

# Continuous Linear Systems



Component

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



Semester

Printemps

## In brief

> **Ametys Code:** N6AE03C

> **Open to exchange students:** No

## Presentation

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### Objectives

- Understand the basic principles of continuous linear control
  - Know how to model energy systems using circuit formalism regardless of the physical domain (electrical, mechanical, hydraulic, magnetic, thermal)
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### Description

Introduction to Continuous Linear Control Systems

- Concept of linear systems
- Modeling using transfer functions and block diagrams
- Structure of a control system with feedback, link between the process to be controlled and the signal part

Physical Analogies

- Introduction to physical analogies in energy systems: generalized energy and power variables
- Elements of physical systems: source, dissipative, or energy storage elements (in kinetic or potential form), interconnection elements (generalized mesh and node laws, transformers, and gyrators)
- Causality in physical systems
- Examples of systems: academic cases, level control, position control

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## Pre-requisites

Circuit fundamentals, differential equations, complex variables

## Useful info

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### Place

> Toulouse