Syllabus

General Information

- Instructor: Yili Hong, PhD

- Office: 213 Hutcheson Hall; Phone: 540-231-9710; Email: yilihong@vt.edu

- Class time and place: TR 11:00am-12:15pm; Hutcheson 209

- Office hours: TR: 9am-11am or by appointment

Resources

- Textbook:

  - [KM] John P. Klein and Melvin L. Moeschberger (2003). *Survival Analysis: Techniques for Censored and Truncated Data (2nd Edition)*, Springer. *Required.*

  - [ME] William Q. Meeker and Luis A. Escobar (1998). *Statistical Methods for Reliability Data*, Wiley. *Recommended.*

- Computing software packages:

  - R, available at `http://www.r-project.org/`

  - RSPLIDA, available at `http://www.public.iastate.edu/~stat533/`

  - SAS

  - JMP

- Course webpage:
  `http://filebox.vt.edu/users/yilihong/teaching/fall2012/stat5454.html`

Description

The objective of this course is to provide a comprehensive introduction to the principles and methods for the analysis of time-to-event data. Time-to-event data are common in biomedical and public health research, as well as in ecology, social science, and industrial research. This course will cover parametric, nonparametric, and semiparametric methods. As a master-level course, the primary focus will be on methods, data analysis, and interpretation of results. The illustrative examples will be primarily from biomedical/public health, and industrial settings.

Evaluation

- Letter grade will be given based on homework (20%), one mid-term (20%), one course project (30%), and the final exam (30%).

- Homework: There will be 6 homework. Turn them in at the beginning of the class on the date it is due. NO late homework will be accepted.

- Mid-term: Tuesday, October 16, 2012, close-book, in class, 75-minute exam.

- Final exam: Monday, December 17th, 2012, 1:05pm to 3:05pm, close-book, materials after the mid-term exam

- Project: students are expected to complete a project in which they acquire and analyze a set of time-to-event data, write a short report, and give a presentation. Teamwork is encouraged.

Outline

Topics	Reading
Basic quantities	[KM] Ch 2.1-2.3
Parametric models	[ME] Ch 4.3-4.12
Censoring and truncation	[KM] Ch 3.1-3.5
Nonparametric estimation	[KM] Ch 4.1-4.4, 4.6
Hypothesis testing	[KM] Ch 7.1-7.6, 7.8
Parametric inference	[ME] Ch 8.1-8.4, Ch 6
Semiparametric regression	[KM] Ch 2.6, Ch 8, Ch 9.3
*Accelerated life testing	[ME] Ch 17.1-17.4, Ch 18, Ch 19.1-19.2
*Advanced topics: competing risks, frailty model, field failure prediction	
*If time permits.	

Academic Integrity

Students are expected to abide by Virginia Tech's Community Standard for all work for this course (`http://www.honorsystem.vt.edu/`). Violations of the Standard will result in a failing final grade for this course and will be reported to the Dean of Students for adjudication. Ignorance of what constitutes academic dishonesty is not a justifiable excuse for violations.

Special Accommodation

As supported by Virginia Tech's Principles of Community (`http://www.vt.edu/diversity/principles-of-community.html`), all students will be treated equally. Those with special needs can be accommodated and should refer to the website `http://www.ssd.vt.edu/` for specific questions.