

**Information sheet for the course**  
**Special articles IV - Ferrous metal alloys for castings with higher utility parameters**

<b>University:</b> <i>Alexander Dubček University of Trenčín</i>	
<b>Faculty:</b> <i>Faculty of special technology</i>	
<b>Course unit code:</b> <i>STaM/D/3-36/d</i>	<b>Course unit title:</b> <i>Special articles IV - Ferrous metal alloys for castings with higher utility parameters</i>
<b>Type of course unit:</b> <i>optional</i>	
<b>Planned types, learning activities and teaching methods:</b> <i>Lectures 2 hours per week</i>	
<b>Number of credits:</b> <i>5</i>	
<b>Recommended semester of study:</b> <i>3rd semester in the 2<sup>nd</sup> year</i>	
<b>Degree of study:</b> <i>III.</i>	
<b>Course prerequisites:</b> <i>none</i>	
<b>Assessment methods:</b> <i>Exam consists of a written test and an oral preparation in the range of curriculum subject.</i>	
<b>Learning outcomes of the course unit:</b> <i>Subject as doctoral comprehensive and cross-cutting knowledge and skills for the use of primary and specialty alloys, non-ferrous metals. Thus, the extended knowledge of the field of ferrous alloys the area of non-ferrous metals and their alloys with a high specification. The goal is to graduate with relevant evidence or scientific work in practice as effectively recognize and suggest materials for the production of heavy and highly stressed components based on just the necessary materials. And so designed or used the material to its limits. This can be achieved only knowledge of the theory and technology of preparation and processing of complex materials in production.</i>	
<b>Course contents:</b> <i>Foundry alloys of Ni, Co, Ti, Cu, Zn, Al, Mg. Possibilities of increasing the mechanical properties of foundry alloys of non-ferrous metals. Vaccination, modifying, microalloying, alloy ferrous metal alloys. Filtration, degassing and directionally solidified in casting and cooling melts. Heat treatment of non-ferrous metals. The use of castings with higher utility parameters in the production and special-exploitation techniques. Graduated III. degree studies must always keep materials and new technology to enable its technical functioning well to compete with other manufacturers. Must be familiar with the application of non-ferrous powder materials and composite materials.</i>	
<b>Recommended of required reading:</b> <i>[1] DILLINGER, J. a kol.: Moderní strojírenství pro školu i praxi, EUROPA – SOBOTÁLES cz., Praha 2007, 608 s.</i> <i>[2] PTÁČEK, L. a kol.: Náuka o materiálu II., Brno, Akademické nakladatelství CERM, 2003</i> <i>[3] ŠENBERGER, J.: Metalurgie oceli na odliatky, Akademické nakladatelství CERM, s.r.o. Brno, 2003.</i> <i>[4] ROUČKA, J.: Metalurgie neželezných slitin, akademické nakladatelství CERM, s.r.o Brno, 2004.</i> <i>[5] HÍREŠ, O.: Povrchové úpravy kovov, Trenčianska univerzita AD v Trenčíne, 2004.</i> <i>[6] PERNIS, R.: Teória tvárnenia kovov, Trenčianska univerzita AD v Trenčíne, 2007.</i>	
<b>Language:</b> <i>Slovak</i>	
<b>Remarks:</b> <i>The subject is provided in the winter semester of the first year of full-time study. The course is elective.</i>	

**Evaluation history:***Total assessed students: 4*

A	B	C	D	E	FX
16,67	6,67	16,67	0	0	0

**Lecturers:** *Assoc. prof. Harold Mäsiar, 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.*