No. 35

Course syllabus for First cycle studies					
1.	**Course title**	**Welding Technologies**			
2.	**Code**	MDE8M2			
3.	**Study Program**	Metallurgical digital engineering			
4.	**Study program organizer (unit, institute, department, division)**	Faculty of Technology and metallurgy			
5.	**Degree (first, second, third cycle)**	first			
6.	**Academic year / semester**	IV/VIII	7.	**Number of ECTS**	5
8.	**Instructors**	**Prof Sveto Cvetkovski**			
9.	**Prerequisites for course enrollment**				
10.	**Objectives of the course syllabus (competences):** The objective of the course is introducing the students to the methods of joining metals with welding **Acquired skills (competences):**				
11.	**Content of the course:** Content. Determination of welding conditions. Determination of weldability conditions. Introduction, Classification of of welding processes. Electrodes for manual metal arc welding and surfacing. Electrode wire for automatic and semi automatic submerged electric arc welding of steel. Electrode wire and powders for automatic and semi automatic welding. Structure of welded joints. Slag-metal equalibrium. Absorbtion of gasses (hydrogen, oxygen and nitrogen) in welded joints and their influence to the welded joints. Appearing of cracks in the welded joints. Methods of preventation of crack appearing in welded joints. Determination of preheating temperature. Weldability probes. Weldability of constructive low alloyed carbon steel, medium carbon steels and steels with increased strength. Weldability of austenitic Cr-Ni steels. Determination weldability conditions. Welding o austenitic stainless steels. Heterogeneous welded joints. Schaeffler diagram. Repair welding of steels resiant to wear. Welding of cast iron.. Quality control of welded joints.				
12.	**Study methods:**				
13.	**Total available time**				
14.	**Allocation of available time**				
15.	**Teaching activities**	15.1.			
		15.2.			
16.	**Other types of activities**	16.1.			
		16.2.			
		16.3.			
17.	**Grading system**				
	17.1.				

	17.2.		
	17.3.		
18.	**Grading criteria (points/grade)**	Up to 61 points	5 (five) (F)
		From 61 to 69 points	6 (six) (E)
		From 70 to 79 points	7 (seven) (D)
		from 80 to 89 points	8 (eight) (S)
		From 90 to 95 points	9 (nine) (B)
		from 95 to 100 points	10 (ten) (A)
19.	**Prerequisites for taking the final exam**		
20.	**Language in which lectures are conducted**		
21.	**Method for monitoring the quality of lectures**		

22. **LITERATURE**

22.1. Compulsory literature

No.	Author	Title	Publisher	Year
1.	S. Kou	Welding Metallurgy 2nd Edition	John Wiley & Sons	2003.
2.	G. E. Linnert	Welding Metallurgy, Vol. 1 – Fundamentals	American Wlding Society	2000.
3.	D. Seferijan	Metalurgija zavarivanja	Научна књига, Београд	1969.

22.2. Additional literature

No.	Author	Title	Publisher	Year
1.				
2.				
3.				