System modeling in Bond Graph

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Ametys Code:** N9EE34B
- **Open to exchange students:** Yes

Presentation

Objectives

At the end of the course, the student will have mastered the Bond Graph formalism, knowing the various basic elements and the rules for connecting these elements.

They will be able to analyze the various couplings in a system, identifying the system's causal loops.

The student will also be able to determine the transfer function of the system from the Bond Graph model established.

Description

The course introduces the Bond Graph modeling approach. This is a multi-physics approach that makes it possible to model different physical phenomena in the same language, and to take into account the various couplings between the components of a system. This approach is applied in this course to various examples of multi-flow and multi-physics systems.

The course is rounded off by a project involving the modeling of an electro-hydrostatic actuator (EHA) on an A320 aircraft using the Bond Graph approach, and the replacement of the EHA's power source by a fuel cell hybridized with super-capacitors.

Pre-requisites

Basic knowledge of physical systems.