UCLouvain

becge1232

2026

Applied statistics

6.00 credits	45.0 h + 22.5 h	Q1

Teacher(s)	Heuchenne Cédric ;
Language :	French
Place of the course	Bruxelles Saint-Louis
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.*
Learning outcomes	**At the end of this learning unit, the student is able to :** • understand and explain the basic techniques of probability and statistics ; • identify when they can be used ; • solve exercises involving those techniques and interpret the obtained results.
Evaluation methods	The evaluation is based on a written exam, without access to materials. It consists of both methodological questions and practical applications. Students may use an official (unannotated) formula glossary, statistical tables, and a non-programmable calculator. These tools are not provided by the teacher during the exam.
Teaching methods	a) The theoretical course introduces the theoretical and methodological foundations of statistical analysis. It is complemented by examples mainly drawn from the fields of economics and management, designed to help students understand and illustrate the methodology as well as apply statistical theory. Particular attention is given to the growing use of statistics to address and/or understand contemporary issues. Special effort is made throughout the course to actively involve students in the development and discovery of statistical concepts and their applications (including, among other means, videos and exercises preparations). A selection of exercises (continuously updated) is made available to students and may serve as a basis for questions or discussions with the teaching team. The course also relies on a syllabus provided to students in addition to the videos. This course is intended to serve as a foundation for various courses that follow later in the students' curriculum. b) Regular independent work is essential for success in the exam. As the course progresses, each student should dedicate enough personal study time to ensure they understand the material. By the end of the semester, the period leading up to the exam should not be one of discovery but rather a time to review material that has already been understood. Personal work should not involve memorizing incomprehensible formulas by heart. What will be assessed in the exam is not the student's ability to rewrite information but rather her/his understanding of concepts and explanatory mechanisms, as well as his/her ability to apply them.
Content	Reminder on Probability Bivariate random variables (syllabus, chapter 4) First part: statistical inference 1) Sampling (syllabus, chapter 5) 2) Punctual estimation (syllabus, chapter 6) 3) Maximum likelihood estimation method (syllabus, chapter 13) 4) Estimation by intervals (syllabus, chapter 7) 5) Hypothesis tests (syllabus, chapter 8) Second part: applications 1) Variance analysis (ANOVA1/ANOVA2) (syllabus, chapter 9) 2) Linear adjustment (syllabus, chapter 10) 3) Simple linear regression (syllabus, chapter 11) 4) Chi-squared tests (multinomial test, adjustment tests, contingency tables) (syllabus, chapter 12)
Inline resources	See the moodle page of the course.

Bibliography	- Wonnacott T. H. and R. J. Wonnacott, Statistique: Economie - Gestion - Sciences - Médecine (avec exercises d'application), Paris, Economica, 4ème ed., 2000. - Wackerly D. D., Mendenhall W and R.L. Scheaffer, Mathematical Statistics with Applications, Duxbury Press, 7th ed., 2007. - Mendenhall W, Beaver R. J. and B. M. Beaver, Introduction to Probability and Statistics, Duxbury Press, 14 ed., 2012. - Mood A.M., Graybill F.A. and D.C. Boes, Introduction to the Theory of Statistics, Mc Graw Hill Ed., 1974. (http://www.colorado.edu/economics/morey/7818/MoodGraybillBoesBook/MGB3rdSearchable.pdf) - Rohatgi V. K. and A. M. Md. Ehsanes Saleh, Introduction to probability and Statistics, Wiley- Interscience; 2d ed., 2000. - Tribout B., Statistique pour Economistes et Gestionnaires, Pearson Education France, Édition : 2e éd., 2013. - Rohatgi V. K. and A. M. Md. Ehsanes Saleh, An Introduction to Probability and Statistics, Wiley Series in Probability and Statistics, 3rd ed., 2015.
Other infos	Students will have access to videos, a syllabus, a collection of exercises, a formula glossary, and statistical tables.
Faculty or entity in charge	ESPB

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Economics and Management	ECGB1BA	6	BECGE1132	🔍
Bachelor in Economics and Management (French-English)	ECAB1BA	6	BECGE1132	🔍
Bachelor in Economics and Management (French-Dutch-English)	ECTB1BA	6	BECGE1132	🔍