

# OPTIMISATION ET R.O.



ECTS  
5 credits



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

In brief

> **Ametys Code:** N7EN12

## Presentation

### Description

Students will have the opportunity to become thoroughly familiar with all the results presented in the course of tutorials, in which modeling issues and optimality conditions will be addressed on the basis of various practical optimization problems. A significant amount of practical work will also allow students to implement numerical methods (Newton, Gauss-Newton) and to test them for the treatment of nonlinear least squares problems, as well as on more general optimization problems with constraints.

Databases tend to use simplistic models (entity association, relational) and languages (relational calculus and algebra, SQL). This does not make the representation of a more complex universe so easy; but it allows us to highlight the problems related to the computer storage of files (coherence, confidentiality, etc., and especially redundancy) via the theory of normalization: functional and multi-valued dependencies, Boyce-Codd normal form, third and fourth normal form, etc. Essentially theoretical, this study will conclude, in practical work, with a brief presentation of the main technical tools for files: hash tables and indexes.