UCL Université catholique de Louvain

LSTAT2220

2015-2016

Analysis of survival and duration data

4.0 credits	15.0 h + 5.0 h	1q

Teacher(s) :	Van Keilegom Ingrid ;
Language :	Français
Place of the course	Louvain-la-Neuve
Prerequisites :	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes :	The following concepts and models will be studied in this course : - Right censoring, left truncation - Some common parametric distribution functions in survival analysis - Nonparametric estimation of basic quantities (Kaplan-Meier estimator of the survival distribution, Nelson-Aalen estimator of the cumulative hazard function,...) - Hypothesis testing regarding the equality of two or more survival curves - Proportional hazards models - Parametric regression models / accelerated failure time models - Frailty models
Aims :	The aim is to familiarize the student with the basic concepts and models in survival analysis. Moreover, by making use of computer packages, the student will be able to solve real data problems. The course stresses more the methodology, the interpretation, and the mechanisms behind common models in survival analysis, and less the theoretical and mathematical aspects. *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".*
Content :	Content - Nonparametric estimation of basic quantities (Kaplan-Meier estimator of the survival distribution, Nelson-Aalen estimator of the cumulative hazard function,...), the development of some (asymptotic) properties of these estimators, and hypothesis testing regarding the equality of two or more survival curves - Proportional hazards model (estimation of model components, hypothesis testing, selection of explanatory variables, model validation, ...) - Accelerated failure time model (estimation of parameters in model, hypothesis testing, model selection, model validation,...) - Frailty model (introduction, motivation, estimation of model components, ...) Teaching methods The course consists of lectures, meetings exercices and an individual project on computer.
Other infos :	Prerequisites - The student should have a good knowledge of probability and statistics. - Good knowledge of SAS or Splus (or any other advanced computer package) is required. Evaluation The evaluation consists of : - an oral exam - a project on computer, which consists of the analysis of real data. Teaching materials The course notes will be distributed during the first lecture. Others Professor : Ingrid Van Keilegom, phone : 010/47 43 30, e-mail : vankeilegom@stat.ucl.ac.be References Cox, D.R. and Oakes, D. (1984). Analysis of survival data, Chapman and Hall, New York. Hougaard, P. (2000). Analysis of multivariate survival data. Springer, New-York. Klein, J.P. and Moeschberger, M.L. (1997). Survival analysis, techniques for censored and truncated data, Springer, New York.
Faculty or entity in charge:	LSBA

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
	STAT9CE	4	-	
Master [120] in Statistics: Biostatistics	BSTA2M	4	LSTAT2020 **and** LSTAT2040	
Master [120] in Statistics: General	STAT2M	4	-	
Master [120] in Mathematics	MATH2M	4	-	
	STAT2FC	4	-	