# UE Introduction to numerical field computation

**ECTS**
3 credits

**Component**
UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

**Semester**
Printemps

> **Teaching language(s):** English

> **Open to exchange students:** Yes

> **Code d'export Apogée:** PAX8ECAD

# Presentation

## Description

This course is an introductory course on numerical field computation using the finite difference and the finite element methods.

**Content**:

- Finite difference method.
- Finite element method:
  - Strong and weak formulations.
  - Finite element analysis : domain discretization, local and global interpolation, numerical integration, assembly, resolution of linear system, etc.

## Course parts

| | | |
|---|---|---|
| UE Introduction to numerical field computation - CM/TD | Lectures (CM) & Teaching Unit (UE) | 16h |
| UE Introduction to numerical field computation - TP | Practical work (TP) | 12h |

## Recommended prerequisites

Familiarity with the following content of the course "Numerical Methods" :

- Approximation and interpolation.
- Numerical integration.
- Numerical linear algebra:
  - Fast linear solvers (direct and iterative).
  - Fast eigen-solvers.

# Useful info

## Campus

> Grenoble - Scientific Polygon