



Course title	Numerical Analysis
Institute/Division	Faculty of Computer Science and Mathematics/ Department of Computer Science
Course code	F-1.NA
Erasmus subject code*	11.0, 11.1, 11.3
Number of contact hours**	45 lecture hours (45h)
Course duration	1 semester (Spring)
ECTS credits	6
Course description (max 100 words)	Computer Arithmetics Floating-point arithmetics, machine epsilon, error analysis Numerical methods for Nonlinear Equations Iterative methods, Bisection method, Fixed point iteration, Newton's method, Secant method, Newton's method for systems Numerical methods for Linear Equations Gaussian Elimination, The LU Factorization Polynomial interpolation Taylor series, Vandermonde polynomial, Newton polynomial, Lagrange Polynomial, Numerical Differentiation Numerical methods for: initial value problems (Euler method, Runge-Kutta methods), boundary value problems, eigenvalue problem Numerical Integration Midpoint rule, Trapezoidal rule, Simpson's rule
Literature	Course notes, Josef Stoer and Roland Bulirsch, Introduction to Numerical Analysis, Springer, 1974, Jeffrey R. Chasnov, Introduction to Numerical Methods, The Hong Kong University of Science and Technology, available at: https://www.math.ust.hk/~machas/numerical-methods.pdf
Course type/organization	This course has one 1.5 hour long lecture each week, and one lab. Materials will be presented in a variety of formats to address different learning styles (e.g., lectures, slides, whiteboard calculations, exercises, textbook)
Assessment method	Attendance: 10% Lab assignments: 50% Final Examination: 40%
Prerequisites	Linear algebra, calculus I, programming languages
Primary target group	2-nd year computer science students
Contact person	dr Ilona Urbaniak
Remarks	Students are expected to complete all assigned readings and homework before class, and to be prepared to answer questions about these readings and homework.

*please insert one of the following codes:

11.0 Mathematics, Informatics

11.1 Mathematics

11.2 Statistics

11.3 Informatics, Computer Science

11.4 Artificial Intelligence

11.5 Actuarial Science

11.9 Others Mathematics, Informatics

**1 lecture hour=45 minutes