UCLouvain

mqant1113

2022

Statistics and Probability

6.00 credits	45.0 h + 20.0 h	Q2

Teacher(s)	Vrins Frédéric ;
Language :	French
Place of the course	Mons
Main themes	• One-dimensional descriptive statistics: graphical representations, central tendency, dispersion. • Two-dimensional descriptive statistics: joint distribution, covariance, linear correlation, linear regression, non-linear fits. • Algebra of events and combinatorial analysis. • Basic rules of probability calculation: probability axioms, conditional probabilities, Bayes formula, decision trees. • Discrete and continuous random variables: density function, distribution function, mathematical expectation, variance. • Studies of the main probability distributions: Bernoulli, binomial, Poisson, uniform, normal. • Law of large numbers, central limit theorem, sampling.
Learning outcomes	**At the end of this learning unit, the student is able to :** Given the « competencies referential » linked to the LSM Bachelor in Management and Business Engineering, this course mainly develops the following competencies: • 1.1. Demonstrate the ability to reason independently and adopt a considered and critical approach to knowledge (academic and common sense). • 2.3. Acquire a knowledge base in quantitative, IT and digital methods. • 3.2. Apply clear and structured analytical reasoning, conceptual frameworks and science-based models to describe and analyse a simple but concrete problem and offer a solution. • 3.4. Analyse and interpret results or proposals, and provide a well-argued critique, for a simple but concrete management problem. 1 At the end of the class, the student will be able to: • represent a random experiment using the probabilistic model. • demonstrate the basic properties associated with the concepts of probability, expectation, variance, covariance, ... • assess the probability of an event occurring in a simple random experiment. • calculate a series of indicators related to one or more random variables (expectation, variance, probability distribution, covariance, correlation). • apply the central limit theorem to estimate a probability, confidence interval, maximum margin of error, or minimum sample size.
Bibliography	• Slides, syllabus et classeurs Excel • TRIBOUT B (2013). Statistique pour economistes et gestionnaires, 2eme ed, Pearson • WONNACOTT R., WONNACOTT R. (1995), Statistique, Economica, traduction de WONNACOTT R., WONNACOTT R. (1990) Introductory Statistics for Business and Economics, 4th ed., John Wiley & Sons.
Faculty or entity in charge	CLSM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor : Business Engineering	INGM1BA	6		🔍
Bachelor in Management	GESM1BA	6		🔍