Course Unit Descriptor

Study Programme: Master of Applied Mathematics

Course Unit Title: Partial Differential Equations

Course Unit Code: MA01

Name of Lecturer(s): Professor Marko Nedeljkov

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): Compulsory

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 7.5

Prerequisites: None

Course Aims:

Introducing different models and corresponding PDEs, basic methods for solving and analysis PDEs to students.

Learning Outcomes:

Analysis of mathematical models connected to PDEs, basic analysis and solving.

Syllabus:

Theory

Examples of modeling with PDEs. Classification of PDEs. Well possedness. Fourier method. Wave equation, initial data and mixed problems. Energy integral. Maximum principle, existence and uniqueness for the Heat equation. Sobolev spaces and weak solutions. Distributions and Fourier transformation. Weak solutions for the wave equation and Dirichlet problem for the Laplace equation.

Practice

Problems corresponding to theoretical part.

Required Reading:

1. W.Strauss, Partial Differential Equations – an Introduction, John Wiley & Sons, 1992.
2. M. Nedeljkov, PDEs, Faculty of Sciences, Novi Sad, 2004.

Weekly Contact Hours: 6	**Lectures:** 4	**Practical work:** 2

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Preliminary exam(s)	50	oral exam	50

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.