Information sheet for the course
Physical metallurgy of steels and their heat treatment

University: *Alexander Dubček University of Trenčín*

Faculty: *Faculty of special technology*

Course unit code: *STaM/I/3-17/d*	**Course unit title:** *Physical metallurgy of steels and their heat treatment*

Type of course unit: *compulsory*

Planned types, learning activities and teaching methods:
Lectures - 2 hours weekly, laboratory seminars - 1 hour weekly, on-site method

Number of credits: *15*

Recommended semester: *1st semester in the 1st year*

Degree of study: *III.*

Course prerequisites: *none*

Assessment methods:
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

Learning outcomes of the course unit:
The student has a deep knowledge of the cross of Metal Physics, Materials Science ferrous and non-ferrous metals, composites, sintered materials and plastics. Acquire new knowledge of physical metallurgy and limit states, which are used in the art, with possible application in science and research.

Course contents:
Laws internal structure of materials. Theory of diffusion and phase transformations. Changes in material properties due to changes in the solid state. Effect of alloying elements on the properties of structural steel, alloy and specialty. Thermal, thermo-mechanical and chemical heat treatment of steels and cast irons. Non-ferrous metals. Plasty- their properties and uses. Special materials, composites and shape memory material. Experimental methods of investigation of structures and phase transformations. Summary of the experimental determination of static shock and cyclic properties of materials.

Recommended of required reading:
[1] HÍREŠ, O.: Fyzikálna metalurgia ocelí a ich tepelní spracovanie. TnUAD v Trenčíne, 2006, 168 s.
[2] PTÁČEK, L. a kol.: Náuka o materiálu I. CERM Brno, 2002.
[3] SKOČOVSKÝ, P. a kol.: Konštrukčné materiály. EDIS Žilina, 2000.

Language: *Slovak*

Remarks:

Evaluation history
Total number of students being evaluated:

A	B	C	D	E	FX
0, 0	0,0	0,0	0,0	0,0	0,0

Lecturers: *Assoc. prof. Ing. Ondrej Híreš, CSc.*

Last modification: *15.4.2014*

Supervisor: *prof. Ing. Vojtěch Hrubý, CSc., guarantee of the study program "Technologies and Materials in Mechanical Engineering", Assoc. prof. Ing. Ondrej Híreš, CSc., Assoc. prof. Ing. Viliam Cibulka, CSc. – together-guarantors.*