AMS 276 Bayesian Survival Analysis and Clinical Trial Design Fall 2016

Course Policies and Syllabus

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Office Hours	Tue and Thur 11:00am-12:00pm, or by appointment

Web page: https://ams276-fall16-01.courses.soe.ucsc.edu/home.

Lectures: Tuesday, Thursday 3:20- 04:55pm, Soc Sci 2 165

Course Description: AMS 276 broadly combines two important topics, survival analysis (SA) and clinical trial design (CTD), in many fields of study, especially biological and medical sciences. The course introduces basic concepts and advanced Bayesian methods will be presented.

Course Topics:

- (SA) Parametric models
- (SA) Regression models that incorporate covariates
- (SA) Semiparametric models for survival data.
- (SA) Frailty models and Cure rate models
- (CTD) Phase I/II/III studies.
- (CTD) Some special topics in trial designs.

Prerequisite: AMS 207 or equivalent course. Enrollment is restricted to graduate students.

Textbooks:

- Survival Analysis
  - Klein, J.P. and Moeschberger, M.L.(2005) *Survival Analysis: Techniques for Censored and Truncated Data (Statistics for Biology and Health).* — **Good for introduction**

    Check their R package *KMsurv* for datafiles.
  - Ibrahim, J.G., Chen M-H and Shinha, D. (2001) *Bayesian Survival Analysis.* — **warning: high level. This assume readers have extensive exposure to Bayesian modeling (parametric, and nonparametric(!).**

    Check their website for datafiles and BUG codes. http://merlot.stat.uconn.edu/~mhchen/survbook/
- Clinical Trial Design
  - Berry, S.M., Carlin, B.P., Lee, J.J. and Müller, P. (2010) *Bayesian Adaptive Methods for Clinical Trials.* — **Good for this specific topic**
  - Cook, T.D. and DeMets, D.L. (Editors) (2001) *Introduction to Statistical Methods for Clinical Trials.* — **Written by many authors. Provide an overview on everything (not necessarily for Bayes or Adaptive Design).**

Homework: There will be homework assignments roughly every 20 (or more) days (20% of the grade).

Exams: There will be two (2) projects (each 40% of the grade), one project for each topic. *(The distribution of the proportions for the grade is Tentative!)*