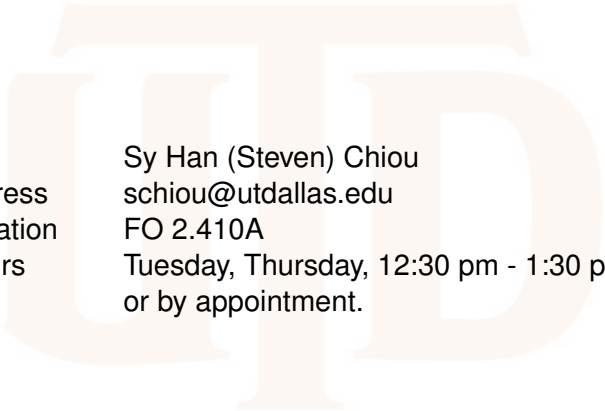


STAT 5353: Probability and Statistics for Data Science and Bioinformatics

Steven Chiou

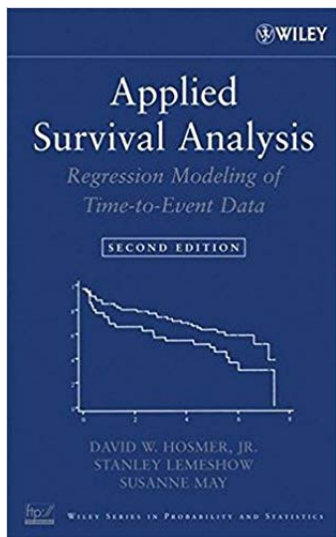
Department of Mathematical Sciences,
University of Texas at Dallas

Course information



Instructor	Sy Han (Steven) Chiou
Email address	schiou@utdallas.edu
Office Location	FO 2.410A
Office Hours	Tuesday, Thursday, 12:30 pm - 1:30 pm, or by appointment.

Required text



- David W. Hosmer, Stanley Lemeshow, and Susanne May
- 2nd edition
- ISBN: 978-0-471-75499-2

Prerequisite

- Calculus through multivariate calculus
- Basic knowledge of regression methods
- Statistical methods for estimation and inferences
- Basic knowledge about `R`
- Basic knowledge about `GitHub`

Course website

- <http://elearning.utdallas.edu/>
- The website will contain
 - Syllabus
 - Lecture notes, both the original and annotated versions
 - R scripts
 - Homework and exams

Grading criteria

- Homework (50%)
 - Biweekly; maybe 5 ~ 6 assignments
 - Requires R
 - Be prepared using *markdown* or *knitr*
 - Due in class or submit via GitHub.
- 1 midterm & 1 Final (25% each)
 - Take-home portion that requires R
 - One week to complete.
- Grade assignment:

A+ : 96 - 100	A : 93 - 95.99	A- : 90 - 92.99
B+ : 86 - 90	B : 83 - 85.99	B- : 80 - 82.99
C+ : 76 - 80	C : 73 - 75.99	C- : 60 - 72.99 F : 0 - 59.99.

Tentative course schedule

	Coverage	Topics
Week 1 (8/21)	Chapter 1	Typical censoring and truncation mechanisms
Week 2 (8/28)	Chapter 2	Estimating the survival function (Kaplan-Meier estimator)
Week 3 (9/4)	Chapter 2	Comparison of survival functions (log-rank test)
Week 4 (9/11)	Chapter 2	Other functions of survival time and their estimators (Nelson-Aalen estimator)
Week 5 (9/18)	Chapter 2	Other functions of survival time and their estimators (Nelson-Aalen estimator)
Week 6 (9/25)	Chapter 8	Parametric regression models
Week 7 (10/2)	Chapter 8	Parametric regression models
Week 8 (10/9)	Exam	
Week 9 (10/16)	Chapter 3	Proportional hazards regression model
Week 10 (10/23)	Chapter 3	Proportional hazards regression model
Week 11 (10/30)	Chapter 4	Interpretation of a fitted proportional hazards regression model
Week 12 (11/6)	Chapter 4	Interpretation of a fitted proportional hazards regression model
Week 13 (11/13)	Chapter 5	Model development
Week 14 (11/27)	Chapter 5	Model development
Week 15 (11/4)	Chapter 9	Other models (accelerated failure time model and others)