

Study programmes: BACHELOR STUDIES - Mathematics				
Course name: CODE M2.31 - Functions of a complex variable				
Lecturers: Miodrag Mateljević, Vladimir Božin, Miljan Knežević				
Status: Compulsory				
ECTS: 5				
Attendance prerequisites: There is no prerequisites.				
Course aims: Acquisition of general knowledge in complex analysis.				
Course outcome: Upon completion of the course, the student has basic knowledge on complex analysis. It also possesses operational knowledge of basic applications in complex analysis.				
Course content: Field of complex numbers. Topology of complex plane \mathbb{C} . Convergence in \mathbb{C} . Stereographic projection. Basic trigonometric formulae. Polar form and the basic branch of the argument of a non-zero complex number. Differentiable functions and Cauchy-Riemannian equations. Analytic (holomorphic) functions. Geometric meaning of the derivative. Conformal mappings. Elementary functions and Möbius transformations. Curves, contours and simply connected domains. Complex integration and independence of path. Cauchy-Goursat theorem. Cauchy's integral theorem and formula - local versions. Cauchy's integral formula for derivatives. Power series. Morera's theorem. Taylor's power series theorem and applications - Cauchy's inequalities and Liouville's theorem. The fundamental theorem of algebra. Laurent's series. Definition and types of isolated singularities. Point as an isolated singularity - characterizations. Definition of a residuum and applications. Evaluation of some real definite integrals by contour integration. Maximum modulus theorem and applications.				
Literature:				
1. Miodrag Mateljević: Kompleksne funkcije 1&2, Društvo matematičara, Beograd, 2006.				
2. Б.В.Шабат: Введение в комплексный анализ, Часть 1, Наука, Москва 1976.				
3. L. Ahlfors, Complex analysis, McGraw Hill, 1979.				
Number of hours: 4	Lectures: 2	Tutorials: 2	Laboratory: -	Research: -
Teaching and learning methods: Frontal / Tutorial				
Assessment (maximal 100 points)				
Course assignments	points	Final exam	points	
Lectures	-	Written exam	30	
Exercises / Tutorials	-	Oral exam	40	
Colloquia	15+15	Written-oral exam	-	
Essay / Project	-			