

Electromecanic conversion



Component
École Nationale
Supérieure
d'Électrotechnique
d'Électronique

In brief

- > **Amety's Code:** N6EE06C
- > **Open to exchange students:** Yes

Presentation

Objectives

This course module aims to familiarize students with the main structures of electrical machines. Ultimately, it should enable them to:

- visually recognize the type of machine (direct current machine, synchronous machine, or asynchronous machine)
- quickly assess the power of an installation incorporating a machine
- familiarize themselves with basic electrical models of machines in order to quickly calculate the electrical and/or mechanical quantities at the machine's input/output
- understand the advantages and disadvantages of using each of the machines studied.

Description

The course covers the basic concepts of DC machines, synchronous machines, and asynchronous machines, which constitute the vast majority of machines used in all areas of electromechanical engineering. After describing the basic architectures, we will present the main characteristics of each of these machines, namely: - characteristic curves highlighting the relationships between torque and speed, voltage and current. This allows students to familiarize themselves with the intrinsic behavior of the machine and thus be able to anticipate a mode of operation.

Pre-requisites

The prerequisites for this course are:

- Calculations of electrical quantities associated with a three-phase electrical network
- Calculations on complex quantities
- Power balance on an electrical system
- the field of application
- equivalent electrical diagrams in order to quickly establish a power balance and calculate the electrical/mechanical quantities required to satisfy an operating point or a task in a targeted application.