

STAT 6332: Statistical Inference II (Spring 2005)

Course Information and Syllabus

Goal: Learn some advanced topics in statistical inference.

Pre-requisite: STAT 6331.

Class: MW, 7 – 8.15 p.m., CB 1.114

Instructor: Pankaj Choudhary, ECSN 3.908, 972-883-4436, pankaj@utdallas.edu

Office hours: W 3.00-4.00 p.m. or by appointment

Grades: About 4-5 homework assignments will be given but they will not be collected or graded. However, I will provide their solutions. There will be 4-5 in-class quizzes (20%), two midterms (30% each) and a final project (20%). The project will consist of a written part and an in-class presentation. Further details for the project will be provided later. No make up exam will be given unless there is an absolute emergency and relevant documentation is provided.

Text: The textbook for the course is *Mathematical Statistics – Basic Ideas and Selected Topics*, Vol. 1, second edition, Bickel, P. J. and Doksum, K. A., 2001, Prentice Hall. However, several topics will be covered from other books, including, *Elements of Large-Sample Theory*, 1999, Lehmann, E. L., Springer (available on reserve in library).

Tentative list of topics to be covered:

- Review of convergence in probability and in law, central limit theorem, Slutsky's theorem, delta method, and their applications.
- Asymptotic theory for maximum-likelihood estimators, posterior distributions, and M -estimators in one dimension.
- Estimating equations.
- Asymptotic theory for the multiparameter case.
- Large-sample tests and confidence regions.
- Nonparametric estimation (U -statistics, limit distribution of statistical functionals, and density estimation).
- Basic ideas of bootstrap and their application to confidence intervals.
- EM Algorithm, and Markov Chain Monte Carlo methods.
- Basic ideas of robust estimation (if time permits).