

Prediction in psychology (linear regression, multilevel, causal models, causal tracks)

6.0 credits	45.0 h + 15.0 h	1q	This biannual course is taught on years 2015-2016, 2017-2018,

Teacher(s) :	Dupriez Vincent ; Yzerbyt Vincent ; Stinglhamber Florence ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<ul style="list-style-type: none"> - To understand the postulates, concepts and conditions for the application of the general linear model - To seize the way in which the mastered tools for statistical analysis (test of averages comparison, variance analysis, covariance analysis, linear regression and multiple regression) are underlain by the general linear model - To develop an integrated approach of the prediction in psychology in terms of modeling of data and comparison of the models - To use the computer tools and statistics allowing to answer the questions of comparison of models - To familiarize with the extensions of the general linear model, such as the multilevel analysis, and the causal analyzes, in particular in structural equations.
Aims :	<ul style="list-style-type: none"> - To develop competences required to analyze data typically collected in psychology and educational sciences, which usually use the general linear model. - To familiarize the students with a series of other statistical approaches which are also based on the general linear model and, singularly, with multilevel models, analyzes of causal tracks, and causal analyzes in structural equations. <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 :	<ul style="list-style-type: none"> - The general linear model and multiple regressions: - Recall of inferential statistics concepts - Comparison of models and inference in models with one parameter - Comparison of models in the models with one predictor: simple regression - Comparison of models in the models with several predictors: multiple regression - Non-linear models: interactions in regression - Comparison of models in the models with categorial parameters: variance analysis and contrasts - Comparison of models in the models with categorial and continuous parameters: analysis of covariance - Violations of independence: repeated measurements and mixed models - Problematic data and transformations - Multilevel analysis - Limits of traditional models for the treatment of hierarchical structures of data: degrees of freedom, independence of residues and variance of sampling - Characteristics of multilevel modeling for the treatment of hierarchical -structures of data: a system of equations - Property of the models: fixed effects and random effects, Bayesian's inference. - Extension of the model: curves of growth <ul style="list-style-type: none"> -Causal models of structural equations - Introduction, principles and basic concepts - Analyze in causal tracks - Models of measurement and factorial confirmatory analyze (recall) - Hybrid models: combination of models of measurement and structural models - Outlook of more advanced techniques (multi-groups analyzes, non-recursive structural models, effects of interaction, panel analyses, etc). <p>The course will be given through lectures. The students will also be introduced to various new software. Data will be available permanently for students in order to allow work at home. The students are invited to be increasingly active in their analysis reasoning and interpretation of data.</p>

<p>Other infos :</p>	<p>Evaluation: The evaluation includes the analysis and interpretations of data using the tools, methods and concepts which the student will have learned to use during the course.</p> <p>Support: The course will essentially use computer tools such as SAS, HICLAS and LISREL</p> <p>References: In addition to certain chapters and articles, the principal texts of references will be:</p> <ul style="list-style-type: none"> - Judd, C. M., McClell & G. H., & Ryan, C. S. (in press). Data analysis: A model comparison approach (2nd edition). Mahwah, NJ: L. Erlbaum Press. - Stephen W.Raudenbush & Anthony S. Bryk (2001). Hierarchical Linear Models: Applications and Data Analysis Methods (Advanced Quantitative Techniques in the Social Sciences) - Kline, R.B. (2004). Principles and Practice of Structural Equation Modeling (2nd edition). Guilford Publications. - Rousset, P., Durrieu, F., Campoy, E., & El Akremi, A. (2002). Méthodes d'équations structurelles : recherche et applications en gestion. Economica.
<p>Cycle and year of study :</p>	<p>> Master [120] in Statistics: General > Master [120] in Education (shift schedule) > Master [120] in Psychology</p>
<p>Faculty or entity in charge:</p>	<p>PSP</p>