

Course Title: Numerical Methods	Number of Units: 1
CFU: 9	SSD: MAT/08
Course aims: The primary goal is to provide a basic knowledge of numerical methods, enabling students to work with mathematical models of technology and systems.	
Course Description Numerical linear algebra: conditioning, error analysis, iterative and exact (factorization based) methods. Eigenproblems: basic numerical approaches. Interpolazione Lagrangian interpolation, splines, numerical quadrature. Differential operator discretization; their representation and solution by finite difference numerical approximations. Linear differential problems and application: Laplace and Poisson equations, FFTs, linear convection. General techniques for solving ordinary differential equations, like Runge-Kutta and linear multistep methods. Laboratory classwork and problem sets require some knowledge of problem solving environments (MATLAB, Python,...).	
Assumed Background: Linear Algebra at undergraduate level , multivariable calculus, some knowledge of problem solving environments (MATLAB, Python,...).	
Assessment methods: Oral examination, written text	