

Smart grids



Component
École Nationale
Supérieure
d'Électrotechnique
d'Électronique

In brief

- **Ametys Code:** N9EE25C
- **Open to exchange students:** Yes

Presentation

Objectives

This four-session course aims to raise students' awareness of the emergence of smart grids by distinguishing them from how networks currently operate.

Description

The concepts of system services (contribution to frequency reserves, adjustment/curtailment, etc.) will be presented, as well as the new degrees of freedom (storage, mass electric mobility, production and consumption predictions, better information (smart meters) for consumption adjustment, etc.) enabling "smart grid management." As the cost to users of these new concepts is essential, an overview of market mechanisms and economic models (investment, operation) will enable students to make the link between energy performance and economic impact. Finally, a few examples of smart grids in island networks and for self-consumption in an eco-neighborhood will highlight these concepts in practice.