Study programme(s): Information Technologies	
Level: Bachelor	
Course title: Numerical Methods	
Lecturer: Sanja Rapajić	
Status: elective	
ECTS: 7	
Requirements: none	

Learning objectives

Introduction to numerical methods and training students for their application and implementation. Acquiring skills for the use of applicative software, appropriate for solving mathematical problems.

Learning outcomes

Acquiring basic knowledge about numerical analysis. Acquiring skills for using numerical methods and applicable software for processing experimental data and solving mathematical problems. Training students for the adoption and application of numerical methods, as well as for reading literature and developing critical way of thinking and analysing problems. Obtaining competence, based on acquired knowledge, for independent solving specific problems, implementing algorithms and correct interpretation of results.

Syllabus

Theoretical instruction

Theory of errors. Approximations of functions, interpolation, least squares, regression and empirical formulas. Numerical differentiation. Numerical integration. Numerical solving equations. Systems of linear and nonlinear equations.

Practical instruction

Exercises follow theoretical lessons with the focus on solving practical problems using software *Mathematica.*

Literature

1. Herceg, D., Krejić, N., Numerička analiza za informatičare, Prirodno-matematički fakultet u Novom Sadu, Departman za matematiku i informaiku, 2006.

2. Herceg, D., Krejić, N., Numerička analiza, zbirka zadataka I,II, Univerzitet u Novom Sadu, 1998.

3. Uri Ascher and Chen Greif, A First Course in Numerical Methods, SIAM, 2011.
4. Gilbert Strang, Computational Science and Engineering, Wellesley, MA: Wellesley-Cambridge Press, 2007.

Weekly teaching load

Lectures: 2	Exercises 1	Other forms of teaching: 2	Student research: 0	Other: 0

Teaching methodology

Lectures, exercises, examinations, consultations, active students' participation in solving problems. Standard teaching methods and appropriate software are used in lectures and exercises.

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