Cursussen Statistiek
Courses in Statistics

2009-2010

PERMANENTE VORMING IN DE WETENSCHAPPEN

CONTINUING EDUCATION IN SCIENCE

UNIVERSITEIT GENT

Inhoud/Contents

address

**Onze dienst aanvaardt de opleidings-
cheques van de Vlaamse Gemeenschap.**

**Our service accepts the training vouchers
of the Flemish Community.**

**Deze reeks includeert cursussen die zijn opgenomen
in de Doctoral Schools programma's.**

**This series encompasses courses that are included
in the Doctoral Schools programs.**

Voorwoord

Statistiek is de laatste decennia onmisbaar geworden in heel wat takken van de wetenschap. Denk maar aan sociologen die oorzaken van gedrag natrekken, artsen en biowetenschappers die DNA analyseren of de effectiviteit van nieuwe interventies evalueren, bio-ingenieurs die de kwaliteit van het milieu bewaken, industriëlen die de productiekwaliteit bijsturen, economen die financiële tijdreeksen bestuderen, … Met de komst van gebruiksvriendelijke software wordt het opslaan en manipuleren van data haast kinderspel. Veel minder evident is het om relevante en kwaliteitsvolle gegevens te verzamelen, om efficiënt informatie te onttrekken en niet misleid te worden door naïeve conclusies. Een techniek en de interpretatie van haar resultaten hangen immers fundamenteel samen met het design en de implementatie van de studie, vaak ook met bijkomende onderstellingen over een complexe datastructuur.

Het Centrum voor Statistiek van de Universiteit Gent, i.s.m. het Instituut voor Permanente Vorming van de Faculteit Wetenschappen (IPVW), organiseert daarom elk jaar cursussen die inspelen op de noden van gebruikers van statistische methoden. Het aanbod richt zich vooral op het verwerven van inzicht in de basis van het statistisch onderzoek. Practica op pc stellen de kandidaat in staat om ook al doende te leren. Het doelpubliek bestaat uit professionelen en onderzoekers met een academische vorming. Of u nu kennis wil opfrissen, op de hoogte wil blijven van recente ontwikkelingen of belangstelling heeft voor een nieuw onderzoeksdomein, deze formule wil u in staat stellen om gericht kennis en vaardigheden op te doen. De nieuwe inzichten zullen uw bedrijf en uw onderzoek de extra voorsprong geven die het verdient. Ook de Vlaamse regering ziet zo'n training als een troef voor haar economisch beleid. Werkgevers kunnen genieten van financiële steun onder de vorm van de BEA-maatregel. Werknemers kunnen gebruik maken van de opleidingscheques. Meer informatie over deze 'stimulerende middelen' vindt u op de websites www.beaweb.be en www.vdab.be/opleidingscheques en via de link op de IPVW-website: www.ipvw-ices.UGent.be.

Tussen november 2009 en april 2010 wordt het pakket basismodules aangeboden, waarin statistische kennis gradueel wordt opgebouwd. Vooraf, in oktober 2009, geven twee modules een introductie tot het gebruik van de statistische software SPSS en SAS, waarvoor de Universiteit Gent een licentie heeft. Naar jaarlijkse gewoonte wordt dit programma aangevuld met een aantal meer gespecialiseerde cursussen. In de eerste twee weken van april 2010 wordt achtereenvolgens het onderwerp "Applied Longitudinal Analysis" behandeld en presenteren we een cursus "Survey Analysis". Nog te verwachten zijn een short course omtrent "Numerical Literacy" en een over "Meta-Analysis". Blijf op de hoogte van deze bijkomende korte cursussen via onze website of het formulier op pagina 16 van deze brochure. Alle cursussen (m.u.v. Module 1) worden in het Engels gedoceerd. Het geheel verloopt in een gemoedelijke sfeer met ruime mogelijkheid tot interactie met de docenten. De IPVW-activiteiten waaraan een examen is verbonden kunnen ook worden opgenomen in het programma van de 'Doctoral Schools' die de UGent-doctoraatstudent ondersteunen bij zijn/haar onderzoek en opleiding.

Verder brengen we graag de volgende initiatieven onder uw aandacht:
In 2008 is aan de Universiteit Gent het IOF[1] valorisatieconsortium Stat-Gent CRESCENDO gestart, i.s.m. het Centrum voor Statistiek. Stat-Gent heeft tot doel de UGent statistiekexpertise te valoriseren via toepassingen voor overheid en industrie. Meer informatie hierover, ook over onze aanbieding van short courses in statistiek en over een meer doorgedreven Master opleiding in Statistische Data-Analyse, die wetenschappers uit diverse disciplines een grondige vorming aanbiedt in de methodes van de toegepaste statistiek, vindt u op de website van het Centrum voor Statistiek: www.cvstat.ugent.be.

Ook de Associatie Universiteit Gent (AUGent) organiseert jaarlijks een navormingscyclus ten behoeve van onderzoekers van de partnerinstellingen. In praktijkgerichte en interactieve sessies (waaronder een cursus SPSS voor beginners) worden essentiële onderzoekscompetenties toegelicht. Meer informatie hierover vindt u via http://navorming.augent.be.

We hopen dat u het nieuwe aanbod kan smaken en wensen u alvast een leerrijk en productief jaar toe!

[1] Industrieel OnderzoekFonds

Introduction

Statistics has become indispensable in many branches of science. Sociologists and psychologists searching to explain behaviour, biologists analysing DNA, clinicians evaluating new interventions, bio-engineers monitoring the environment, managers performing quality control, economists studying time series, … they all rely on statistical methods. Today's user-friendly software allows anyone to store and manipulate data quite easily. It remains a challenge however, to gather relevant, high-quality data and retrieve information efficiently to draw accurate inference. Without training and due professionalism one runs a high risk of arriving at misleading conclusions. One must recognise how the appropriate statistical technique and justified interpretation depend fundamentally on the design and conduct of a study in combination with any assumptions about the data structure.

