

Electromagnetism



Component

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



Semester

Automne

In brief

- > **Ametys Code:** N5EE05A
- > **Open to exchange students:** Yes

Presentation

Objectives

- At the end of this course, the students will have assimilated the equations of standard electrodynamics and will be able to describe their physical meaning.
- They will be able to propose a method and to formulate hypotheses useful for solving common static or propagative electromagnetic problems.
- At the end of the practical courses, students will be able to formulate the conditions required to solve an electromagnetism problem by numerical methods (ie finite elements method).

Description

- Vector calculus review: scalar field, vector field, vector potential, scalar potential.
- Electric and magnetic field equations in vacuum and in media, transition conditions and boundary conditions
- Magnetic energy and coenergy in vacuum
- Introduction to propagation phenomena

Pre-requisites

- Vector operators (div, rot, grad, Laplacian, etc.)
- Cartesian and polar coordinate systems