Study program: Mathematics (Ph.D. program)

Course: Numerical Solving of Parabolic Partial Differential Equations

Course instructor(s): Helena Zarin

Course type (compulsory/elective): elective

Credit points: 10 ECTS

Prerequisites: -

Course objectives:

Introduction to numerical methods for parabolic partial differential equations.

Learning outcomes:

Adoption of methods which enable research in the field of numerical solving of parabolic partial differential equations.

Course description (outline):

Explicit and implicit schemes. θ-schemes. Maximum principle. Stability. Semidiscretization. Methods of lines. Problems in higher dimensions. Standard and discontinuous discretizations.

References:

1. Knabner, Angermann: Numerical methods for elliptic and parabolic partial differential equations, Springer, 2003
2. Quarteroni, A., Valli, A., Numerical Approximation of Partial Differential Equations, Springer, 1997

Active teaching hours	**Theoretical classes:** 2	**Practice classes:** -6

Methods of teaching:

Lectures and computer practice, with active participation of the students, discussion, etc.

Grading structure			
Pre-exam obligations	**Points**	**Exam**	**Points**
Colloquia	**25**	Oral exam	**50**
Seminars	**25**		