To meet the needs of users of statistical methods, the Centre for Statistics of Ghent University in co-operation with the Institute for Continuing Education of the Faculty of Science (ICES) organises a yearly series of courses. The goal is to train users of statistical software, providing them with insight in the basics of statistical research. Practical sessions on PC's allow participants to obtain this through hands-on experience. Our courses are aimed at professionals and participants with an academic training, who wish to refresh their knowledge, keep it up to date or discover new areas of research. The program is designed to offer specific knowledge and skills through separate modules. The new insights will give your company or research the extra edge it needs. The Flemish Community regards continuing training as an important element of its economic policy. Employers are granted financial support through the government's introduction of the BEA-measure and employees can use training vouchers. More information about this stimulating initiative can be found on the websites: www.beaweb.be and www.vdab.be/opleidingscheques (both in Dutch) or via the link on the ICES-website: www.ipvw-ices.UGent.be (English).

From November 2009 to April 2010, the program offers a classic series of basic modules which gradually build up statistical knowledge and techniques. Leading into these basic modules, two courses in October 2009 introduce the statistical software SPSS and SAS, for which Ghent University has a campus license. Every year, the program offers an additional number of more specialised courses. In the first week of April 2010, the subject of "Applied Longitudinal Analysis" will be tackled and in the second week of April 2010 we offer a course on "Survey Analysis". Also scheduled is a short course on "Numerical Literacy" and one on "Meta-Analysis". More information about these 2 courses will be posted on our website or can be requested through use of the form on page 16 of this brochure. With exception of the first module, all modules are taught in English to give international candidates the opportunity to participate.

Classes take place in a pleasant atmosphere with ample opportunity to interact with the lecturers.

ICES-activities that include an exam will also be incorporated in the program of the Doctoral Schools, which support UGent doctoral students with their research and training.

Also, we would like to bring the following initiatives to your attention:
In 2008, the IOF[2] valorisation consortium Stat-Gent CRESCENDO was launched at Ghent University, in collaboration with the Center for Statistics. Stat-Gent's mission is to valorise UGent statistical expertise through applications in government and industry. For more information about this consortium, about short courses in statistics organised by the Center for Statistics and on the Masters program in Statistical Data-Analysis, which offers a more thorough training in the methods of practical statistics to scientists in diverse areas, visit our website www.cvstat.ugent.be.

The Ghent University Association (AUGent) organises its own more basic training aimed at the researchers of the partner institutes. More information about this initiative can be found on http://navorming.augent.be.

Hoping the new program meets your expectations, we look forward to meeting you and wish you an enjoyable and productive learning experience!

[2] Industrial Research Fund

MODULE 1 – **Inleiding tot SPSS**

Dhr. Kris Erauw

Beschrijving

We leven in een kennismaatschappij. Heel veel mensen verzamelen gegevens of willen bepaalde ideeën met onderzoeksbevindingen ondersteunen. Denk aan de jongeren in een stedelijke jeugdraad die in hun jeugdwerkbeleidsplan de geformuleerde beleidslijnen moeten ondersteunen met onderzoeksbevindingen; of aan de voorzitter van een oudercomité die de standpunten van ouders op een wetenschappelijk verantwoorde manier wil bevragen. Het inzamelen en opslaan van al die gegevens is vaak niet zo evident als het lijkt. Zeker niet als het de bedoeling is de gegevens later op een professionele manier te verwerken.

Deze lessenreeks is er op gericht data in een bruikbare vorm te verzamelen, de ingezamelde data in SPSS op te slaan en met SPSS de eerste beschrijvende statistieken te produceren.

De verschillende lessen in de reeks zijn ervaringsgericht opgevat. De deelnemers worden met een aantal problemen geconfronteerd waarna mogelijke oplossingen besproken en gedemonstreerd worden.

Les 1

Data en dataverzameling: data in SPSS invoeren en definiëren, data uit andere programma's importeren en gebruiken.

Les 2

Elementaire bewerkingen: samenvattende statistieken en voorstellingen genereren, variabelen herschrijven en combineren, databestanden bewerken en combineren.

Les 3

Gemiddelden vergelijken: grafische voorstelling van gemiddelden, t-toetsen en one-way variantie-analyse.

Les 4

Meer uit je databestand halen: de eerste stappen in lineaire regressie.

Data

5, 6, 8 en 9 oktober 2009 telkens van 17u tot 20u.

Plaats

PC-klas 1 van de Faculteit Psychologische en Pedagogische Wetenschappen, Henri Dunantlaan 1, Gent.

Doelpubliek

Deze practica zijn bedoeld voor alle personen die gegevens inzamelen en/of opslaan, met de bedoeling deze statistisch te analyseren en te interpreteren.

Toelatingsvoorwaarden

Geen

Lesmateriaal

Documentatie- en oefeningenbundel.

Prijs

De deelnameprijs bedraagt 325 EUR voor deelnemers uit de private sector, 175 EUR voor UGent-personeelsleden en personeel uit de non-profit, social-profit en overheidssector. Een gereduceerde prijs van 125 EUR geldt voor doctoraatsstudenten. In deze prijs is o.a. het lesmateriaal ingesloten.

