linge1214
2018

UCLouvain

Further Statistics

| 4 credits | 30.0 h + 15.0 h | Q1 |

Teacher(s)	Hafner Christian ;Timmermans Catherine (compensates Hafner Christian) ;Uyttendaele Nathan (compensates Hafner Christian) ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	Part 1: Methods of statistical analysis. After an introduction to statistical models (population and sampling models), students are shown how statistic sampling distributions form the basis for inferencing. These properties make it possible to check the precision of specific estimators, to construct confidence intervals and to check the risks of error in a hypothesis testing procedure. This involves the development of a general theory of estimation (the properties of the estimator, including properties in large samples) and a general theory of hypothesis testing. Part 2: Application to some standard problems. In this part, the methods taught in Part 1 are adapted to analyzing useful application issues in Economics and Management: inter-variable relation modelling (linear models); Introduction to experiment plans (comparison of two averages, independent or paired samples), variance analysis (comparison of several averages); studies of categorical data including inter-variable independence tests
Aims	1 The aim of this course is to introduce the types of reasoning and basic methods used in statistical analysis, and examine how they are applied to solve simple statistical problems in the field of Economics and Management. This course also aims to teach the core subject-matter developed in the Statistics and Econometrics courses which students will take later in their degree course. By the end of the course students should be able to understand basic mechanisms of statistical inferencing and provide practical solutions to standard problems of estimation, confidence interval construction and hypothesis testing. Concepts are introduced through simple examples (averages, variances and proportions) but students are also presented with instruments and models used to tackle more general problems such as general estimation techniques and hypothesis testing resolution. They should also be able to deal with classic statistical problems such as modelling inter-variable relations, comparisons of averages and adjustment tests. . - - - - *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	Contents: Statistical model and sampling distribution, point and interval estimation (simple problems and general theory, including asymptotic properties), hypothesis testing (simple problems and general theory), multiple linear models, variance analysis, categorical variables (multinomial adjustment tests and contingency tables). Method: The course comprises: - lectures (the teacher introduces the concepts through a particular concrete application and abstracts from that), - practical exercise sessions (the teacher gives students applications/problems and suggests ways of solving them). Active student participation through reading and independent problem solving
Bibliography	• Wackerly, D., Mendenhal, W. and R. Scheaffer, Mathematical Statistics with Applications, Duxbury Press, New York, 7h edition (chapitres 7, 8, 9, 10, 11, 13, 14). • Wackerly, D., Mendenhal, W. and R. Scheaffer, Mathematical Statistics with Applications, Duxbury Press, New York, 7h edition (chapitres 7, 8, 9, 10, 11, 13, 14).
Faculty or entity in charge	ESPO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Business Engineering	INGE1BA	4	LINGE1113 AND LINGE1114	🔍
Master [120] in data Science: Statistic	DATS2M	4		🔍
Minor in Statistics and data sciences	LSTAT100I	4		🔍