

High-Dimensional Models

Course title - Intitulé du cours	High-Dimensional Models
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	Eric GAUTIER
Other teacher(s) - Autre(s) enseignant(s)	
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Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	15h
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Professor: Eric Gautier, office T532, eric.gautier@tse-fr.eu, available for questions in the classroom after class in the same room, else by appointment.

Course's Objectives - Objectifs du cours :

- The following themes will be studied:
- Notions of convex analysis
- Model selection, nonparametrics, and thresholding
- Lasso and Dantzig selector for the linear model
- Generalized linear model
- Generalizations of the Lasso (group Lasso, fused Lasso, multivariate and graphical models)
- Algorithms

Prerequisites - Pré requis :

Linear and logistic regression, maximum-likelihood, basic Bayesian statistics, optimization, and R programming.

Grading system - Modalités d'évaluation :

The final grade comes from one homework (by group of 3) that counts for 1/3 and a final exam (2 hours ; no book, notes, telephone or tablet allowed ; with questions on the course material and exercise(s)).

Bibliography/references - Bibliographie/références :

Peter Bühlmann & Sara van de Geer, Statistics for High-Dimensional Data, Springer

Christophe Giraud, Introduction to High-Dimensional Statistics, Chapman & Hall

Trevor Hastie, Robert Tibshirani, & Martin Wainwright, Statistical Learning with Sparsity, Chapman & Hall.

Distance learning – Enseignement à distance :

Classe en ligne interactive Forum