MODULE 2 – **Introduction to SAS**

Dr. Anita Prinzie

Course description

The amount of data stored in data warehouses grows exponentially every day. This high-dimensional and often noisy data is stored with the aim to eventually extract useful patterns and information on which strategies can be based. However, the data as stored in a data warehouse is typically not suitable for immediate analysis. The data might be noisy, data might be stored across different tables or more rich information could be extracted by creating your own variables. Hence, before any information can be extracted and modeled, a first time-consuming task involves the manipulation of the data (missing-value imputation, creation of new variables) stored in multiple tables to obtain an analysis table appropriate for subsequent statistical analyses like regression analysis, analysis of variance or survival analysis. This course aims to empower you to manipulate huge data warehouses by learning the SAS programming language. Whereas other software packages may offer limited capabilities to handle and manipulate high-dimensional data, with the SAS language you are in total control of data manipulation. In addition to data manipulation, we will illustrate by hands-on practice how you can use SAS statistical procedures to subsequently analyse/model your data. Unlike the interactive SAS Enterprise Miner, the SAS language provides more flexibility to define model parameters and facilitates easy replication of analyses. After finishing this course, you will be able to perform data manipulation and basic statistical analyses using the SAS programming language.

Dates and venue

October 12, 14, 19 and 21, 2009 from 5:30 p.m. to 9:00 p.m., at the Faculty of Science, Building S9, Campus Sterre, Krijgslaan 281, Ghent.

Target audience

This course will benefit investigators/data analysts from diverse areas in charge of analysing potentially high-dimensional data stored in a data warehouse. It is most suited to anyone working with high-dimensional data (either in terms of number of instances and/or number of variables). However, if you are working with low-dimensional data, you too will benefit from this course as mastering the SAS programming language delivers you more control to manipulate your data in order to create new variables and to replicate your work in a convenient way.

Course prerequisites

The course is open to all interested persons. Knowledge of basic statistics is considered an advantage.

Course material

Copies of lecture notes.
Optional but highly recommended programming manual:
"The Little SAS® Book: A Primer", Lora D. Delwiche & Susan J. Slaughter, 4rd ed., (2008), SAS Publishing.

Fees

The registration fee amounts to 325 EUR for participants of the private sector, 175 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 125 EUR applies to doctoral students. The book is optional but recommended and can be bought at the additional cost of 40. Please indicate this clearly on the registration form.

MODULE 3 – Introductory Statistics Basics of Statistical Inference

Prof. dr. Maria Ysebaert

Course description

This course aims to provide insight into basic statistical concepts with emphasis on practical applications. Mathematical formulae will be kept to a minimum. The theory and the methods of analysis will be extensively illustrated with examples relating to a wide variety of different fields.

We start with concise graphical and numerical descriptions of data obtained from observational or experimental studies. The most common and frequently used probability distributions of discrete and continuous variables will be presented. Statistical inference draws conclusions about a population based on sampled data. Chance variations are taken into account such that a level of confidence is attached to these conclusions. We present the reasoning behind significance tests for the comparison of observed data with a hypothesis, the validity of which we want to assess. We apply this procedure to data obtained either from one or from two populations. The correct use of the t-test will be discussed. Nonparametric methods are considered as a possible alternative in case the requirements of the t-test are not met. We cover the basic concepts of hypothesis testing for categorical data, including the chi-square test. Quite often the relationship between two variables, where the outcome of one variable is seen as depending on the value of the other, is the focus of scientific interest. We will give an introduction to linear regression analysis, where a regression line based on observations obtained in a sample describes this relation.

Dates and venue

November 24 and 26, December 1, 3, 8, 10 and 15, 2009, from 5:30 p.m. till 9:30 p.m. (each lecture is followed by a hands-on practical session) at the Faculty of Science, Building S9, Campus Sterre, Krijgslaan 281, Ghent.

Target audience

This course will benefit investigators from diverse areas, research scientists, clinical research associates, and, in general, anyone who comes in contact with data handling and who wants to acquire insight into basic statistical methods or who feels that his/her knowledge and practice of statistics needs refreshing. No extensive background in mathematics is required.

Exam

Participants can, if they wish, take part in an exam at a date which will be specified later. A certificate from Ghent University will be issued to participants with a university degree at the bachelors level or an equivalent degree upon succeeding in this test. As such this course can be incorporated in a doctoral training program.

Course prerequisites

The course is open to all interested persons.

Course material

Copies of lecture notes.
Recommended handbooks are:
Book 1: "Fundamentals of Biostatistics", Bernard Rosner, 6th ed. (2005), Thomson Learning.
Book 2: "Introduction to the Practice of Statistics", David S. Moore, George P. McCabe & Bruce Craig, 6th ed. (2007), W.H. Freeman.

Fees

The registration fee amounts to 700 EUR for participants of the private sector, 300 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 200 EUR applies to doctoral students. The books are optional and can be bought at the additional cost of 65 EUR (Rosner) or 60 EUR (Moore *et al.*). It suffises largely to buy one of both books. Please indicate this clearly on the registration form.

MODULE 4 – Analysis of Variance

Prof. dr. Maria Ysebaert

Course description

Analysis of variance (ANOVA) is a statistical tool used in the comparison of means of a random variable in populations that differ in one or more characteristics (factors), e.g. treatment, age, sex, subject, etc. First, we cover one-way ANOVA, where only one factor is of concern. Depending on the type of the factor, the conclusions pertain to just those factor levels included in the study (fixed factor model), or the conclusions extend to a population of factor levels of which the levels in the study are a random sample (random effects model). In two-way and multi-way ANOVA (populations differ in more than one characteristic), the effects of factors are studied simultaneously to obtain information about the main effects of each of the factors as well as about any special joint effects (factorial design). In nested designs, where each level of a second factor (mostly a random factor) occurs in conjunction with only one level of the first factor, analysis of variance enables us to extract the variability induced by the nested factor from the effects of the main factor. For correct analysis of the data in multi-way ANOVA, not only the linear model and the type of factor have to be considered but, also, the assumptions that must be satisfied.

