Study Program: Mathematics	

Type and level of studies: Bachelor studies, VI semester

Course name: Complex analysis

Lecturer: Miloje S. Rajović

Status: compulsory

ECTS: 8

Attendance Prerequisites: Mathematics analysis 1, 2, 3, 4

Course aims

The study of the basic concepts and theorems of complex analysis and their understanding through tasks.

Course outcome

The students have learned the basic concepts of Complex Analysis. They can show that they are able to prove the main theorems of Analysis and Mathematics in general, and to compare the newly-acquired knowledge with the previously acquired knowledge from other areas.

Course content

Functions of a complex variable. A field of complex numbers and its topological structure. Complex variable function. Limit value, continuity, differentiability, Cauchy Riemann conditions. Geometric interpretation.

Conformal mappings. Bilinear functions. Elementary functions, branch points.

Representation of holomorphic functions by sequences. Degree sequence: normal, absolute and uniform convergence. Path integral. Primitive function. Cauchy's theorem and Cauchy's integral formula. Taylor's order. Properties of holomorphic functions. Laurent's order.

Residues. Zeros and singularities of analytic functions. Calculating integrals. The notion of analytic function. Analytical extension and examples. Chain continuation and continuation along a continuous curve. Monodromy theorem. Singularities of complete analytical function. Geometric principles. The principle of argument. The principle of preserving areas. The maximum modulus principle. Schwartz's lemma

Practical part: *Exercises, Other forms of teaching, Study research work*

Exercises and assignments accompany the lectures in terms of content.

Literature

1. 1. Б. Станковић, Теорија функција комплексне променљиве, Научна књига, Београд 1972
2. М. Матељевић, комплексне функције 1 &2, Друштво математичара Србије, Београд 2006
3. В. Дајовић, теорија функција комплексне променљиве, Научно дело, Београд 1977
4. М. Рајовић, Ј. Вујаковић, Збирка решених задатака из Комплексне анализе, Академска мисао, Београд 2009

Number of active classes				Other classes
Lectures: 3	Practical classes: 3	Other forms of teaching:	Students' research work	

Teaching methods

Lectures, consultations, term tests, homework.

Assessment (maximum 100 points)			
Course assignments	**points**	**Final exam**	**points**
activity during lectures	**10**	written exam	**20**
practical classes		oral exam	**30**
term test(s)	**40**	....	
seminar(s)			
Total	**50**		**50**