**Numerical mathematics (ECTS credits: 5)**

Language: the course is offered in Serbian and Hungarian.

**Course description:**

The course covers some elements of Mathematical analysis I and II and Numerical analysis.

This short course would cover the following topics: 1. lecture: Numerical series – introduction, 2. lecture: Criteria for numerical series convergence, 3. lecture: Functional series – introduction, 4. lecture: Power series and expansion of analytical function into Taylor and Maclaurin series, 5. lecture: expansion of function into Fourier series, 6. lecture: Functions with two variables – introduction, 7. lecture: Unconstrained optimization of function with two variables, 8. lecture: Constrained optimization with one constrained and objective function with two variables, 9. lecture – Error analysis, 10. lecture: Numerical solution of equations with one unknown: graphical method and bisection, 11. lecture: Numerical solution of equations with one unknown: Newton-Raphson method and secant method, 12. lecture: interpolation – Lagrange and Newton interpolation formula, 13. lecture: Numerical integration and numerical solution of initial-value problems for ordinary differential equations.

**Aims:**

The goals are the following:

* To understand the theory of numerical and functional series, the theory of function with two variables and elements of Numerical analysis
* Solving mathematical problems with a mathematical software

**Learning outcomes:**

After completing the course the student should be able to:

* numerically solve mathematical models from real problems
* solve problems of algebra, mathematical analysis and numerical mathematics with the help of mathematical software