In this course we will focus on correct execution of data analysis and understanding the results of this analysis. We will provide insight into the conclusions and pay attention to expressing these conclusions in a correct and understandable way. The different methods will be extensively illustrated with examples from scientific studies in a variety of fields.

Dates and venue

December 17, 2009, January 5, 12, 19 and 26, February 9 and 16, 2010, from 5:30 p.m. to 9:30 p.m. (each lecture is followed by a hands-on practical session) at the Faculty of Science, Building S9, Campus Sterre, Krijgslaan 281, Ghent.

Target audience

This course will benefit investigators from a diversity of areas, who need to use statistical methods in the collection and handling of data in their research, in particular for assessing the effect of e.g. different treatments.

Exam

Participants can, if they wish, take part in an exam. A certificate from Ghent University will be issued to participants with a university degree at the bachelor level or an equivalent degree upon succeeding in this test. As such this course can be incorporated in a doctoral training program.

Course prerequisites

Participants are expected to have an active knowledge of the basic principles underlying statistical strategies, at a level equivalent to the "Introductory Statistics" course of this program. In the first session, on December 17, 2009, these principles will be briefly reviewed. This review session is open to interested participants of subsequent modules of this year's program. Participants who have recently followed the introductory course are exempt from that first session.

Course material

Copies of lecture notes.
Recommended handbook: "Applied Linear Statistical Models", Michael H. Kutner, Christopher J. Nachtsheim, John Neter & William Li, 5th ed. (2004), McGraw-Hill.

Fees

The registration fee amounts to 700 EUR for participants of the private sector, 300 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 200 EUR applies to doctoral students. The book is optional and can be bought at the additional cost of 60 EUR. Please indicate this clearly on the registration form.

MODULE 5 – Applied Linear Regression

Dr. ir. Geert De Meyer

Course description

Linear regression addresses how a continuous dependent variable is affected by one or more continuous predictors. The fact that many practical problems deal with continuous variables (e.g. income, blood pressure, temperature) makes linear regression a popular tool, and most of us will be familiar with the concept of drawing a line through a cloud of data points.

The first two sessions of this module introduce the conceptual framework of this method using the simple case of a single predictor. Formulas and technicalities are kept to a minimum and main focus will be on interpretation of results and assessing model validity. This includes confidence statements on the predictor effect (hypothesis tests and confidence intervals), using the regression model to predict future results, and verification of model assumptions.

In session 3 and 4 the conceptual framework will be expanded to accommodate more than one predictor leading to the multiple linear regression model. How to deal with these complex models in general and how to come to the most simple model starting from a large number of predictors will be discussed in detail. In these complex linear models special attention will be given to interpreting individual predictor effects, as these can be complicated by underlying relations between predictors (confounding).

Session 5 covers design of experiments (DoE) as a case example of multiple linear regression. DoE is a popular process improvement methodology used for practical problem solving in science and industry. The last session will briefly touch on problems where the linear regression model is not appropriate and needs to be replaced by related approaches such as nonlinear models and mixed models. Different aspects will be illustrated with case examples from the instructors practical experience, and students are encouraged to bring examples from their work.

Dates and venue

February 23, March 2, 9, 16 and 23, 2010 from 5:30 p.m. to 9:30 p.m. (each lecture is followed by a hands-on practical session) at the Faculty of Science, Building S9, Campus Sterre, Krijgslaan 281, Ghent.

Exam

Participants can, if they wish, take part in an exam. A certificate from Ghent University will be issued to participants with a university degree at the bachelor level or an equivalent degree upon succeeding in this test. As such this course can be incorporated in a doctoral training program.

Course prerequisites

Participants are expected to have an active knowledge of the basic principles underlying statistical strategies, at a level equivalent to the "Introductory Statistics" course of this program. In the first session of module 4, "Analysis of Variance", on December 17, 2009, these principles will be briefly reviewed. This session is free and open to interested participants of this year's program.

Course material

Copies of lecture notes.
Recommended handbook: "Applied Linear Statistical Models", Michael H. Kutner, Christopher J. Nachtsheim, John Neter & William Li, 5th ed. (2004), McGraw-Hill.

Fees

The registration fee amounts to 700 EUR for participants of the private sector, 300 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 200 EUR applies to doctoral students. The fee includes i.a. the lecture notes. The book is optional and can be bought at the additional cost of 60 EUR. Please indicate this clearly on the registration form.

MODULE 6 – Applied Longitudinal Analysis

Prof. dr. Stijn Vansteelandt

Course description

Longitudinal studies, employing repeated measurement of subjects over time, play a prominent role in the biomedical sciences as well as in pharmaceutical studies, where they provide valuable insights into both the development and persistence of disease and those factors that can alter the course of disease development. In this course, we will provide a systematic presentation of modern methods for the analysis of such studies, with an emphasis on practical applications in biomedical research.

The course will begin with a discussion of the usefulness of longitudinal studies over cross-sectional studies and of the limitations of standard regression methods for analysing longitudinal studies. The course will then cover the general linear mixed model for the analysis of continuous responses. A wide range of examples drawn from real-world studies will be used to illustrate the methods for estimating models in SAS and R and for interpreting model coefficients. The regression modeling will cover model building for the mean and covariance structure to choose parsimonious models, prediction of patient-specific profiles and verification of goodness-of-fit of the model. In the final lecture, we will discuss specialised topics, including the problem of missing data in longitudinal studies, adjustment for baseline responses and evaluation of the effect of time-varying exposures.

All methods will be illustrated with annotated computer output from SAS and R. Six hands-on computer sessions will help practice the principles exposed in this course.

