LECGE1114

2015-2016

Statistics in Economics and Management I

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Kestemont Marie-Paule ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	1: Descriptive Statistics. Descriptive Statistics is the umbrella term for those methods which make it possible to condense the data from a sample or a population down into a small number of useful characteristics or estimates. The samples deal with frequency distributions, density and distribution functions and parametric and non parametric characteristics. The description of double-entry tables makes it possible to describe samples where two characteristics are analysed simultaneously. 2: Introduction to Probability Theory. It is the method of selecting a sample which ensures that there is a link between the population and its sample. The topics covered in this part of the course deal with the rules of probability theory (conditional, total, Bayes formula, etc.), the quantification of events in univariate random variables and the associated distribution of probabilities, for finite sets. Enumerations resulting from experimental plans generating uniform, discreet, binomial and hyper-geometric laws are studied in detail. 3: Introduction to Statistical Inferencing. When observations are used to challenge hypotheses on population parameters, statistical inferencing uses estimators. This part of the course analyses these statistical estimators, their characteristics and their inferencing qualities. 4: Random variables. This part of the course extends the concept of discreet random variable to include the case of countable but infinite sets (geometric laws and Poisson's law) and their link to the binomial process. These concepts are then extended to uncountable sets (continuous random variables and probability density). The calculations related to laws of uniform continuous, exponential and normal distribution are also studied in more detail. 5: Multivariate random variables The object here is to show how one can analyse experiments where the characteristics of interest are modelled by several random variables. The links which can exist between these variables are often the object of the analysis. The basic ideas are introduced by means of bivariate discreet variables -continuous variables will only be mentioned in passing. The properties of linear combinations of random variables are also discussed. 6: Sampling This part of the course explains how statistical inferencing can be carried out on the basis of random sampling. The statistical model provides the framework for the analysis and sampling distributions establish the link between sample and population. These concepts are illustrated through average and proportional sampling distributions. In the case of large samples, the Central-Limit theorem is naturally applicable.
Aims :	This course is an introduction to statistics and to the probability theory. Students should be able to describe and analyse a sample, to identify basic sampling procedures, to determine the characteristics of basic statistics (average, deviation, proportion) at work in these procedures and to specify the features which make it possible to make inferences about population parameters. Probability theory is a branch of Mathematics which makes it possible to describe and understand random experiments. It is therefore an essential tool for measuring and checking the uncertainties inherent in statistical reasoning. This course goes into more detail on the basic topics covered in the Descriptive Statistics course, which was limited to the study of finite sets and to provide the tools specifically for those experiments where the possible results are countable but infinite or uncountable (continuous). *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".*
Content :	The course comprises: - lectures (the teacher introduces concepts on the basis of concrete applications and abstracts from this), - practical exercise sessions (the teacher gives students applications/problems to solve and suggests a possible way of solving them) supplemented by active student participation through reading, independent problem resolution etc.
Faculty or entity in charge:	ESPO

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Minor in Mangement (basic knowledge)	LGESA100I	5	-	
Minor in Economics (open)	LOECO100I	5	-	
Bachelor in Economics and Management	ECGE1BA	5	-	
Minor in Statistics	LSTAT100I	5	-	
Master [120] in Environmental Science and Management	ENVI2M	5	-	