

Study program: Mathematics (Ph.D. program)			
Course: Methods of Functional Analysis in Mechanics			
Course instructor(s): Teodor Atanacković			
Course type (compulsory/elective): elective			
Credit points: 10 ECTS			
Prerequisites: -			
Course objectives: Introduction to solving models in mechanics through fractional calculus.			
Learning outcomes: The students will be able to apply the general theory to solving equations.			
Course description (outline): Generalized functions and integral transformations. Fixed point theorems. Applications of fractional calculus in mechanics. Generalized highly elastic bodies. Anomalous diffusion. Variation principles in mechanics. Optimal control by fractional calculus.			
References:			
1. K. S. Miller, B. Ross, An introduction to the fractional integrals and derivatives-Theory and applications, John Willey and Sons, 1993			
2. T. Atanacković, Fractional calculus in mechanics, Novi Sad 2007.			
3. S. G. Samko, A.A. Kilba, S. O. I. Marichev, Fractional integrals and derivatives, Theory and applications, Dover Publ. INC, 1992			
Active teaching hours		Theoretical classes: 2	Practice classes: -6
Methods of teaching: Lectures, with active participation of the students, discussion, seminars, etc.			
Grading structure			
Pre-exam obligations	Points	Exam	Points
Colloquia	25	Oral exam	25
Seminars	25		