BSTA 754
Advanced Survival Analysis
Fall 2024 Syllabus
(updated: 8/27/2024)

- 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 serve as a starting point towards methods research in the area. Lectures are a blend of concepts, estimation/inference, and applications. Some emphasis is given to competing risks, recurrent events and time-dependent covariates since these are incompletely described in the current literature. Methods for the analysis of more complex data structures are considered.
- Credit: 1.0 credit hours
- Course Prerequisites: BSTA 622 (may be taken concurrently), or permission of instructor
- Lectures: Mon/Wed, 10:15-11:30 in Blockley Hall Room 940; (Sept 4 to Dec 9)
- Instructor: Douglas Schaubel, Ph.D (email: douglas.schaubel@pennmedicine.upenn.edu; office: Blockley Hall: 614)
- Office Hours: Thursday: 11:30-12:15; other times are available by appointment.
- Text Various book excerpts will be posted
- Computing: SAS, R, Python (student's choice)
- Grading:
    - Homeworks: 70%
    - Class presentation/report: 30%

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