

Titolo:
Numerical Methods

Docenti:
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Programma:
Background in numerical linear algebra. Numerical solution of linear systems: Steepest Descent, Conjugate Gradient, GMRES, basic ideas on preconditioning techniques. Numerical solution of non-linear systems: Newton, Quasi-Newton and Inexact Newton methods. Eigenvalue problems: power method, the Rayleigh quotient, the Lanczos method. Discretization of PDEs: introduction, Ritz-Galerkin variational formulations, the Finite Element method.

Testi di riferimento:
G. Gambolati, M. Ferronato. "Lezioni di Metodi Numerici per l'Ingegneria". Ed. Libreria Progetto, Padova, 2017.
Y. Saad. "Iterative Solution of Sparse Linear Systems". SIAM, Philadelphia, 2003.
A. Quarteroni, R. Sacco, F. Saleri. "Numerical Mathematics". Springer-Verlag, Berlin, 2007.