

Calcul Scientifique



Component

École Nationale
Supérieure
d'Électrotechnique
d'Électronique
d'Informatique
d'Hydraulique
et des
Télécommunications

In brief

> **Code:** N6EN04A

Presentation

Objectives

Understand, know how to evaluate (complexity, efficiency, precision) and use the basic tools of numerical linear algebra.

Description

Singular value decomposition, pseudo-inverse of a matrix and applications.

Notions of numerical errors (direct and inverse errors) and conditioning of a matrix.

Dense matrix factorization for solving linear systems: LU, Cholesky, QR.

Iterative algorithms for solving linear systems: relaxation methods (Jacobi, Gauss-Seidel), steepest descent and conjugate gradient.

Algorithms for the search of eigenvalues/vectors : iterated power, Jacobi algorithm.