

Study Programme: Information Technologies			
Course Unit Title: Numerical Methods			
Course Unit Code: IT630			
Name of Lecturer(s): Sanja Rapajić			
Type and Level of Studies: Bachelor Academic Degree			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Summer			
Language of instruction: Serbian (primary), English (secondary)			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 7			
Prerequisites: None			
Course Aims: 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: <i>Theory</i> 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. <i>Practice</i> Exercises follow theoretical lessons with the focus on solving practical problems using software Mathematica.			
Suggested Reading: 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 Contact Hours: 5	Lectures: 2	Practical work: 3	
Teaching Methods: Lectures, exercises, examinations, consultations, active students' participation in solving problems. Standard teaching methods and appropriate software are used in lectures and exercises.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Colloquia	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.