lstat2140

2017

Non parametric statistics

4 credits	15.0 h + 5.0 h	Q1

Teacher(s)	Heuchenne Cédric (compensates Van Keilegom Ingrid) ;Van Keilegom Ingrid ;
Language :	French
Place of the course	Louvain-la-Neuve
Aims	1 The students will obtain knowledge about the basic concepts of nonparametric statistical inference. They will learn about elementary nonparametric testing procedures. They will be able to use these nonparametric procedures for analyzing real data, and this by using, for example, statistical software packages. - - - - *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	Content - Hypothesis tests concerning location and dispersion of a population, given an i.i.d. sample - Detection of differences in location and/or dispersion between two populations - Goodness-of-fit tests for checking whether an unknown distribution belongs to a given parametric family of distributions, or equals a specific parametric distribution - Measures of association between two (or more) random variables - The use of order statistics and rank statistics in nonparametric estimation and testing procedures Teaching methods During the lectures we will explain for each of the statistical procedures the following : the motivation behind a test statistic, how to obtain the distribution of the test statistic under the null hypothesis, and how to construct the testing procedure. The aim is to get insight into nonparametric testing procedures and to learn about the different aspects of such procedures. At the end of the course the students have to work through some course work (a project) that will allow them to get more familiar with the use of nonparametric methods in practical applications, when for example analyzing real data.
Bibliography	• Gibbons, J.D. (1971). Nonparametric Statistical Inference. McGraw-Hill, New York. • Hollander, M. et Wolfe, D.A. (1999). Nonparametric Statistical Methods. Second Edition. Wiley, New York. • Lehmann, E.L. (1998). Nonparametrics: Statistical Methods Based on Ranks. Revised First Edition. Prentice Hall, New Jersey. • Maritz. J.S. (1995). Distribution-free Statistical Methods. Second Edition. Chapman and Hall, New York. • Mouchart, M. et Simar, L. (1978). Méthodes nonparamétriques. Recyclage en statistique, volume 2. Université catholique de Louvain, Louvain-la-Neuve, Belgique. • Randles, R. et Wolfe, D. (1979). Introduction to the Theory of Nonparametric Statistics. Wiley, New York.
Other infos	Syllabus is available at DUC.
Faculty or entity in charge	LSBA

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Statistics: General	STAT2M	4		🔍
Master [120] in Economics: General	ECON2M	4		🔍
Master [120] in Mathematics	MATH2M	4		🔍
Master [120] in Statistics: Biostatistics	BSTA2M	4		🔍