

<b>Study programmes:</b> MASTER STUDIES - Mathematics				
<b>Course name:</b> Analytical methods in elementary mathematics				
<b>Lecturers:</b> Đorđe Krtinić, Miljan Knežević				
<b>Status:</b> Optional				
<b>ECTS:</b> 8				
<b>Attendance prerequisites:</b> Analysis 2				
<b>Course aims:</b> Getting familiar with some basic inequalities.				
<b>Course outcome:</b> Upon completion of the course, the student mastered the basic mathematical inequalities such as algebraic inequalities and geometric inequalities. The student is informed with several examples of concrete inequalities and their relation with topics in school mathematics, to solve them and apply them.				
<b>Course content:</b> Algebraic inequalities (convex functions, mean inequalities, Holder inequality, Chebyshev's inequality, Muirhead's theorem, Karamata's inequality and Jensen's inequality). Applications in Fourier series. Applications in calculus of variations. Geometric inequalities (inequalities for elements of triangle and polygon, isoperimetric problem, Erdős–Mordell inequality, Brunn–Minkowski inequality).				
<b>Literature:</b>				
<ol style="list-style-type: none"> <li>1. G. H. Hardy, J. F. Littlewood, G. Polya, Inequalities</li> <li>2. Z. Kadelburg, D. Đukić, M. Lukić, I. Matić, Nejednakosti</li> <li>3. A. Marshall, I. Olkin, B. Arnold, Inequalities: Theory of majorization and its applications</li> </ol>				
<b>Number of hours:</b> 7	<b>Lectures:</b> 3	<b>Tutorials:</b> 2	<b>Laboratory:</b> -	<b>Research:</b> 2
<b>Teaching and learning methods:</b> Frontal / Tutorial				
<b>Assessment (maximal 100 points)</b>				
<b>Course assignments</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>	
Lectures	-	Written exam	40	
Exercises / Tutorials	-	Oral exam	30	
Colloquia	30	Written-oral exam	-	
Essay / Project	-			