Information sheet for the course
Microscopic Methods of Structure Evaluation

University: *Alexander Dubček University of Trenčín*

Faculty: *Faculty of Industrial Technologies in Púchov*

Course unit code: *MI-I-P-13* | **Course unit title:** *Microscopic Methods of Structure Evaluation*

Type of course unit: *compulsory*

Planned types, learning activities and teaching methods:
Lecture: 1 hours weekly/13 hours per semester of study; face to face
Seminar:1 hours weekly/13 hours per semester of study; face to face
Laboratory tutorial:2 hours weekly/26 hours per semester of study; face to face

Number of credits: *4*

Recommended semester: *3rd semester in the 2nd year full-time*
3rd semester in the 2nd year part-time

Degree of study: *the 2nd degree of study (Engineer's degree)*

Course prerequisites: *none*

Assessment methods:
Assessment methods relate to the project containing 3 sequences:

1. *problem definition,*
2. *assessment of microstructury,*
3. *search proposal.*

Maximum quantity for problem solution is 3x10 spots. Exam condition is to reach more than 15 spots.

Learning outcomes of the course unit:
Student knows the methods of material structure assessment, can apply the concrete method for specific application and identify alternative methods of using.

Course contents:

1. *The basic material properties.*
2. *Assessment of stress-deformation characteristics.*
3. *Degradation and its microstructure.*
4. *Influence of material purity and heat treatment on structure quality.*
5. *Defects and their assessment.*
6. *Image analysis.*
7. *Fracture surface versus basic microstructure.*
8. *Intermediate phases in structures.*
9. *Dimension, morphology and distribution of particles.*
10. *Practicle application of material degradation.*

Recommended of required reading:

1. Annual Book of ASTM Standards - Section 3, Metals Test Methods and Analytical Procedures - Volume 03.02/Wear and Erosion; Metal Corrosion, ASTM, Philadelphia
2. ASM International. Handbook Committee. *ASM Handbook* , *Properties and Selection: Irons, Steels, and High Performance*. 2005, Volume 1. pp. 1618. ISBN 0-87170-379-3

Language: *Slovak*

Remarks:

Evaluation history:

A	B	C	D	E	FX

Lecturers: *doc. Ing. Marta Kianicová, PhD., doc. RNDr. Ján Bezecný, CSc.*

Last modification: *31.03.2014*

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