Dates and venue

April 6, 7 and 9, 2010 from 9 a.m. to 12.15 a.m. and from 1.15 p.m. to 4.30 p.m. at the Faculty of Science, Building S9, Campus Sterre, Krijgslaan 281, Ghent.

Target audience

This course will benefit medical investigators, research scientists, clinical research associates, who need to use statistical methods for analysing data that are collected over time, in particular for assessing the effect of different treatments on the evolution in (health) outcomes over time.

Exam

Participants can, if they wish, take part in an exam at a date, which will be specified later. A certificate from Ghent University will be issued to participants with a university degree at the bachelor level or an equivalent degree upon succeeding in this test. As such this course can be incorporated in a doctoral training program.

Course prerequisites

Participants are expected to be familiar with the basic principles of statistical inference and of linear regression analysis.

Course material

Copies of lecture notes.
Recommended book: "Applied Longitudinal Analysis", Garrett Fitzmaurice, Nan Laird and James Ware, 1st ed. (2004), Wiley-Interscience.

Fees

The registration fee amounts to 700 EUR for participants of the private sector, 300 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 200 EUR applies to doctoral students. The fee includes i.a. the lecture notes. The book is optional and can be bought separately at the price of 118 EUR. Please indicate this clearly on the registration form.

MODULE 7 – Survey Analysis

Prof. dr. Joop Hox and Prof. dr. Edith de Leeuw

Course description

Data for social research are often collected by means of a survey, be it by telephone or face-to-face interviews or by self-administered postal mail surveys or online Internet surveys. The design of a survey influences the resulting data. In the early days of the survey, the resulting analyses were relatively simple and based on the assumptions of simple random sampling and complete data. Today more complex procedures are available to deal with unit and item non-response and complex sampling designs.

This short course is intended as a basic and nontechnical introduction to survey analysis. The morning is devoted to lectures and a theoretical introduction into the topic, during the afternoons this will be applied in computer labs. The course starts with an overview of sources of survey error and describes how survey design influences the resulting data. The first day focuses on non-response and incomplete data, and the second day on complex sampling designs. We will provide a basic introduction on imputation and weighting. We will not discuss the constructions of surveys weights and imputations in detail, but assume that participants will work with existing surveys data sets that include weights, clustering and stratification information, and incomplete data.

Dates and venue

April 15 and 16, 2010 from 9 a.m. to 12.15 a.m. and from 1.15 p.m. to 4.30 p.m. This course has two computer labs in the afternoon. These computer labs use the SPSS module Missing Data Analysis and Complex Sampling Procedures.

Target audience

This course will benefit all researchers in the behavioural and social sciences, who deal with data through surveys.

Course prerequisites

The course assumes reasonable familiarity with standard statistics and analysis of variance and multiple regression analysis.

Course material

The course is partly based on: Handbook of Survey Methodology. Edith D. de Leeuw, Joop J. Hox & Don A. Dillman (Eds.) International New York: Psychology Press (formerly published by Lawrence Erlbaum Associates).
See also: http://www.xs4all.nl/~edithl/surveyhandbook.

Fees

The registration fee amounts to 500 EUR for participants of the private sector, 200 EUR for employees of Ghent University, the government, the non-profit and social-profit sector. A special rate of 150 EUR applies to doctoral students. The fee includes i.a. the lecture notes. The book is optional and can be bought separately at the price of 30 EUR. Please indicate this clearly on the registration form.

The teachers

Dhr. **Kris Erauw** is stafmedewerker bij de dienst onderwijs-ondersteuning van de Faculteit Psychologie en Pedagogische Wetenschappen aan de Universiteit Gent. Hij stond jarenlang mee in voor de begeleiding van studenten bij de vakken statistiek en methodologie, en bij het schrijven van hun scriptie. Daarnaast ondersteunt hij onderzoekers bij het ontwikkelen van een gepast onderzoeksopzet en bij het verwerken van hun data.

Prof. dr. Edith de Leeuw is Professor of Survey Methodology at the department of Methodology and Statistics of the Faculty of Social Sciences at Utrecht University. Her research interests focus on data quality in social surveys. Ms. de Leeuw is associate editor of JOS (http://www.jos.nu) and member of the editorial board of Sociological Methods and Research, Field Methods, and MDA. She has published articles in both Dutch and international scientific journals and co-authored books in the field of methodology and statistics, including the recently published International Handbook of Survey Methodology. Her most recent publications focus on mixed-mode surveys, children as respondents and comparative research. She has taught specialised courses on survey methodology both in Europe and the USA.

Dr. ir. Geert De Meyer holds a PhD in applied biological sciences and has more than 10 years experience in biotech R&D. Initially he was a researcher on topics in plant pathology (PhD) and plant breeding (Plant Genetic Systems). Later, when joining Innogenetics in 2001, his focus shifted to applied statistics for drug and diagnostic test development. He worked on topics such as pre-clinical research, clinical trials, analytical methods, biomarkers, quality control and process improvement. In 2006 he obtained a master in statistical data analysis and started statistical consulting activities for biotech companies. Since June 2008 he is a business developer for the IOF consortium Stat-Gent.

Prof. dr. Joop Hox is Professor of Social Science Methodology at the department of Methodology and Statistics of the Faculty of Social Sciences at Utrecht University. As Methodology chair, he is responsible for the research, development and teaching carried out at the faculty in the field of social science methods and techniques. His research interests focus on two lines of work: data quality in social surveys and multilevel modeling. The two lines of research reinforce each other, for instance in using multilevel methods to model complex survey data. He has acted as reviewer for national and international journals in the fields of survey methodology and statistics, and has been guest editor for special issues. His recent research focusses on survey nonresponse, interviewer effects, survey data quality, missing data

problems, and multilevel analysis of regression and structural equation models.

