

Program	Level		First cycle				
	Name of the program		All study programs				
COURSE							
Course title	Analysis II						
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)			
PMAT 170	II	Mandatory course	8	4+4+0			
Lecturer							
Course Goals	<ul style="list-style-type: none"> - Integral calculus of a real function of a real variable and its applications. - Achieving the required level of competence in knowing and applying the definite and improper Riemann integral of a real variable function, - Developing conceptual motivation for courses in analysis in higher years of study. 						
Learning Outcomes	<ul style="list-style-type: none"> - Master the techniques of finding the indefinite integral, - Understand Riemann's concept of integrability, - To be able to apply the integral calculus to solve typical problems in geometry, physics and other sciences. 						
COURSE CONTENT							
<ul style="list-style-type: none"> - Primitive function and indefinite integral. Table of integrals of elementary functions. Integration methods. Integration by parts. Substitution method. Integrals that cannot be expressed by elementary functions. - Integration of rational functions. Euler's method. Binomial integral. Integration of trigonometric functions. Elliptic integrals. - A definite integral. Darboux's approach to the definition of a definite integral. Riemann integral sum. Examples. An example of a nonintegrable function. - Space of integrable functions. Lebesgue criterion for Riemann integrability. - The first mean value theorem for integrals. - Integration by parts of definite integrals. - Change of a variable for a definite integral. - The second mean value theorem for integrals. - Applications of a definite integral. Surfaces of plane figures. Volume of a solid of revolution. - The length of the curve arc. Surface area of a solid of revolution. - Improper Riemann integral. Criteria for the convergence of improper integrals. Integral criterion for convergence of series. - Sequences of functions. Uniform convergence. - Power series. Convergence radius. Continuity. Differentiation and integration. - Taylor's series. Analytical functions of a real variable. - Disadvantages of Riemann's notion of integral. 							
LITERATURE							
[1] V. A. Zorich, Mathematical analysis I, Universitext, Springer, Berlin, 2003.							
[2] Ljaško i dr., Zbirka zadataka iz matematičke analize, IBC '98, 2002.							
STUDENT WORKLOAD (hours in a semester)							
Lectures	60	Exercises	60	Individual work	80	T o t a l	200
GRADING				REMARKS			
Criterion	Maximum points	Minimum points					
Midterm exams	50	25					
Final exam	50	25					
T o t a l	100	55					