

Course Syllabus (Survival Analysis)

COURSE INFORMATION Course title: Survival analysis
Term: 2nd Semester 2023-24
Time: M7M8M9 (Monday)
Room: 834

INSTRUCTOR Yu-Jen Cheng

CONTACT INFORMATION Institute of Statistics
National Tsing-Hua University
Room 817, General Building III
Hsin-Chu, Taiwan 30043
Office Hours: M6
Phone: 886-3-5715131-33189
Fax: 886-3-5728318
E-mail: ycheng@stat.nthu.edu.tw

COURSE PRE-REQUISITES Calculus

COURSE DESCRIPTION The course will introduce fundamental concepts in survival analysis. The emphasis is on statistical methods which are useful in medical follow-up studies and in general time-to-event studies, including

- Chapter 1: Introduction to survival analysis
- Chapter 2: One Sample Estimation
- Chapter 3: Proportional Hazard Model
- Chapter 4: Two-Sample Testing
- Chapter 5: Accelerated Failure Time Model
- Chapter 6: Penalized Regression Analysis (Lasso, Ridge, Elastic Net) in Survival Data
- Chapter 7: Survival Tree, (XG)Boosting and Precision Medicine

CLASS MATERIALS <http://www.stat.nthu.edu.tw/~ycheng/teaching/teaching.html>

REQUIRED TEXTBOOKS none

OPTIONAL TEXTBOOKS

- Klein, J. P. and Moeschberger, M. L. "Survival Analysis: Techniques for Censored and Truncated Data", Springer, 1997.
- Cox, R. and Oakes, D. "Analysis of Survival Data", Chapman and Hall, 1984.
- Kalbfleisch J. D. and Prentice, R. L. "The Statistical Analysis of Failure Time Data", Wiley, 2002.
- Hastie, T., Tibshirani, R. and Friedman, J. "The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition", Springer, 2009.

GRADING POLICY Your grade will be determined by homework (40 %), a midterm (30%), and a final project (or a final exam) (30 %). **No Late Homework Accepted!**