lstat2230

2021

Advanced survival models

3.00 credits	15.0 h	Q2

Teacher(s)	Legrand Catherine ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	The content of the course LSTAT2220 Survival Data Analysis is a prerequisite for this course. The student should be familiar with the basis of analysis of survival data, including the definition, estimation and interpretation of the survival function and of the (cumulative) hasard function, and of the most commonly used regression models (parametric proportional hasards models, semi-parametric Cox model, Accelerated Failure Time model, ') for independent survival data
Main themes	Classical survival analyses techniques assume that (1) the observations are independent, (2) if followed long-enough all observations will eventually experience the event of interest, and (3) only one event is of particular interest and no other event may prevent this event to occur. In this course, we will investigate other models which are applicable for correlated observations (frailty models), models which allow to consider the case when a proportion of the population will never experience the event of interest (cure models), and models to be applied in the case of competing risks (competing risks models) or of several events of interest (multi-state models)..
Learning outcomes	**At the end of this learning unit, the student is able to :**
	1 The objectives of the course are to provide each year a comprehensive exposition of one or more specific topic(s) of special interest in the field of biostatistics.
Evaluation methods	Students are evaluated on an ongoing basis on the quality of their presentations, their answers to questions from other students but also on the basis of their participation during the presentations of other students. An open-book oral exam will be organized and will cover the entire course.
Teaching methods	The course is structured around guided readings of articles, with question/answer sessions. Students will then be asked to present to the other students the subjects that have been assigned to, answer the questions of the other students and of the professor and also demonstrate active participation during the presentations of the other students. Depending on the evolution of the situation in the second quadrimstre, the course will be organized either face-to-face or remote.
Content	After a brief summary of so-called "classical" surival analysis techniques, more advanced survival models will be studies, namely frailty models, cure models and competing risks models. Main estimation techniques (parametric and/or semi-parametric models) will be discussed, as well as their implementation in standard statistical software (when available). Cases of applications of these models will be studied and interpretation of these models will be discussed.
Inline resources	All necessary resources will be made available to students via Moodle.
Bibliography	Articles mis à disposition via moodle.
Faculty or entity in charge	LSBA

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Statistics: General	STAT2M	3		🔍
Master [120] in Statistics: Biostatistics	BSTA2M	3		🔍
Certificat d'université : Statistique et sciences des données (15/30 crédits)	STAT2FC	3		🔍