Fluids mechanics, turbulence and CFD

Niveau d'étude
BAC +5

Composante
UFR Sciences
et Techniques

En bref

› **Langue(s) d'enseignement:** Français

› **Ouvert aux étudiants en échange:** Non

Présentation

Description

This course is divided into 6 chapters given by Luminita Danaila (LD) and Abdellah Hadjadj (AH). Each of these chapters will be addressed by several lectures and practical works as described below.

Objectifs

Turbulent flows are ubiquitous in environment and industrial systems. As the most striking property of turbulence is its randomness, one of the aims in current research is to yield reliable predictions for turbulence statistics. The course outlines the difficulties encountered in turbulent flows and provides tools to understand and to handle basic aspects of turbulence from theoretical, numerical and experimental viewpoints.

Pré-requis obligatoires

Knowledge on the following topics is mandatory:

- Fluid mechanics, Navier-Stokes
- Heat and mass transfer
- Differential equations

Contrôle des connaissances

Compétences visées

As specific objectives, by the end of the course students should be able to:

- Derive and model unclosed terms in transport equations for academic turbulent flows,
- Use Matlab/Scilab software for computing simple statistics of flows measured with either hot/cold wires anemometry, or PIV.
- Understand and describe the main physical phenomena occurring in basic turbulent flows (boundary layer, jet, wake, grid turbulence).
- Understand fundamentals of RANS, LES approaches.

Infos pratiques

Lieu(x)

> Saint-Étienne-du-Rouvray