

Machine Learning

Course title – Intitulé du cours	Machine Learning
Level / Semester – Niveau /semestre	MRes
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Eric Gautier and Pascal Lavergne
Other teacher(s) – Autre(s) enseignant(s)	
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Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	15
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	English

Teaching staff contacts:

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Course Objectives:

The goal of this class is to acquire knowledge of some machine learning methods and their applications in econometrics.

- We will focus on supervised learning and we will cover regression and classification problems.
- We will review some of the main methods: regularized estimation (ridge, lasso, ...), tree-based methods (including random forests), neural nets, boosting.
- We will also see how to implement some of these methods.

Prerequisites :

Core courses of M2 ETE

Practical information about the sessions:

- We expect students to come to all the sessions and do the assignment asked for each subsequent session if any and participate
- Laptops or tablets allowed

Grading system :

The students are expected to present in front of their classmate a paper, book chapter, empirical or simulation study of their own. We value presentations which are personal and critical and take a step back, especially when presenting a paper.

Class participation will also be considered.

Bibliography/references :

- An Introduction to Statistical Learning with Applications in R, [Gareth James](#), [Daniela Witten](#), [Trevor Hastie](#), [Robert Tibshirani](#) · 2013 Springer
- The Elements of Statistical Learning : Data Mining, Inference, and Prediction, [Trevor Hastie](#), [Robert Tibshirani](#), [Jerome H. Friedman](#) · 2001 Springer

Other references will be given during the lectures

Session planning :

To be determined