Study programme(s):	Applied Mathematics – Data Science

Level: master studies

Course title: Numerical analysis

Lecturer: Nataša Krejić

Status: elective

ECTS: 6

Requirements:

Learning objectives

Learning outcomes
A student should be able to understand numerical algorithms, to analyse problems and to apply the methods taught in this course.

Syllabus
Theoretical instruction
Nonlinear equations - localication of zeroes. Iterative methods (convergence, error estimation, exit criteria). Succesive approximation method. Newton's method and its' modifications. Iterative methods for systems of eqautions. Newton's method and its modifications. Local convergence. Global covergence. The method of least squares. Numerical methods for linear and nonlinear boundary problems.
Practical instruction
Computer implementation of the methods for nonlinear equations and systems of equations. The least squares method. Computer implementation of numerical methods for ODEs.

Literature
D. Herceg, N. Krejić, Numerical Analysis, Stylos, Novi Sad, 1997.
D. Herceg, N. Krejić, Numerical Analysis / Collection of Solved Problems, I and II, University of Novi Sad, 1997.
R.L. Burden, J.D. Faires, Numerical Analysis, Brooks Cole, 2010.

Weekly teaching load				Other:
Lectures: 2	Exercises: 3	Other forms of teaching:	Student research:	

Teaching methodology
lectures, exercises, analysis of examples with applications, writing reports are statistical analysis

Grading method (total number of points 100)			
Pre-exam oblications	points	**Final exam**	points
seminar	10	oral exam	
tests		written exam	50
colloquia	40	(add/remove categories if necessary)	
(add/remove categories if necessary)			