STAT 890
Selected Topics: 855-Lifetime Data Analysis

Spring 2012
Day Course

Students requiring accommodations as a result of disability, must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: Dr. Joan Hu

Prerequisite: STAT 450

Textbook:
Recommended: *Survival Analysis* (2nd Ed), by Klein, J.P. and Moeschberger, M.L., Publisher: Springer

Reference:

1. *Analysis of Survival Data*, by Cox and Oakes
2. *Counting Processes and Survival Analysis*, by Fleming and Harrington
3. *The Statistical Analysis of Failure Time Data*, by Kalbfleisch and Prentice
4. *The Statistical Analysis of Recurrent Events*, by Cook and Lawless
5. *Statistical Models and Methods for Lifetime Data*, by Lawless
6. *Statistical Models Based on Counting Processes*, by Andersen, Borgan, Gill and Keiding
7. *Survival Analysis Using SAS: A Practical Guide*, Author: Paul Allison, Publisher: SAS Publishing

Calendar Description:
Statistical methodology used in analyzing failure time data. Likelihoods under various censoring patterns. Inference using parametric regression models including the exponential, Weibull, lognormal, generalized gamma distributions. Goodness of fit tests. The proportional hazards family, and inference under the proportional hazards model. Stratification and blocking in proportional hazards models. Time and dependent covariates. Regression methods for grouped data.

Outline:
This course introduces students to the most important statistical approaches in analyzing event history data. It includes parametric inferences with likelihood functions under various censoring patterns, and non/semiparametric inferences such as Kaplan-Meier estimator, logrank test, and the Cox proportional hazards model. Some advanced topics will be covered, including counting process framework, various forms of incomplete lifetime data (e.g., competing risks, interval censoring, and truncation), recurrent events and multi-state process, and regression models alternative to the Cox proportional hazards model.

1. Introduction
2. Parametric inferences
3. Kaplan-Meier estimator, logrank test, Cox proportional hazards model
4. Counting process framework
5. Competing risks, interval censoring and truncation
6. Recurrent events and multi-state process
7. Alternative regression models

Grading Scheme:

Assignments 60%
Projects 40%

Grading is subject to change.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Please consult the General Guidelines of the calendar for more details.

Revised October, 2011