

- Faculté des sciences économiques
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## Survey sampling

### Characteristics

- 6 ECTS credits
- Compulsory course master in statistics
- Spring semester
- Course : 4 hours
- Evaluation: final exam of 1h45 during the last course
- Prerequisite : --

### Teaching Team

- *Prof. Yves Tillé*  
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### Objectives

At the end of the course, the student must be able to design a sampling survey and to provide appropriate estimations and confidence intervals by using auxiliary information.

### Content

The first part of the course is dedicated to the planning of surveys. After a presentation of the general definition, the particular designs are introduced : simple random sampling, stratification, cluster sampling, multistage sampling, balanced sampling. The second part is dedicated to the problem of estimation with auxiliary information. The difference estimator, ratio estimator, regression estimator, are presented as particular case the general theory of calibration. The third part is dedicated to particular topics of survey sampling like treatment of nonresponse, small domain estimation.

### Exercises

Exercises are put into practice based on the theory taught during the course. A large part of the exercises are dedicated to simulations of sampling selection and estimation by means of the 'sampling' package of the R language.

### Textbooks

Y. Tillé (2001). *Théorie des sondages : Echantillonnage et estimation en population finie*, Dunod, Paris.

Y. Tillé (2006), *Sampling Algorithms*, New York, Springer-Verlag.

P. Ardilly et Y. Tillé (2005). *Sampling Methods : Exercises and Solutions*, 382 pages, Springer-Verlag, New York.