

## 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; Smyth 232
- Office hours: Tuesday: 1:30pm-3:00pm, Wednesday: 1:00pm-2:30pm, 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: <https://canvas.vt.edu>

### 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: close-book, in class, 75-minute exam.
- Final exam: take-home, comprehensive.
- 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
*Advanced topics: competing risks, frailty model, diagnostics	
*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.