

Advanced Statistical Theory I-II
(140.771-2, 2007).

Meeting times: Tue-Th 1:30-2:50, W2009

Instructors:

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The course is part of the theory sequence. This part first examines large sample theory of the MLE, partial likelihood and generalized moment estimation. Then, it examines problems with many nuisance parameters, first from a large sample perspective, and then from a Bayesian and empirical Bayesian perspective. The course then examines U-statistics. Finally, the course examines topics on stochastic processes.

The instructors acknowledges the partial sharing of notes by H Chernoff, C Rohde, DB Rubin, and DO Scharfstein.

Tentative Outline

Date	Topic
Aug 30, Sept 4, 6, 11, 13, 18	Large sample theory of maximum likelihood
Sept 20, 25, 27	M- and Generalized Moment estimation approaches
Oct 2, 4	Partial likelihood
Oct 9, 11, 16, 18	Problems with many nuisance parameters Part 1: semiparametric theory
Oct 23	Examination
Oct 25, 30, Nov 1	Problems with many nuisance parameters Part 2: Bayesian and Empirical Bayesian methods
Nov 6, 8	U-statistics
Nov 13, 15, 20, 27, 29	Markov chains
Dec 4, 6, 11, 13, 18	Martingales in survival analysis
Dec 20	Examination

References

- Casella and Berger (2002). *Statistical Inference*, Duxbury.
- Cox, DR. and Hinkley, DV. (1973). *Theoretical statistics*. London: Chapman and Hall.
- Ferguson, T. (1967). *Mathematical statistics: a decision theoretic approach*. New York: Academic Press.
- Royall, R. (1997). *Statistical evidence, a likelihood paradigm*. London: Chapman and Hall.
- Grimmett GR and Stirzaker DR. *Probability and Random Processes*. Oxford.