvků I a II, ČVUT Praha,1992
BENČA, Š.: Aplikovaná pružnosť I: Metóda konečných prvkov. STU Bratislava, 1989
COOK, R. D.: Concepts and Applications of FEM Analysis. John Wiley and Sons, 1989, Third Edition

Language: *Slovak*

Remarks: —

Evaluation history: /Grading system/

A	B	C	D	E	FX
Excellent	*Laudable*	*Good*	*Accepted results*	*Pass*	*Fail*

Lecturers: *doc. Ing. Ján Vavro, PhD.*

Last modification: *31.03.2014*

Supervisor: *prof. Ing. Darina Ondrušová, PhD.*