STAT 713 — Mathematical Statistics II (Spring 2009)

Instructor: Xianzheng Huang

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TA: Wensong Wu

(Course materials will be posted on the Blackboard.)

Class Meeting: MWF 1:25–2:15 PM, 201A LeConte College

Office Hours: TTH: 9:00 AM–12:00 PM. Please feel free to make appointments to see me at other times.

Required Text: *Statistical Inference,* 2nd Edition, by Casella & Berger, Duxbury (2002).

Prerequisite: STAT 712.

Purpose: To acquaint beginning graduate students in statistics and other disciplines with the mathematical development of statistical inference. To provide a foundation for further study in statistical theory at both master's and doctoral level.

Topics: Chapters 5 (starting from §5.3.2)$\sim$ 9 of the text.

Exams: Exam I on 02/20/09; Exam II on 04/03/09; *Final* on 05/04/09 at 2:00$\sim$5:00 PM. (Make-up exam is considered only in extreme circumstances and *documentation is required.*)

Grade Scale: 90–100=A; 87–89=B+; 80–86=B; 77–79=C+; 70–76=C; 67–69=D+; 60–66=D; 0–59=F.

Grade Breakdown: Homework = %40; Three exams = %60 (%20 each).

Learning Outcomes: Upon satisfactory completion of this course, students should be able to achieve the following.

1. Be familiar with the sampling distributions of important statistics such as sample mean, sample variance, order statistics, and functions of these statistics.
2. Understand convergence concepts.
3. Appreciate the statistical thinking behind the sufficiency principles, likelihood principles, and invariance principles.
4. Understand the derivation and evaluation of three methods of constructing point estimators, MOM, MLE, and Bayes estimators.

5. Grasp common methods of constructing a test statistic for hypotheses. Be able to assess the quality of a testing procedure, say, the power of the test, unbiasedness, whether or not UMP test is attained, etc.
6. Understand the derivation and evaluation of common methods to construct interval estimators.
7. (If time permits...) Understand the rationale behind the Bayesian inferential methods.
8. (If time permits...) Appreciate the several main topics studied in the decision theory.

Class Policies:

1. There are around seven homework assignments posted on the Blackboard during the semester. You are encouraged to discuss homework problems with me and your classmates. But each student should write up his/her solutions independently. Late homework will not be accepted. If homework is found to have been copied, all students involved will receive a 0.
2. All exams are closed notes and books.
3. There is no "extra credit" for this class.
4. Class participation is strongly encouraged.