Advanced Methods in Survey Sampling

INSTRUCTOR: I. PAPAGEORGIOU

Course Code: 61203
Course Type: Elective of Course Group 1
Course Level: Graduate (MSc)
Year of Study: A'
Semester: 2nd
ECTS: 3
Language: English

Course Description

The module refers to the problem of inference for survey populations adopting the design-based approach. Topics include:
Basic theory of survey sampling in finite populations. A brief presentation of basic sampling designs and methodology for estimation of parameters of populations.
Use of auxiliary information to introduce weights and improve statistical errors. Methods include ratio and regression estimation, probability proportional to size and calibration.
Variance estimation in complex surveys. Methods of adjustment for non-response.

Prerequisites

Basic knowledge of Statistics.

Target Learning Outcomes

Upon completion of the course, the students will be able to identify the type of the statistical problem in real survey sampling situations, as well as to choose and apply in any case the appropriate methodology. Furthermore, they will be able to evaluate the quality of the results of the chosen methodology.

Recommended Bibliography

- Lohr, S.L (2021). Sampling: Design and Analysis. Third edition. Chapman and Hall/CRC.
- Lu, Y. and Lohr, S.L. (2022) R Companion for Sampling Design and Analysis. Third edition.
- Lumley, T. (2010) Complex Surveys: A Guide to Analysis Using R. Wiley.

Teaching and Learning Activities

Six weekly three-hour lectures and homework/projects.

Assessment and Grading Methods

Grade of final exam (70%) and projects during the teaching weeks (30%).