

Solving PDEs using finite differences



Component

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

In brief

- **Ametys Code:** ELP4
- **Open to exchange students:** Yes

Presentation

Objectives

At the end of this course, students will have learned the basics of solving partial differential equations using the finite difference method.

Description

In this course, students will study: - Elliptic Equations Discretization and solving of the equation in 1D. Study of consistency, stability, and convergence in 1D. - Parabolic Equations Discretization and solving, stability, consistency, and convergence. Explicit, implicit, Richardson, and Crank-Nicolson schemes. - Introduction to Hyperbolic Equations Presentation of a discretization and some of its properties. Examples will be drawn from the EEEA department (PN junction, electromagnetism, etc.).