

<b>Study programmes:</b> BACHELOR STUDIES – Mathematics (module ML)			
<b>Course name:</b> Selected Topics of Analysis A			
<b>Lecturers:</b> Miodrag Mateljević, Miljan Knežević, Vladimir Božin			
<b>Status:</b> Optional			
<b>ECTS:</b> 5			
<b>Attendance prerequisites:</b> Analysis 1			
<b>Course aims:</b> Expanding and deepening knowledge from mathematical analysis and its applications.			
<b>Course outcome:</b> The student should master special knowledge and acquire a substantially understanding of the learned mathematical content.			
<b>Course content:</b>			
<ol style="list-style-type: none"> <li>1. <b>Application of mathematical analysis in physics.</b> Motion of particle in <math>\mathbb{R}^n</math>. The concept of velocity and speed. The concept of acceleration.</li> <li>2. <b>Some important theorems of differential calculus.</b> Lagrange's mean value theorem. Darboux's theorem. Applications.</li> <li>3. <b>Some important classes of real functions of real variable.</b> Monotone functions. Functions of bounded variation. Absolutely continuous functions.</li> <li>4. <b>Convex functions.</b> Various characterizations of convex functions. Inequalities related to convex functions. Applications.</li> <li>5. <b>Isoperimetric problem.</b> Isoperimetric inequality for polygons. Isoperimetric inequality for closed rectifiable curves in the plane. Isoperimetric inequality in <math>\mathbb{R}^n</math>.</li> </ol>			
<b>Literature:</b>			
1. M. Mateljević, Odabrana poglavlja analize, skripta.			
<b>Number of hours:</b> 4	<b>Lectures:</b> 2	<b>Tutorials:</b> 2	<b>Laboratory:</b> - <b>Research:</b> -
<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	10	Written exam	40
Exercises / Tutorials	-	Oral exam	30
Colloquia	-	Written-oral exam	-
Essay / Project	20		