

# Statistics 525: Survival Analysis I, Spring 2011

## Syllabus

**Time and Place:** MWF 9:05-9:55 in 010 Life Science

**Instructor:** David Hunter <dhunter@stat.psu.edu>

310 Thomas, 863-0979

Office hours: By arrangement or simply stop by

**Audience:** The course is intended to be a PhD-level course. It is assumed that students have taken probability, mathematical statistics, and applied statistics courses such as STAT 511–STAT 514. If you are not certain about your background, please don't hesitate to talk with me.

**Textbook:** No textbook will be required for this course. However, here are two textbooks that I plan to use in guiding the course:

1. *Survival Analysis: Techniques for Censored and Truncated Data* by John P. Klein and Melvin L. Moeschberger, ISBN 0–387–94829–5, Springer. This textbook is a very commonly-used book in introductory survival analysis courses, including STAT 525 at Penn State in previous semesters. It is a good reference book if you're interested in purchasing it, but my intent is to make it possible to take this course without having to purchase any textbook.
2. *Survival and Event History Analysis: A Process Point of View* by Odd O. Aalen, Ørnulf Borgan, and Håkon K. Gjessing, ISBN 978–0–387–20287–7, Springer. This book is available as online content through the PSU library and is I think free. It gives a useful perspective on standard survival analysis techniques, namely, it drops the usual requirement that observations be independent. This is possible via the “counting process” point of view, and I plan to discuss this in the course.

We will read and discuss some of the seminal papers in survival analysis in this course, a partial list of which is provided below in the “references” section. This list will be updated over the course of the semester.

- Grading:** There will be an in-class midterm exam (25%), a comprehensive final exam (35%), and homework assignments (40%).
- Computing:** We will use a lot of R in this course. If you're not familiar with R, it would be a good idea to download it onto a computer you have access to by visiting [www.r-project.org](http://www.r-project.org).
- Integrity:** All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. See <http://www.science.psu.edu/academic/Integrity/> for details.
- Climate:** The Eberly College of Science Code of Mutual Respect and Cooperation ([www.science.psu.edu/climate/Code-of-Mutual-Respectfinal.pdf](http://www.science.psu.edu/climate/Code-of-Mutual-Respectfinal.pdf)) embodies the values that we hope our faculty, staff, and students possess and will endorse to make the Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.

## References

- Aalen, O. O. (1978). Nonparametric inference for a family of counting processes. *Annals of Statistics*, 6(3):534–545.
- Cox, D. R. (1972). Regression models and life-tables. *Journal of the Royal Statistical Society, Series B*, 34(2):187–220.
- Kaplan, E. L. and Meier, P. (1958). Nonparametric estimation from incomplete observations. *Journal of the American statistical association*, 53(282):457–481.