

Course unit: Data and Decisions

Course metadata

- Title in French: Données et Décisions
- Course code: tba
- ECTS credits: 4
- Type: advanced course
- Semester 9 (Fall-Winter)
- Teaching period: Mid-November to Mid-February
- Teaching hours: 100h
- Language of instruction: French
- Coordinator: tba
- Instructor(s): Marie Billaud-Friess, Michaël Chalamel (L'Oréal), Franck Chevalier (EY), Emmanuel Daucé, Christophe Pouet, , Sitraka Forler (Post Luxembourg), Lirone Samoun (smartpush)
- *Last update 02/09/2025 by C. Pouet*

Brief description

This course unit is divided into four parts:

- **Statistical learning** (30 hours) taught by Christophe Pouet.
- **Python for data science** (18 hours) taught by François Brucker and Emmanuel Daucé.
- **Advising using data** (24 hours) taught by Michaël Chalamel and Franck Chevalier.
- **Data Project: data sources and preprocessing** (24 hours) taught by Sitraka Forler and Lirone Samoun.

Learning outcomes

- Know how to model and program an estimation problem
- Know how to model and program a classification problem
- Know how to acquire and aggregate data
- Know how to use data to take decisions
- Understand the importance of data governance and data quality

Course content

Statistical learning

1. Introduction
 1. Classical problems: regression, classification
 2. Supervised, unsupervised and semi-supervised learning
 3. Curse of dimensionality
2. Regression
 1. Multiple linear regression, OLS method
 2. Shrinkage-type methods (LASSO, Ridge)

3. k-nearest neighbors
3. Classification
 1. Logistic regression
 2. k-nearest neighbors
 3. SVM
 4. Rosenblatt perceptron and neuronal networks

Python for data science

1. Dataframe: data exploration and data description
2. Recommendation systems (including KNN, PCA and SVD)
3. Data visualization (including maps, geopandas, ...)

Data-driven decision making

1. What is data?
2. How do we take decision?
3. Data governance and data quality
4. How to develop data-based decision making?
5. Data platform and data architecture

Data Project: data sources and preprocessing

tba

Bibliography

You can check the availability of the books below at [Centrale Méditerranée library](#).

1. Statistical Learning
 - James G., Witten D., Hastie T. and al. (2013). An introduction to statistical learning: with applications in R. New York: Springer
 - Hastie T., Tibshirani R. and Friedman J. (2013). The elements of statistical learning: data mining, inference, and prediction. New York: Springer.
 - Cornillon P-A., Matzner-Løber E. et al. (2010). Régression avec R. Paris: Springer.
2. Python for data science
 - Jannach, D., Zanker, M., Felfernig, A. and Friedrich, G. (2010). Recommender Systems: An Introduction. Cambridge.
3. Advising using data
 - tba

From:

<https://wiki.centrale-med.fr/mmefi/> -

Permanent link:

<https://wiki.centrale-med.fr/mmefi/en:ddefidode2022>

Last update: **2025/09/18 10:36**

