

6.0 credits	30.0 h + 30.0 h	1q
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Teacher(s) :	Johannes Jan ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<ul style="list-style-type: none"> - To supplement the training of students with the minimum of multidimensional mathematical tools necessary (matrix and vectors) while insisting more on the control of notations used than on calculation itself, and this by calling more upon the intuition and the charts than with the formal developments. - To give the basic elements making it possible to check if in a multivariate problem, certain variables of interest can be explained by others, and this mainly within the framework of multiple linear models. - To study the methods of reduction of dimensions allowing to produce graphs easy to interpret where one can represent the individuals observed and better understand the relations of interdependency between the individuals and the variables. - To develop the tools for dependence analysis between variables, including the latent factors. - To provide the tools allowing to create classes of individuals (typologies of behavior) and to be able to classify new individuals in the suitable group. - To use an adapted software and this, in particular, with data coming from the field of psychology.
Aims :	<ul style="list-style-type: none"> - To develop a certain understanding of multivariate instruments most traditionally used in psychology, as well as the similarities and the differences between these reasonings - To learn how to use the methods appropriate to available data. - To introduce the minimum amount of mathematical elements necessary for a good comprehension of the methods. <p>By the end of the course, the student should be able to implement, with real data, the suitable tools among the most traditional methods of multidimensional data processing. The course will thus be centered on the good comprehension of the methods, their implementation and correct interpretation of the results, including the control of suitable software.</p> <p><i>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".</i></p>
Content :	<p>Introduction to the vectors, matrix and geometrical interpretation, analysis of multiple regression, including validation of the models chosen, analysis in principal components, factorial analysis, correspondences analysis, "multidimensional scaling", classification (cluster analysis) analysis, canonical correlations, discriminating analysis, logistical regression, elements of the models of structural equations with latent variables.</p> <p>For pedagogy, we will concentrate upon the intuition and the charts more than on mathematical developments, but always respecting the scientific rigor which is essential.</p> <p>In addition to the lectures where the instruments are defined and illustrated through many examples, practical works classes with the use of adequate treatment softwares are also organized at the same time.</p> <p>The lecture corresponds to 75% of the course, the balance being devoted to practical works.</p>
Other infos :	<p>Pre-required courses: basic course of statistics (inference, estimation methods, assumptions test techniques, confidence intervals)</p> <p>Evaluation: the evaluation is carried out in two parts: an oral examination where the professor will evaluate the degree of comprehension and control of the tools seen during the course and a practical work on real data using part of these methods.</p> <p>Support: Lecture will follow quiet closely a book reference by using slides.</p> <p>Reference: Lattin, J., Carroll, J.D. and Green, P.E. (2003), Analyzing Multivariate Data, Thomson Learning, Inc., Duxbury Press.</p> <p>Training : Monthly meetings with an assistant</p>
Cycle and year of study :	<p>> Master [120] in Psychology</p> <p>> Certificat universitaire en statistique</p>
Faculty or entity in charge:	PSP