Dr. Anita Prinzie is a postdoctoral researcher of the Research Foundation – Flanders (FWO) working as a guest researcher at Ghent University. She received her Master in Marketing Analysis and Planning and her doctoral title at Ghent University. In her doctoral research she studied the use of methods of sequential analysis for Customer Relationship Management. After this she worked as a guest researcher at Monash University, Australia. At the moment she teaches the SAS macro language course in Marketing Modeling and Engineering to students in the Master of Marketing Analysis program (UGent). Her current research interests encompass testing the external validity of her newly developed Random Multinomial Logit algorithm for choice analyses and the understanding and analysing of customer decision processes from a marketing action perspective.

Prof. dr. Stijn Vansteelandt is assistant professor at Ghent University, Department of Applied Mathematics and Computer Science. He teaches courses in statistics at the Faculty of Sciences, the Faculty of Pharmaceutical Sciences and in the Master in Statistical Data Analysis program. He performed his postdoctoral research at the Harvard School of Public Health and at Ghent University. His present research focuses on missing data and causal inference in clustered sampling designs and longitudinal studies.

Prof. dr. Maria Ysebaert is a biochemist who received her training at Ghent University, the University of Oregon Medical School and the Nobel Institute in Stockholm. In her research correct statistical analysis has always been a priority. She is now a retired member of the Faculty of Veterinary Medicine, where she taught courses in biochemistry and in statistics at the graduate and postgraduate level. She is still active in the Center for Statistics of the UGent where she is involved in setting up its program in continuing education in statistics.

Practical information

Registration

Please use the registration form in this brochure or on our website: **www.ipvw-ices.UGent.be**.

Y**our registration is valid only upon receiving a confirmation mail from ICES**. If you have not received this mail within a week, please contact ICES to double check.

The registration fee covers tuition, some or all of the course materials, use of auditoria and PCs, drinks and sandwiches.

Payment

The registration fee is due within 30 days following receipt of the invoice. Payment is possible through bank transfer **with clear statement of the structured message on the invoice**. All mentioned amounts are free from VAT.

Additional reduction

When 3 or more participants from the same company or institute enrol simultaneously for the same module(s), an additional overall reduction of 20% is granted, books not included. Therefore, please check before enrolling if anyone else at your institute or company is interested or is already planning to participate. This reduction does not apply to (doctoral) students.

Cancellation

• Participants can cancel their registration only in writing and until 5 working days before the start of the module concerned, in which case 25% of the registration fee will be retained. In case of cancellation within 5 working days before the start of the module, the full registration fee is due.

• ICES reserves the right to cancel or postpone one or more modules for organisational reasons, in which case participants are given the option of a full refund of the registration fee.

The complete cancellation conditions are available on our website: **www.ipvw-ices.UGent.be**.

Financial support from the government: training vouchers and the BEA-measure

• **The training vouchers** (opleidingscheques) are an initiative of the Flemish community and can be ordered online by any employee living in the Flemish or Brussels Region. Please order them well in advance and send them to our office as soon as you receive them. Please do not write anything on the cheques.

• **Employers** on the other hand can make use of the **BEA-measure**. To avoid unpleasant additional administration please watch the clarifying demo presentation on the ICES-website before opening an account on beaweb.

For both initiatives see **www.vdab.be/opleidingscheques** for more information and placing orders.

Doctoral schools (Information for UGent doctorandi)

In 2007-2008, five Doctoral Schools were founded at the Ghent University. They are concentrated around the following domains of research:
- Arts, Humanities and Law
  (Director: prof. Dominique Willems)
- Social and Behavioural Sciences
  (Director: prof. André Vandierendonck)
- Natural Sciences
  (Director: prof. Guido Vandenberghe)
- (Bioscience) Engineering
  (Director: prof. Yvan Houbaert)
- Life Sciences and Medicine
  (Director: prof. Jozef Vercruysse)

These institutions, in close consultation with the faculties, support doctorandi: on the one hand they organise specialised training and workshops in research skills and "transferable skills", on the other hand they set up guest lectures and information sessions, and invest in promotional tasks and contacts with the industry.

See **www.ugent.be/en/research/doctoralschools** for more information

Inschrijvingsformulier Statistiek   2009-2010

Dit formulier vindt u ook terug op onze website: **www.ipvw-ices.UGent.be**

Stuur dit formulier ten minste 5 werkdagen voor de start van de eerste geselecteerde module via post, fax of mail naar het IPVW. Plaatsen worden toegekend volgens chronologie van inschrijven.
Adres: IPVW – Krijgslaan 281, S3 – 9000 GENT   **Fax:** +32 (0)9 264 85 90   **E-mail:** Isabel.DeZutter@UGent.be
Uw inschrijving wordt geldig zodra u van onze dienst een bevestigingsmail hebt ontvangen.

Naam: .... Voornaam: ....

Functie: ....

Bedrijf of instelling: ....

Volledig adres: ....

Tel.: .... Fax: .... E-mail: ....

Geboortedatum*:   /   / 1 9   Geboorteplaats*: ....   Geslacht*: ☐ M ☐ V

* Algemene informatie over het geslacht en de leeftijd van onze deelnemers wordt vermeld op de certificaten en wordt zonder namen meegedeeld aan Accor i.h.k.v. de opleidingscheques..

Verplicht voor UGent-deelnemers: SAP interne bestelbonnummer°: **4 3** . . . .

° Gelieve ook de goedgekeurde bestelbon zelf met dit inschrijvingsformulier mee te sturen.

