

## Sampling (62205)

**Instructors: I.PAPAGEORGIOY**

Elective Course, 3<sup>rd</sup> or 4<sup>th</sup> semester, 5 ECTS units

Course level: Graduate (MSc)

Language: Greek

### Course Description

The module includes a presentation of

- Basic sampling techniques for probability sampling. The presentation includes implementation of each sampling method and estimation of population parameters. Specialized R packages for illustration.
- Methods for improving the estimation: using auxiliary information, sampling proportional to size. Illustration via packages in R.

Practical problems during the implementation of sampling surveys

- Methods to approximately calculate the estimation of variance for the obtained estimates in complex sampling designs.
- Non-response. How to identify the type of and how to treat non-response. Imputation and re-weight methods. Implementation in R.

### Prerequisites

Probability, Estimation, Statistical inference.

### Target Learning Outcomes

Upon completion of the course, students will have the knowledge and the skills to implement sampling techniques to collect data for a sampling survey and derive statistical results with respect to population parameters. Moreover, to make use either previous or auxiliary information to improve statistical properties of the derived estimates. Students will have the technical skills to recognize the type of and treat the non-response in a survey.

### Recommended Bibliography

- Barnett, V. (2002). *Sample survey: Principles and methods*. 3rd Edition, London: Arnold.
- Cochran, W. G. (1977). *Sampling techniques* (3rd Edition). New York: John Wiley and Sons
- Fink, A. (2013). *How to Conduct Surveys: A Step-by-Step Guide*. 5th Edition. Sage Publications.
- Groves, R.M. Floyd, J., Fower, Jr., Couper, M.P., Lepkowski, J.M., Singer, E., & Tourangeau, R. (2009). *Survey Methodology*. 2nd Edition, Wiley-Blackwell.
- Levy, P.S. and Lemeshow, S. (1999). *Sampling of Populations. Methods and Applications* (3rd Edition). New York: John Wiley and Sons.

- Lohr S. L. (2010). Sampling: Design and analysis (2nd Edition). Pacific Grove, CA: Duxbury Press.

**Teaching and Learning Activities**

Face to face teaching covering theory and practice. The practicals are implemented with R.

**Assessment and Grading Methods**

Written exam and projects.