Study programme: M3 Mathematics

Level: bachelor

Course title: Numerical analysis 1

Lecturer: Nataša Krejić

Status: obligatory

ECTS: 8

Learning objectives

Acquiring basic knowledge and skills in numerical mathematics. Development of the mathematical mind for precision, exactness and calculation, also work habits. Use of computers in numerical problem solving.

Learning outcomes

Students will: be able to apply simple numerical methods; develop skills to set up problems, implement and execute numerical algorithms, solve problems and interpret the solutions; be able to link the mathematical knowledge with computer science and other subjects; be able to use mathematical software; be able to pass their knowledge of numerical analysis to school pupils and students of mathematics.

Syllabus

Theoretical instruction

Approximate numbers and errors. Machine numbers and computer arithmetic. Error terms in function evaluation. Interpolation, interpolating polynomials and error terms. Numerical differentiation, difference quotients and error terms. Numerical integration. Quadrature formulas. Newton-Cotes formulas. Numerical equation solving. Localization of zeros. General iterative method. Special iterative methods.

Exercises

Exercises follow the theoretical instructions.

Literature

Herceg, D., Krejić, N., Numerička analiza, Univerzitet u Novom Sadu, Stylos, Novi Sad, 1997.
Herceg, D., Krejić, N., Numerička analiza. Zbirka zadataka I, Univerzitet u Novom Sadu, Institut za matematiku, Novi Sad, 1998.
Herceg, D., Krejić, N., Numerička analiza. Zbirka zadataka II, Univerzitet u Novom Sadu, Institut za matematiku, Novi Sad, 1998.

Weekly teaching load				Other: 0
Lectures: 3	Exercises: 4	Other forms of teaching: 0	Student research: 0	

Grading (maximum number of points 100)			
Pre-exam obligations	**points**	**Final exam**	**points**
Colloquia	50	Oral exam	50