Ja, ik schrijf me in voor de volgende module(s) van de cursus Statistiek 2009-2010 georganiseerd door het Centrum voor Statistiek i.s.m. het Instituut voor Permanente Vorming in de Wetenschappen:

☐ **M1: Inleiding tot SPSS**

☐ **M2: Inleiding tot SAS****   *Ik bestel:* ◯ *Geen boek* ◯ *Boek (Delwiche & Slaughter)*

☐ **M3: Inleidende Statistiek. Basis van Statistische Gevolgtrekking****

                                  Ik bestel: ◯ *Geen boek* ◯ *Boek 1 (Rosner)* ◯ *Boek 2 (Moore et al.)*

☐ **M4: Variantie-Analyse****   *Ik bestel:* ◯ *Geen boek* ◯ *Boek (Kutner et al.)*

☐ **M5: Toegepaste Lineaire Regressie****   *Ik bestel:* ◯ *Geen boek* ◯ *Boek (Kutner et al.)*

☐ **M6: Toegepaste Longitudinale Analyse**** *Ik bestel:* ◯ *Geen boek* ◯ *Boek (Fitzmaurice et al.)*

☐ **M7: Survey Analyse****   *Ik bestel:* ◯ *Geen boek* ◯ *Boek (de Leeuw et al.)*

    ** Deze cursussen worden in het Engels gedoceerd.

Het totale bedrag van mijn inschrijving (incl. boeken) komt op: .... **EUR. Alle bedragen zijn vrijgesteld van BTW.**

Financiële steun van de overheid:

◯ **Ik heb opleidingscheques aangevraagd voor een bedrag van** .... **EUR (VDAB), of**

◯ **Ik heb een portefeuille geopend op BEAweb.be op** . . / . . / 20 . . **voor het totale bedrag van**
.... **EUR, met projectnummer: 20 . . /BEA/** . . . . . .

Ik ben: ☐ tewerkgesteld in de industrie

        ☐ tewerkgesteld in de non-profit, social profit, overheidssector, onderwijs, …

        ☐ een (doctoraat)student (Studentenkaartnummer: ....)

FACTURATIE ADRES Naam: ....

                  Adres: ....

                  BTW nr: BE . . . / . . . / . . .

                  Door deze inschrijving verklaart u zich akkoord met onze betaal- en annulatievoorwaarden.

                  Datum: .... Handtekening:

....

Registration form Statistics   2009-2010

This form can also be found on our website: **www.ipvw-ices.UGent.be**

Please send, fax or e-mail this form to ICES no later than 5 working days before the start of the first selected module. Acceptance is on a first-come, first-serve basis.
Address: ICES – Krijgslaan 281, S3 – 9000 GENT   **Fax:** +32 (0)9 264 85 90   **E-mail:** Isabel.DeZutter@UGent.be
Your registration becomes valid after receiving email confirmation from our service.

Last Name: First name:

Function:

Company or institute:

Full address:

Phone: Fax: E-mail:

Date of birth*:   /   / 1 9   Place of birth*:   Gender*: ☐ M   ☐ F

* General information about age and gender of our participants is used on the certificates and is sent without names to Accor within the framework of the training vouchers..

Required for UGent-participants: SAP internal order number°: 4 3 . . . .

° Please also send the approved internal order along with this registration form.

Yes, I enrol for the following module(s) of the course in Statistics 2009-2010 organised by the Center for Statistics in co-operation with the Institute for Continuing Education in Science:

☐ **M1: Introduction to SPSS****

☐ **M2: Introduction to SAS**   *I order:* ○ *No book*   ○ *Book (Delwiche & Slaughter)*

☐ **M3: Introductory Statistics: Basics of Statistical Inference**

        I order: ○ *No book*   ○ *Book 1 (Rosner)* ○ *Book 2 (Moore et al)*

☐ **M4: Analysis of Variance**   *I order:* ○ *No book*   ○ *Book (Kutner et al.)*

☐ **M5: Applied Linear Regression**   *I order:* ○ *No book*   ○ *Book (Kutner et al.)*

☐ **M6: Applied Longitudinal Analysis**   *I order:* ○ *No book*   ○ *Book (Fitzmaurice et al.)*

☐ **M7: Survey Analysis**   *I order:* ○ *No book*   ○ *Book (de Leeuw et al.)*

    ** This course is taught in Dutch.

The total amount for my registration (including books) adds up to: .... **EUR for the courses (free from VAT).**

Financial support from the government:

    ○ **I have requested training vouchers for the total sum of** .... **EUR (VDAB), or**

    ○ **I have opened an account on BEAweb.be on** . . / . . / 20 . . **for the total sum of** .... **EUR,**

      with project number: 20 . . **/BEA/** . . . . . .

I am: ☐ employed in the industry

    ☐ employed in the non-profit, social profit, government sector, schools, …

    ☐ a (doctoral) student (Student card n°: ....)

INVOICE ADDRESS   Name: ....

        Address: ....

        VAT n°: BE . . . / . . . / . . .

        By enroling, you agree with our payment & cancellation procedure.

        Date: ....   Signature:

Stay informed of other ICES activities

In addition to the course in Statistics, ICES also organises a variety of other courses on statistics and broader scientific subjects in the framework of continuing education. To stay informed of our activities on a regular basis you can subscribe to our mailing list.

I want to ◯ receive more information about the following ICES-activities

◯ make changes to my subscription

PERSONAL INFORMATION

Title: ◯ Mr ◯ Mrs ◯ Miss

Last Name: .... First name: ....

Address: Street: .... N°: .... Bus: ....

Postal Code: .... City: .... Country: ....

Phone: .... Fax: .... E-mail: ....

CORPORATE INFORMATION

Company: ....

Function: ....

