STATISTICS AND RESEARCH METHODOLOGY

Statistics and Research Methodology (This flyer will be updated soon)	
Offered by	Department of Industrial Engineering and Innovation Science
Language	English
Primarily interesting for	All students
Prerequisites	None
Contact person	Prof. dr. Chris Snijders (C.C.P.Snijders@tue.nl)

Content and composition

In the Statistics and Research Methodology package, we will unravel the mysteries of executing research properly, including knowledge about some basic and more advanced statistics, and hands-on experience with dealing with quantitative data. Are you curious as to how to find meaning in a heap of data? Or how to lie with statistics? This is your chance.

The course is of use to those who want to get a basic background in (mainly) quantitative research methods and statistics, in a hands-on way.

Course code	Course name	Level classification
0HV00	Behavioral Research Methods 1: *Designing research*	1. Basic
0HV50	Behavioral Research Methods 2: *Dealing with data*	2. Intermediate
0HV110	Behavioral Research Methods 3: *Tricks of the trade and research ethics*	3. Advanced

Precedence relationships within the package

It is obligatory to follow course Advanced Research Methodology as the last course of this package.

Course description

Behavioral Research Methods 1: Designing research (0HV00)
This course provides a general introduction to the defining properties of scientific research and the empirical research cycle. You will learn the principles of sound scientific argument. This implies knowledge about [1] converting a practical question into a proper research question, about [2] which kinds of research designs are appropriate for a given research question, about [3] how to set up a simple research design, and about [4] how to evaluate the results of a simple research design. Moreover, you will gain better understanding of the relation between this sequence of problem formulation, research design, statistical analysis, and the quality of causal inference. You should not only know how modifications in this sequence affect the quality and credibility of their causal inference, but you should also acquire the necessary skills to design and to analyze research data themselves. In addition, we introduce some of the basic statistical concepts, and the tools to deal with them.

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Behavioral Research Methods 2: Dealing with data (0HV50)
The second course provides training in dealing with research data with the help of statistical software (SPSS). Making use of elaborate (real life) data sets, you will learn how to estimate different kinds of statistical models. Several standard statistical models are included in the course, such as t-tests, multiple regression analysis, ANOVA, ANcOVA, and factor analysis. The different models are introduced in a problem-based way: let us assume we have the data, now what can we sensibly do with it? To do this, some more statistical background is necessary. In addition, we consider how to calculate the right sample size for your research and consider what can go wrong when sample sizes are too small or too big.

Behavioral Research Methods 3: Tricks of the trade and research ethics (0HV110)
The third course adds two specific statistical models to your repertoire: logistic regression and multi- level models, and a second statistical software package (Stata). Taken together with the previous two courses, you then have a decent selection of models and packages at your disposal, and the knowledge to extend those when needed. As one specific methodological tool, we consider “conjoint analysis”, a technique that is often being used in marketing and is quite appropriate in many other fields as well. As the ultimate litmus test, you should be able to competently deal with a given data set: “here you have data, do something smart with it”. In addition, we consider the ethics of (mainly experimental) research. Which kinds of ethical issues can play a role in research? How can others be sure that you dealt with your data honestly? Which kinds of safeguards can be included to prevent ethical mishaps?