MTH G342 – Mathematical Statistics **Spring 2006**

Course Description

MTH G342 is a basic introductory course for mathematical statistics for graduate students. The emphasis is on providing the students with a firm mathematical foundation of statistical concepts and methods. This course provides an overview of the most commonly used basic mathematical skills for developing new statistical methods.

Plan for covered material

We shall mainly follow the book
Theory of Point Estimation, *2nd Ed.* by E. Lehmann and G. Casella. Springer, c1998.

Topics include
1. Properties of exponential families (Section 1.3);
2. Data reduction through sufficient and complete statistics (Section 1.5-1.7);
3. Find estimators with finite sample optimality: UMVUEs and Information bound (Chapter 2);
4. Equivariant estimators (Chapter 3);
5. Bayes estimators (Chapter 4 and Berger's book);
6. Minimaxity and Admissibilty (Chapter 5);
7. Find estimators with large sample optimality: asymptotic theory (Chapter 6);
8.* Hypothesis testing.

These are lists of topics to be covered, but not in the order to be taught. In fact, we will start on a bit of asymptotic theory (topic 7) as that is the most commonly used technique.

Grading

There will be homework assignments generally due every one to two weeks. The course grade will be the weighted average of all homework. There is no exam. However, at the midpoint and the end of the semester, there will be homework assignments that cover all topics taught up to that time.