Program	Level	First cycle
	Name of the program	Pure Mathematics

COURSE

Course title	**Complex Analysis II**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
PMAT 390	V	Mandatory course	5	2+2+0
Lecturer				
Course Goals	The goal of this course is to introduce students into advanced methods related to functions of a complex variable. Those methods are a powerful tool for solving various problems in mathematics and its applications. The aim is also to enable students to use their knowledge in modelling problems and their solving.			
Learning Outcomes	Upon the successfull competion of the course we expect the student to be able to: - Apply complex analysis techniques to solve certain specific problems in mathematical physics - Understand geometric aspects of complex analysis and apply those - Use more advanced techniques, such as the maximum modulus principle and its generalizations - Represent an entire function as an infinite product and understand relation between the order of the function and a sequence of its zeros - Apply a variety of complex-analytic techniques in solving advanced problems.			

COURSE CONTENT

- Models of hyperbolic geometry.
- Basic geometric principles: argument principle, principle of maximal modulus, properties of holomorphic functions on simply connected domains.
- Conformal equivalence and Riemann's mapping theorem.
- Applications of the maximum modulus principle and Jensen's formula.
- Growth of entire functions; Phragmen-Lindelöf theorem, zeros of entire functions of finite order.
- Infinite products; representation of entire and meromorphic functions in terms of an infinite product.
- Theorems of Weierstrass, Hadamard and Mittag-Leffler.
- Dirichlet problem. Poisson's kernel.
- Elliptic functions and Gamma function.

LITERATURE

[1] A. Odžak, L. Smajlović, Kompleksna analiza, Prirodno-matematički fakultet Sarajevo, 2013.

[2] J. L. Taylor, Complex Variables, Pure and Applied Undergraduate texts, AMS, Providence, Rhode Island, 2011.

[3] J. P. D'Angelo, An Introduction to Complex Analysis and geometry, Pure and Applied Undergraduate texts, AMS, Providence, Rhode Island, 2010.

STUDENT WORKLOAD (hours in a semester)

Lectures	30	Exercises	30	Individual work	65	T o t a l	125

GRADING			**REMARKS**
Criterion	Maximum points	Minimum points	
Midterm exams	50	25	
Final exam	50	30	
T o t a l	100	55	