No. 41

Course syllabus for First cycle studies						
1.	**Course title**	Ferroalloys				
2.	**Code**	MDE5M2				
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 cycle**				
6.	**Academic year / semester**	3 year	Semester 5	**Number of ECTS**	5	
8.	**Instructors**	Prof. Aleksandar Dimitrov, PhD Associate prof. Aleksandar Petrovski, PhD				
9.	**Prerequisites for course enrollment**	/				
10.	**Objectives of the course syllabus (competences):** Acquiring theoretical and practical knowledge in the field of ferroalloys **Acquired skills (competences):** Ability to work in the laboratory and industry on certain processes for the development and production of Ferroalloys					
11.	**Content of the course:** Course content: Introduction; Ferroalloy production processes: blast furnace; electric arc furnace; metallothermal process, Physicochemical basics of ferroalloy production: carbothermic and metallothermal reduction of metal oxides, Carbon electrodes: amorphous carbon electrode; graphite electrodes; Cederberg electrode, Technologies for obtaining ferroalloys: Ferromanganese production, Ferrosilicon production, Ferronickel production, Ferrochrome production, Ferrovanadium production, Ferrotitanium production; Ferromolybdenum production.					
12.	**Study methods:** Lectures and exercises, consultations, project (homework, seminar) assignments, home study (exam preparation)					
13.	**Total available time**	150				
14.	**Allocation of available time**	/				
15.	**Teaching activities**	15.1.	Lectures - theoretical teaching	30		
		15.2.	Exercises (laboratory, lecture), seminars, teamwork: classes	25		
16.	**Other types of activities**	16.1.	Project tasks: hours	20		
		16.2.	Homework - assignments	75		
		16.3.				
17.	**Grading system**					
	17.1.	Tests: points	80			
	17.2.	Seminar paper/project, written and oral presentation: points	20			
	17.3.	Final exam: points	100			
18.	**Grading criteria**	Up to 61 points	5 (five) (F)			

	(points/grade)	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**	Regular attendance at classes, preparation of exercises	
20.	**Language in which lectures are conducted**	English	
21.	**Method for monitoring the quality of lectures**	Anonymous student survey	

22. **LITERATURE**

22.1. Compulsory literature

No.	Author	Title	Publisher	Year
1.	Aleksandar Dimitrov	Ferroalloys Internal textbook	Faculty of Technology and Metallurgy, Skopje	2017
2.	Fathi Habashi	Handbook of extractive metallurgy	Weinheim: Wiley-Vch	1997
3.	H. Erinin, A. Avramov	Ferroalloy metallurgy	Technology, Sofia	1979

22.2. Additional literature

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