**Mathematics 3 (ECTS credits: 6)**

Language: the course is offered in English, Serbian and Hungarian.

**Course description:**

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

This short course cover the following topics:

1. Numerical series – introduction
2. Criteria for numerical series convergence
3. Functional series – introduction
4. Power series and expansion of analytical function into Taylor and Maclaurin series
5. Expansion of function into Fourier series
6. Functions with two variables – partial derivativs and expansion of analytical functions of two variabls into Taylor and Maclaurin series
7. Unconstrained optimization of function with two variables
8. Constrained optimization with one constraine and objective function with two variables
9. Error analysis
10. Numerical solution of equations with one unknown: graphical method and bisection
11. Numerical solution of equations with one unknown: Newton-Raphson method and secant method
12. Interpolation – introduction and Lagrange interpolation formula
13. Interpolation – Newton interpolation formula
14. Numerical integration and numerical solution of initial-value problems for ordinary differential equations
15. Closing remarks

**Aims:**

The goals are the following:

* The students should understanding the theory of numerical and functional series, the theory of function with two variables and elements of Numerical analysis; - The students should be able to identify without any assistance the necessary steps in the product development process;
* The students should be able to use mathematical software for solving mathematical problems.