

- Faculté des sciences économiques
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## Generalized linear model (5ST2019)

| Filières concernées          | Nombre d'heures    | Validation        | Crédits ECTS |
|------------------------------|--------------------|-------------------|--------------|
| <b>Master en statistique</b> | <b>Cours: 2 ph</b> | <b>écrit: 2 h</b> | <b>3</b>     |

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

### Période d'enseignement:

- Semestre Printemps

### Equipe enseignante:

Teaching team  
Prof. Alfio Marazzi  
IUMSP, Unité de Statistique  
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### Objectifs:

At the end of the course, the students should be able to understand the principles, to apply the methods, and to correctly interpret the results of a data analysis based on a Generalized Linear Model.

### Contenu:

1. An outline of Generalized Linear Models (GLM)
2. Review of the elementary likelihood theory
3. Logistic, Poisson, Negative binomial, Gamma regression models
4. Loglinear models for counts
5. Models for categorical outcomes
6. Proportional odds model for ordinal outcomes
7. The theory of generalized linear models
8. Related models: the Box-Cox transformation model, the generalized log-gamma model

### Forme de l'évaluation:

E : two 2-hour written exam during the exam session at the end of the semester.

Reexamination session (September) : 2h written test

### Documentation:

- McCullagh, P, Nelder, JA, Generalized Linear Models, 2nd edition, Chapman & Hall, 1989
- Chambers, JM & Hastie, TJ, Statistical Models in S, Wadsworth & Brooks/Cole, 1992
- Agresti, A, An Introduction to Categorical Data Analysis, Wiley, 1996

### Pré-requis:

Basics of Statistics, Linear Regression Models

### Forme de l'enseignement:

- 3 ECTS credits
- Compulsory course for master in statistics
- Spring semester
- Exercises : Applications using the software R