Statistical modeling

**ECTS** : 6

**Volume horaire** : 49.5

**Description du contenu de l'enseignement :**

- Statistics, the what and why
- Probabilistic models for statistics : parametric and non parametric models, identifiability
- Convergence theorems
- Likelihood function, statistical information, and likelihood inference
- Bayesian inference

**Compétence à acquérir :**

This course is the first part of the two L3 statistics courses. It covers the fundamentals of parametric statistics, both from mathematical and methodological points of view, with some forays into computational statistics. The main theme is that modelling is an inherent part of the statistical practice, rather than an antecedent to the statistical step. Data may be a given, while models almost never are. This means one should keep a critical eye about models and develop critical tools to assess their adequation. Including, first and foremost, an assessment by simulation (Monte Carlo) methods. The course is entirely in English, except for the partial and final exams. Some practicals (TP) will be included, covering R language programming and applications to the bootstrap and Monte Carlo methodologies.

**Mode de contrôle des connaissances :**

Mid-term exam and final exam, potentially completed by quizzes and projects along the semester

**Bibliographie, lectures recommandées :**

Casella and Berger (1989) Statistical Inference. Duxbury,

L. Wasserman : All about statistics.

**Document susceptible de mise à jour - 05/11/2026**

**Université Paris Dauphine - PSL -** Place du Maréchal de Lattre de Tassigny - 75775 PARIS Cedex 16