Introduction to Magnetohydrodynamics

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

In brief

- **Ametys Code:** N9EE26E
- **Open to exchange students:** Yes

Presentation

Objectives

The course "Analytical Modeling of Coupled Phenomena" aims to familiarize students with the modeling of coupled electromagnetic and mechanical phenomena in asynchronous machines.

Description

Students will learn how to establish analytical models to describe the dynamic behavior of machines, taking into account the interactions between the magnetic field, rotor mechanics, and electric currents. Emphasis will be placed on studying the effects of asynchronism, slip, and losses on the overall performance of motors. Students will develop skills to solve these models using analytical methods and understand the impact of different configurations and operating conditions. Finally, case studies and practical simulations will enable students to validate theoretical models and apply this knowledge to the optimization of asynchronous machines in industrial applications.