UCL Université catholique de Louvain

LMAT1271
2013-2014

Calculation of probability and statistical analysis

6.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	von Sachs Rainer ; Timmermans Catherine (compensates von Sachs Rainer) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	First part (Probability): Random events, probabilities, conditional probabilities. Random variables and vectors: most important particular distributions. Independence and correlation. Law of large numbers and Central Limit Theorem. Second part (Statistical analysis): Estimation of the parameters of a probability distribution. Most important estimation methods and their properties. Application to estimation of a mean, a variance and a proportion. Hypothesis testing relatively to means, variances and proportions. Factor analysis of variance and problems of multiple comparisons. Simple linear regression.
Aims :	The general objective of this course is to give an introduction into the concepts of probability theory and statistical analysis and into the most common methods used in practice. At the end of the course the students will be able to: use the basic notions of probabilistic modelling, work with the concept of random variables, apply the most frequent techniques of probability theory (e.g. conditional probabilities and expectation; normal, Poisson and exponential laws), construct and use certain estimators (method of moments, maximum likelihood estimator) and analyse given data by the methods of statistical inference (confidence intervals and hypothesis 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".*
Other infos :	Prequisite: Mathematical analysis 1 (and 2), linear algebra
Cycle and year of study :	> Master [120] in Statistics: General > Master [120] in Environmental Science and Management > Bachelor in Physics > Bachelor in Mathematics
Faculty or entity in charge:	MATH