

**Information sheet for the course**  
**Special articles III - Welding of high strength materials used in production**  
**of special equipment**

<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/3-34/d</i>	<b>Course unit title:</b> <i>Special articles III - Welding of high strength materials used in production of special equipment</i>
<b>Type of course unit:</b> <i>compulsory</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>3<sup>rd</sup> 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>Conditions for passing the subject:</b> <i>Presentation of seminar work on the subject. The test 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 to use modern methods of welding in the use of new resources and welding consumables. The goal is to graduate syllabus proved in practice to develop the most efficient techniques for welding thermomechanically processed metal type ARMOX, WELDOX and HARDOX with optimal reduction of the mechanical properties of the weld joint. This can be achieved only knowledge of the discipline theory and welding technology, materials science, degradation processes and limit states of materials as well as the science of heat treatment of metals.</i>	
<b>Course contents:</b> <i>The basic outline of the course are the latest methods of welding under CO2 and inert atmosphere of argon in interaction with the material properties thermodynamically metal processing. Another aspect of the composition of the mixtures of protective and inert gases, surface treatment of additional materials, the thickness of the base material and the heat output per unit length of the arc. Although the manufacturers of thermo-mechanically processed materials, the essential conditions for the technological process of welding, this is usually brief and failed to address the decline in the mechanical properties of the weld joint. Thus welded products must meet not only the conditions for certification of their quality in Slovakia but also throughout the EU. Mechanical properties of the weld joint falls far below basic material Rifle resistance then remains uncertain.</i>	
<b>Recommended of required reading:</b> <i>[1] DILLINGER, J. a kol.: Moderní strojírenství pro školu i praxi, EUROPA – SOBOTÁLEScz., Praha 2007, 608 s.</i> <i>[2] PTÁČEK, L. a kol.: Náuka o materiálu II., Brno, Akademické nakladatelství CERM, 2003</i> <i>[3] Firemné materiály z termomechanicky spracovaných plechov ARMOX, WELDOX a HARDOX. fa. Ssab OXELUND Sweden.</i> <i>[4] MARTINEC, J., PLÍHAL, A.: Svařování termomechanicky spracovaných plechu, Zborník prednášok zo 14. semináru ESAB, MTF STU Trnava 2010.</i> <i>[5] Hrivňák, I.: Zváranie a zvariteľnosť materiálov, Citadella, Bratislava 2013, 496 s.</i>	
<b>Language:</b> <i>Slovak</i>	

**Remarks:**

*The subject is provided in the winter semester of the second year of full-time study. The course is elective.*

**Evaluation history:**

*Total assessed students: 4*

A	B	C	D	E	FX
25,0	75,0	0,0	0,0	0,0	0,0

**Lecturers:** *Assoc.prof. Ing. 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.*