BSTA 754
Advanced Survival Analysis
Fall I 2021 Syllabus
(updated: 8/20/2021)

- Course Description: An advanced course in survival analysis, intended to equip students with the knowledge necessary to apply and understand advanced techniques used in survival analysis, and to embark on methods research in the area. Lectures study the large-sample properties of estimators based on one-sample, k-sample and partial likelihood inference, with proofs based on counting process and Martingale theory. The theory of competing risks is studied from several angles. Methods for the analysis of more complex data structures are considered.
- Credit: 0.5 credit hours
- Course Prerequisites: BSTA 622 (may be taken concurrently), or permission of instructor
- Lectures: Mon/Wed, 10:15-11:30 (9/1 to 10/20)

- Instructor: Douglas Schaubel, Ph.D (email: douglas.schaubel@pennmedicine.upenn.edu; office: Blockley Hall: 614)
- T.A.: Jiayi (Jessie) Tong, M.S.
- Office Hours: Instructor: Mon/Wed: 11:30-12:15; other times may be available by appointment.
  TA: TBD
- Text Various book excerpts will be posted
- Computing: SAS, R
- Grading:

- homeworks (likely 3): 65%
- final exam (24-hour take-home): 35% (To be assigned 10/21 at 4:00 pm; due 10/22 at 4:00 pm)

- Topics (ordering is approximate):
  - Introduction and fundamentals
  - One-sample estimators
  - Competing risks
  - Counting processes and Martingales
  - Two-sample tests
  - Proportional hazards regression
  - Additive hazards regression
  - Multivariate survival
  - Analysis of recurrent event data
  - Temporal process regression
  - Landmark analysis
  - Causal inference with censored outcomes
  - Modeling restricted mean survival time