

Program	Level		First cycle				
	Name of the program		Pure Mathematics				
COURSE							
Course title	Analysis IV						
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)			
PMAT 340	V	Mandatory course	6	3+3+0			
Lecturer							
Course Goals	The main aim of the course is to, combined with courses Analysis I, Analysis II, and Analysis III, form a very good basis for studying more advanced fields of mathematical analysis.						
Learning Outcomes	After completing this course, students should demonstrate competency in the following skills: <ul style="list-style-type: none"> - Understand the notion of summability and be able to use different summability methods; - Be able to apply some techniques to calculate integral with parameters; - Be able to discuss absolute and uniform convergence ; - Understand the basics of vector calculus; - Be able to work with infinite products; - Be able to do calculations using Gamma and Beta functions and their properties. 						
COURSE CONTENT							
<ul style="list-style-type: none"> - Convergence of Fourier series, convergence criterions - Notion of summability, summability methods, summability of Fourier series. - Fubini theorem, diffeomorphisms, decomposition theorem. - Improper integrals, absolute integrability. - Theorems of Gauss, Green, and Stokes. - Basics of vector calculus, the notion of gradient, rotor, and divergence, and their properties. - Uniform convergence, the order of limits, differentiation, and integration under limits. - Uniform convergence of integrals. - Infinite products, gamma and beta functions, Stirling formula. 							
LITERATURE							
[1] V. A. Zorich: Mathematical Analysis II, Springer, 2003. [2] F. Vajzović i M. Malenica: Diferencijalni račun funkcija više promjenljivih, Univerzitetska knjiga, Sarajevo, 2002. [3] F. Vajzović i M. Malenica: Integralni račun funkcija više promjenljivih, Univerzitetska knjiga, Sarajevo, 2002. [4] I. I. Ljaško, A. K. Boljarčuk, et al: Zbirka zadataka iz matematičke analize, prevedeno izdanje, Naša knjiga d.o.o. Beograd, 2007. [5] P.M. Miličić i M.P. Uščumlić: Zbirka zadataka iz više matematika II [6] S. Kurepa: Matematička analiza, dio: Funkcije više varijabli, Tehnička knjiga, Zagreb 1970. [7] D. Mihailović, D.Đ. Tošić: Elementi matematičke analize II, Naučna knjiga, Beograd, 1991.							
STUDENT WORKLOAD (hours in a semester)							
Lectures	45	Exercises	45	Individual work	60	T o t a l	150
GRADING				REMARKS			
Criterion	Maximum points	Minimum points					
Midterm exams							
Project							
Final exam							

Total	100	55	
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