

COURSE OUTLINE

Ημερομηνία: 3 Νοε 2022

A. INFORMATION FOR THE COURSE

A1. School	School of Science and Technology of Information
A2. Department	Department of Statistics
A3. Master Programme	
A4. Course Code	6128
A5. Title of the Course	ADVANCED SAMPLING METHODS

Lecturers

Name	Rank	Specialization
MERKOURIS PANAGIOTIS	Associate Professor	

B. TYPE OF COURSE

B1. Year of Study	4
B2. Semester	8th
B3. Level of Course (if applicable)	1st Cycle
B4. Type of course	Elective
B5. Field	Scientific Field
B6. ECTS credits allocated (ECTS)	7.00
B7. Is the Course in the Syllabus?	Yes
B8. If yes, which is the reference Page?	29-68
B9. Is there a site for the course?	Yes https://www.dept.aueb.gr/el/stat-courses

C. INSTRUCTION

C1. Lectures Include:	Classroom lectures: Yes Distance learning lectures: No Seminars: No Laboratory exercises: Yes Field training exercise: No Literary analysis: Yes Tutorial: Yes Interactive teaching: No Educational visits: No Project: No Essays/reports: Yes Independent study: Yes Lectures given by scientists: No Internship: No
C2. Scheduled Hours for Lectures per week	4.00
C3. Scheduled Hours for Tutorials per week	
C4. Scheduled Hours for Workshops per week	
C5. Scheduled Hours for Case Studies per week	
C6. Scheduled Hours for Other Activities per week	
C7. Scheduled Hours for Lectures per semester	52
C8. Scheduled Hours for Tutorials per semester	
C9. Scheduled Hours for Workshops per semester	3
C10. Scheduled Hours for Case Studies per semester	
C11. Scheduled Hours for Other Activities per semester	
C12. Mode of Delivery	Face to Face
C13. Student's Evaluation	Written examination at the end of the semester: Yes Oral examination: No Midterm exam: No Homework: Yes Project: No Public Presentation: No Laboratory exercises: No Practical exercises: No Exempt work: No

C14. Language of Instruction	Greek
------------------------------	-------

D. PREREQUISITE COURSES

E. COURSE CONTENTS (Syllabus)

Statistical theory of finite populations: populations, sub-populations, variables, parameters. Random sampling, probabilities of selection of units. Sampling with unequal probabilities, sampling weights, selfweighting and nonselfweighting sampling. Randomization in finite populations, estimation of finite population parameters and calculation of estimators' variances. Design effect. Estimation for sub-populations. Estimation of the distribution function. Graphics for survey data. Estimation for population size and rare populations.

Use of auxiliary information in estimation: Method of generalized regression (ratio estimator, regression estimator, poststratified estimator). Calibration.

Variance estimation in complex surveys. Resampling methods (random groups, jackknife, bootstrap).

Treatment of non-sampling errors. Methods of adjustment for non-response. Imputation.

F. LEARNING OUTCOMES

Upon completion of the course, 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.

G. LITERATURE

G1. Use of Multiple Literature	Yes
G2. Recommended or required reading	Yes