Address: Street: .... N°: .... Bus: ....

Postal Code: .... City: .... Country: ....

Phone: .... Fax: .... E-mail: ....

Where and how do you wish to be informed?

Where? ☐ at home ☐ at work

How? ☐ through mail ☐ through post

of the following ICES courses:

☐ Biological Basis of Our Behaviour*

☐ Continuing Education for Surveyors*

☐ Crystalline Rocks and Plate Tectonics*

☐ Introduction to Bio-informatics

☐ Introduction to Biotechnology*

☐ Statistics

And/or more specifically about the short courses:

☐ Numerical Literacy

☐ Meta-Analysis

☐ Synthetics: from 'plastic' to high tech materials*

* These courses are taught in Dutch.

of future ICES courses within these departments:

☐ Analytical chemistry

☐ Applied mathematics and computer science

☐ Biochemistry, physiolgy and microbiology

☐ Biology

☐ Geography

☐ Geology and soil science

☐ Inorganic and physical chemistry

☐ Molecular biology

☐ Molecular genetics

☐ Organic chemistry

☐ Pure mathematics and computer algebra

☐ Solid state sciences
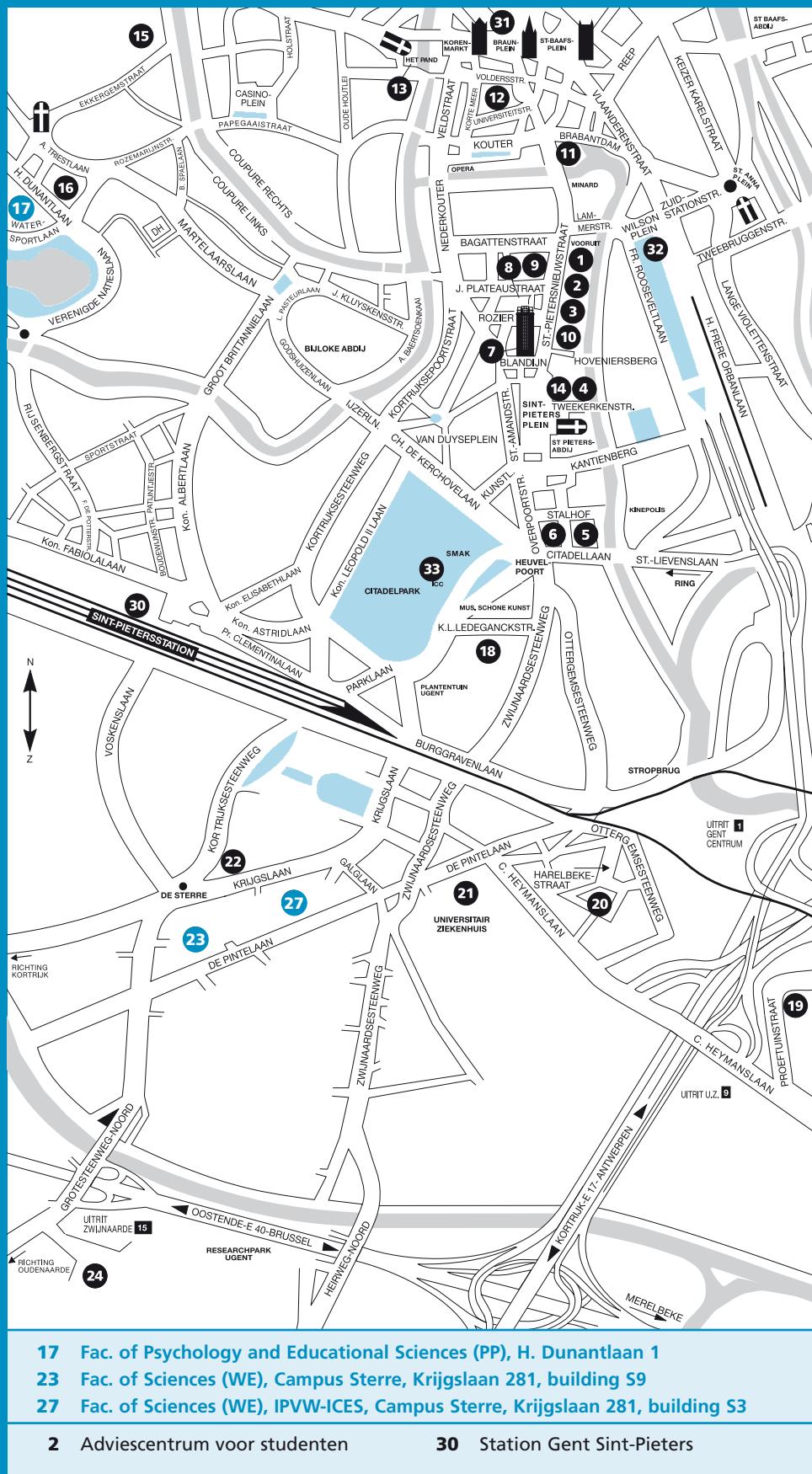
☐ Subatomic physics and radiation physics

Notities / Notes

Notities / Notes

Notities / Notes

Course locations

17	Fac. of Psychology and Educational Sciences (PP), H. Dunantlaan 1
23	Fac. of Sciences (WE), Campus Sterre, Krijgslaan 281, building S9
27	Fac. of Sciences (WE), IPVW-ICES, Campus Sterre, Krijgslaan 281, building S3

| 2 | Adviescentrum voor studenten | 30 | Station Gent Sint-Pieters |

For all further information:

UNIVERSITEIT GENT

Faculty of Sciences

ICES, Krijgslaan 281, building S3, 9000 Ghent
Phone 09 264 44 26 – www.ipvw-ices.UGent.be