

No. 10

Course syllabus for First cycle studies				
1.	Course title	Mathematics 1		
2.	Code	MDE1M1		
3.	Study Program	Metallurgical Digital Engineering		
4.	Study program organizer (unit, institute, department, division)	Faculty of Technology and Metallurgy, UKIM in Skopje		
5.	Degree (first, second, third cycle)	First		
6.	Academic year/semester	First Year / First Semester	7.	Number of ECTS
7.	Instructors	Prof. Dr. Beti Andonovikj, PhD Assoc. Prof. Dr. Pavel Dimovski, PhD		
8.	Prerequisites for course enrollment	None		
9.	Objectives of the course syllabus (competencies):			
	The course aims to provide students with the necessary knowledge of differential and integral calculus for functions of a single variable, which forms the mathematical foundation for many engineering subjects.			
	Acquired skills (competences):			
10.	Content of the course:			
	The set of real numbers, intervals, and absolute values. Functions of one real variable (definition, boundedness, monotonicity, periodicity, symmetries, inverse function). Overview of elementary functions. Sequences, convergence of a sequence, the number e. Limits of functions, continuity, and asymptotes. Concept of the derivative, derivatives of elementary functions, differentiation rules. Derivatives of composite, inverse, parametric, and implicit functions. Geometric interpretation of the derivative, equations of tangent and normal lines. Differential. Higher-order derivatives and higher-order differentials. L'Hôpital's rule. Basic theorems of differential calculus. Analysis of functions using derivatives and their graphical representation. Indefinite integral, tabular integrals, and integration rules. Methods for solving indefinite integrals (substitution, partial integration, integration of rational functions). Definition of definite integrals and the relationship between indefinite and definite integrals. Applications of definite integrals (area of planar figures and arc length).			
11.	Study methods: Lectures and exercises, consultations, homework assignments, and independent study.			
12.	Total available time	240		
13.	Allocation of available time			
14.	Teaching activities	15.1.	Lectures - Theoretical Instruction:	45 hours
15.		15.2.	Exercises (Laboratory, Tutorials), Seminars, Teamwork:	45 hours
15.		15.3	Practical Work:	0 hours

16.	Other types of activities		16.1.	Project Assignments:	0 hours					
			16.2.	Independent Assignments:	30 hours					
			16.3.	Homework:	120 hours					
17.	Grading system									
	17.1.	Tests (Points):			90					
	17.2.	Seminar Work/Project, Written and Oral Presentation (Points):			10					
	17.3.	Final Exam (Points):			0					
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		Attended the course							
20.	Language in which lectures are conducted		Macedonian and English							
21.	Method for monitoring the quality of lectures		Self-evaluation, questionnaires							
22.	LITERATURE									
	22.1.	Compulsory literature								
		No.	Author	Title	Publisher					
		1.	Б.Андоновик и др.	Збирка решени задачи од математика 1 за студентите на ТМФ	УКИМ					
		2.	Н. Шекутковски	Математичка анализа 1	Просветно дело					
	22.2.	3.	Б. Пиперевски	Математичка анализа 1	ФЕИТ					
		Additional literature								
		No.	Author	Title	Publisher					
		1.	С. Геговска Зајкова и др.	Вовед во математика за инженери	УКИМ					
		2.	G. James	Mathematics for Modern Engineering	Pearson					
		3.			2020					