UCLouvain

lstat2200

2019

Survey and Sampling

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

4 credits	15.0 h + 5.0 h	Q2

Teacher(s)	Kestemont Marie-Paule ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Topics to be treated - General framework of inference in finite population; population, sampling, statistics for the inference based on experimental data, linear homogenous estimation: elementary units, complex units. - Sampling with unequal probabilities: Hansen-Hurwitz and Horvitz-Thompson estimators, for the particular case of simple random sampling. - Estimators improvement through auxiliary information: ratio estimator, regression estimator - Sampling from complex units: stratified sampling, cluster sampling, two stages sampling. - Sampling from biological populations: basic issues in sampling, estimation of the population size.
Aims	1 Objective (in terms of abilities and knowledge) This course aims at providing the student the basic knowledges on the sampling methods, with a particular, but not exclusive, emphasis on sampling from (finite) human populations. At the end of the course, the student should be able to correctly designing a simple survey and analysing the results. - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Written examination in session : 14 points on 20. Individual project delivered for the beginning of the first session : 6 points on 20.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** 8 x 2 hours of masterful presentations and 2 x 2 hours of practical exercices on computer.
Content	General framework of inference in finite population : • Techniques of random samplings and estimators properties. • Simple random sampling • Stratified random sampling • Uneven probability sampling • Cluster sampling • Multi-level sampling Estimation improvement by use of auxiliary information.
Inline resources	MOODLEUCL : lecture LSTAT2200.
Bibliography	Tillé, Y. (2001). Théorie des sondages : échantillonnage et estimation en populations finies, (Cours et exercices avec solutions), Dunod, Paris. Mouchart M. et J.-M. Rolin (1981), Enquêtes et Sondages, Série " Recyclage en Statistique ", Vol.5, , Louvain : U.C.L., Comité de Statistique. Sharon Lohr (1999), Sampling : Design and Analysis, Duxbury Press Rao Poduri S.R.S. (2000), Sampling Methodologies with Applications, London : Chapman and Hall.
Faculty or entity in charge	LSBA

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Mineure en statistique et science des données	LOSTA100I	4		
Approfondissement en statistique et sciences des données	LSTAT100P	4		
Minor in Statistics, Actuarial Sciences and Data Sciences	LSTAT100I	4		
Master [120] in Data Science : Statistic	DATS2M	4		
Master [120] in Data Science Engineering	DATE2M	4		
Certificat d'université : Statistique et sciences des données (15/30 crédits)	STAT2FC	4		
Master [120] in Data Science: Information Technology	DATI2M	4		
Master [120] in Economics: General	ECON2M	5		
Master [120] in Statistic: General	STAT2M	4		