UCLouvain

lcops1114

2018

Statistics and Bases of Probability Theory

5 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Kestemont Marie-Paule ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Part 1: Descriptive statistics. This brings together methods that condense the data of a sample in a few useful characteristics or estimates. Frequency distributions, the functions of density and distribution, and parametric and non-parametric characteristics are addressed in the samples. Part 2: Bases of probability theory. Depending on the procedure for selecting the sample, these methods ensure a link between the population and the sample. The matters addressed are the rules flowing from the Kolmogorov axiom on the calculation of total, composite and conditional probability, the quantification of events in random variables, the associated distribution of probabilities, and operational characteristics (parameters). There will also be a detailed examination of censuses of experimental schemes that generate uniform, discrete, binomial, geometric and hyper-geometric laws, and Poisson's law. Part 3: Bases of statistical inference. To compare observations with hypotheses constructed on parameters of the population, the basic objectives are estimators, their characteristics, and their qualities of inference on simple plans.
Aims	1 Statistics is a science that compares data from a sample (the reality of estimates or numerical data collected while observing, or experimenting with, some of the population) with theory (a statement of abstract hypotheses on parameters of the population). For the most part, effective use of this methodological tool is acquired through work. This course is an introduction to statistics. Students must be able to describe a sample, handle the bases of probability theory applied to censuses, identify simple sampling procedures, establish the operational characteristics of basis statistics (average, deviation and proportion) in these procedures, and identify qualities that will make it possible to make inferences on parameters of the population. - - - - *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	Written exam MCQ and/or open questions in examination session. The examination can possibly be different between the publics COMU and HUSO / SOCA / SPOL. Examination modalities can be different from a session to another. Certificatif test during the week SMART : 4 points on 20 of the examination presented to the session of January.
Teaching methods	The lecture is given in 11 x 2 hours of masterful presentations (presentation of the concepts, examples of applications, problem solving) and in 12 x 2 hours of sessions of exercises in small groups, completed by an active participation of the students in readings and visualization of videos, preparation of exercises and tests of knowledge.
Content	This lecture is an introduction to statistics. The statistics is the science which allows to confront data samples (observing or experimenting a subset of population) with theory (expressed by hypotheses on characteristics of population). It is the science of data analysis that applies widely to economics, political and social sciences. The lecture articulates around descriptive statistics, probability theory and statistical inference (introduction).
Inline resources	MOODLEUCL : lecture LCOPS1114.
Bibliography	Livre de référence : Notions de statistique, Christiane Simard, 3ème édition, Modulo Inc.
Faculty or entity in charge	ESPO