



KU LEUVEN

BAYESIAN ANALYSIS OF LONGITUDINAL STUDIES

24-28 OCTOBER 2016

Prof. Emmanuel Lesaffre of the Leuven Biostatistics and Statistical Bioinformatics Centre (L-BioStat), Catholic University of Leuven, Belgium, will be presenting this intensive five-day course at Stellenbosch, under the auspices of the South African DST-NRF Centre for Epidemiological Modelling and Analysis (SACEMA), in association with the Department of Statistics and Actuarial Science, University of Stellenbosch. The course will take place from 9 am to 4 pm daily at the Stellenbosch Institute for Advanced Study (STIAS), adjacent to SACEMA.

The total course fee, including refreshments, lunches and social events, is R6000 for early bird registration by 18 September 2016 and R7000 for later registration, deadline 10 October 2016. Of this, R1000 is a non-returnable registration fee. For international participants, the course fee is 600 euros for early bird registration, and 700 euros for late registration. Of this, 100 euros is a non-returnable registration fee. Accommodation, breakfast and dinner is not included in the course fee, but information about accommodation packages may be obtained from SACEMA.

Registration should be done online at www.sacema.org. Enquiries may be directed to the SACEMA Research Manager, Ms Lynnemore Scheepers, at scheepersl@sun.ac.za, or phone: +27(0)21 8082589/2780.

Course summary: Many statistical practitioners make use of the Bayesian approach because it allows analyses on highly structured data. An important class of models involves the analysis of follow-up studies, i.e. longitudinal-, survival studies or a combination of the two. We will illustrate the Bayesian approach for the analysis of such data, by means of examples, and focus on the analysis of longitudinal studies. For instance, Bayesian implementations will be illustrated on (generalized and non-linear) linear mixed models with non-standard distributions for the random parts, growth curve models, pharmaco-kinetic models, multivariate mixed models, joint mixed models of several random variables, longitudinal models with smooth subject-specific evolutions, longitudinal models with informative measurement times, etc. Finally, we will look at joint modelling of the survival and longitudinal process. Examples will be analysed using WinBUGS/OpenBUGS/JAGS and R-versions of them, but also dedicated R-software.

The 5-day course will consist of theoretical sessions each morning, and practical sessions each afternoon, when participants will work on their laptops with tutor assistance, and (optionally) in small groups. A provisional outline programme is available on request.

Target audience and pre-requisites: This course is designed for applied statisticians and epidemiologists with a solid statistical background. Required skills and knowledge are: programming in R or SAS®, statistical inference, (linear, logistic, Cox) regression models and basic knowledge of Bayesian methodology. It will be advantageous to have practical experience in modelling longitudinal and survival studies.

Course material will be made available in hardcopy as well as electronically, to each participant. Some recommended reading for the course:

- *Bayesian Biostatistics*, E. Lesaffre and A. Lawson (2012), John Wiley and Sons
- *Missing Data in Longitudinal Studies: Strategies for Bayesian Modeling and Sensitivity Analysis*, M. Daniels and J. Hogan (2008), CRC Chapman and Hall, Boca Raton



Emmanuel Lesaffre is Professor of Biostatistics at L-Biostat, K.U.Leuven, Leuven, Belgium. His research interests include Bayesian methods, longitudinal data analysis, statistical modelling, analysis of dental data, interval censored data, misclassification issues and clinical trials. He has written more than 350 papers in peer-reviewed statistical and medical journals. He is the founding chair of the Statistical Modelling Society, past-president of the International Society for Clinical Biostatistics and fellow of ISI and ASA. He has (co-authored six books, including that on Bayesian Biostatistics (2012) recommended above.