

Fluid Structure Interaction



Component
École Nationale
Supérieure
d'Électrotechnique
d'Électronique

In brief

- > **Ametys Code:** N9EM02C
- > **Open to exchange students:** No

Presentation

Objectives

Fluid-structure interaction (FSI) phenomena can occur whenever a fluid comes into contact with a solid. The interactions likely to occur in this case are crucial in fields such as aeronautics, civil engineering, bio-mechanics, the nuclear industry, renewable energies and so on. Understanding these phenomena through modeling and simulation is therefore essential for fluid mechanics engineers.

This course aims to introduce the basic concepts associated with modeling and numerical simulation of fluid-structure interactions.

Description

-General formalism, dimensional analysis and classification of IFS problems.

Review of the main aeroelastic phenomena and their modeling (buffeting, flutter, galloping, static divergence, vortex-induced vibration (VIV)).

-Main IFS simulation methods.

Vortex-induced vibrations (VIV), frequency lock phenomenon: OpenFoam simulation

. -Immersed boundary method: further study in numerical simulation.