Fluid mechanics

Introducing

Description

Fluid Mechanics: Introductory definitions and general properties of a fluid, forces acting on a fluid particle. Fluid statics for incompressible and compressible fluids, manometry, buoyant force, forces and moments exerted by a fluid on flat and curved surfaces, and pressure distribution in rigid body motion. Fluid dynamics and kinematics, Euler's equation, Bernoulli's equation, mass conservation, control volume and Reynolds transport theorem, linear momentum equation.

Objectives

Fluid Mechanics:

At the end of this module, the student should have understood and be able to explain (main concepts):
- The concept of a fluid and the forces acting on a fluid particle.
- The distribution of static pressure within a fluid and the forces exerted by the fluid on a solid surface.
- The ideal fluid in motion: kinematics and dynamics.

The student should be able to:
- Calculate the forces exerted by a fluid on flat and curved solid surfaces.
- Use Bernoulli's equation (energy conservation) and Euler's theorem (momentum conservation) in a wide range of practical applications.

Necessary prerequisites

Basic thermodynamics concepts facilitate a better understanding of the fundamental principles.

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

Toulouse