

<b>Study program:</b> Mathematics (Ph.D. program)			
<b>Course:</b> Numerical Solving of Differential Equations			
<b>Course instructor(s):</b> Helena Zarin			
<b>Course type (compulsory/elective):</b> elective			
<b>Credit points:</b> 10 ECTS			
<b>Prerequisites:</b> -			
<b>Course objectives:</b> Introduction to methods of numerical solving of differential equations.			
<b>Learning outcomes:</b> Adoption of numerical methods for research work in numerical solving of differential equations.			
<b>Course description (outline):</b> Initial value problems of ODEs. One-step and multistep methods. Boundary value problems of ODEs and PDEs. Finite difference methods. Finite element methods. Finite volume method for PDEs. Boundary value problems in applications in physics and technics.			
<b>References:</b>			
1. Stoer, J., Bulirsch, R., Introduction to Numerical Analysis, Springer, 2002			
2. Ascher, U.M., Matheij, R.M.M., Russell, R.D., Numerical solution of boundary value problems for ordinary differential equations, SIAM, 1995			
3. Thomas, J.W., Numerical Partial Differential Equations, Finite Difference Methods, Springer, 1995.			
4. Axelsson, O., Barker, V.A., Finite Element Solution of Boundary Value Problems, SIAM, 2001.			
<b>Active teaching hours</b>	<b>Theoretical classes:</b> 2	<b>Practice classes:</b> -6	
<b>Methods of teaching:</b> Lectures and computer practice, with active participation of the students, discussion, etc.			
<b>Grading structure</b>			
<b>Pre-exam obligations</b>	<b>Points</b>	<b>Exam</b>	<b>Points</b>
Colloquia	25	Oral exam	50
Seminars	25		