ST3242: Introduction to Survival Analysis

(2006-2007 Semester I)

Schedule:

Time: Mondays & Thursdays 10:00 am - 12:00 noon

Venue: S13-05-05

Final Exam: to be announced later

Course Objective:

To introduce the students to the basic statistical methodology for
analyzing survival data

To equip the students with the basic tools for survival data analysis

To nurture general statistical thinking

Major Reference:

David W. Hosmer, Jr and Stanley Lemeshow

Applied Survival Analysis: Regression

Modeling of Time to Event Data

1999, John Wiley & Sons, Inc

Minor Reference

J.P. Klein and M. L. Moeschberger

Survival Analysis: Techniques for censored

and truncated data.

2nd ed. 2003, Springer

The topics covered will be within the scope of the major reference. Some
course materials will be taken from the minor reference.

Assessment:

Tutorial 10%,

Middle term exam 30%,

Final exam 60%

Course Outline

1. **The basics of survival analysis**

   - Special features of survival analysis
   - Censoring mechanisms
   - Basic functions and quantities in survival analysis
   - Models for survival analysis

2. **Descriptive methods and univariate analysis**

   - Kaplan-Meier estimator of survival function
   - Confidence bands for the survival function
   - Point and interval estimates of quantiles of survival time
   - Point and interval estimates of the mean survival time
   - Estimation of other functions of survival time
   - Comparison of survival curves

3. **Regression models for survival data**

   - Coding covariates
   - Semi-parametric regression models
   - Proportional hazards regression model with distinct-event time data
   - Proportional hazards regression model when ties are present
   - Estimation of the survival function of the regression model

4. **Interpretation of proportional hazards regression models**

   - Nominal and continuous scale covariates
   - Multiple covariate models
   - Covariate adjusted survival functions

5. **Model building and diagnostics**

   - Variable selection techniques
   - Residuals
   - Assessing the proportional hazards assumption
   - Checking the influence of individual observations
   - Overall goodness-of-fit measures
   - Interpretation of the final model

6. **Other topics**

   - Extension of the proportional hazards model
   - Parametric models