AMS 132: Statistical Inference (Fall 2009)
General course information

Instructor: Athanasios Kottas
Office: 153A Baskin Engineering Building
Phone: 459-5536
E-mail: thanos@ams.ucsc.edu

Web page: http://www.soe.ucsc.edu/classes/ams132/Fall09/

Lectures: Tuesday, Thursday 10-11:45am (Baskin Engineering 169)
Office hours: Tuesday 12-1pm; Wednesday 11am-12pm

Course description: This course provides a calculus-based introduction to the basic concepts and methods for statistical inference. Building on background from probability theory (Bayes theorem and conditional distributions), we will first develop the Bayesian approach to statistical inference. We will then cover maximum likelihood estimation, including study of properties of maximum likelihood estimators. Next, we will discuss various sampling distributions of estimators to motivate statistical inference more general than point estimation, including confidence intervals and hypothesis testing. Finally, if time permits, we will provide a brief introduction to inference for linear regression models.

Background: The key prerequisite is a calculus-based course on probability theory such as AMS 131 or Computer Engineering 107.


Reading: The material in this course is cumulative and may go quickly. It is expected that you will stay up to date by reading from the relevant textbook chapters and practicing with the homework problems.

Homework: Homework will be assigned, but will not be collected or graded. Answers to some of the textbook exercises are given at the back of the book. Detailed solutions to some of the homework problems will be discussed during the lectures. Working on the homework problems is key as it will enable you to develop facility in the methods of the course through regular practice.
**Quizzes:** There will be four in-class short quizzes:

   - Quiz 1: Thursday October 8
   - Quiz 2: Tuesday October 20
   - Quiz 3: Thursday November 12
   - Quiz 4: Tuesday November 24

In general, the problems for the quizzes will be based on the homework exercises. The lowest quiz score will be dropped when computing your total quiz score. This is meant to account for *any* reason that might prevent you from taking a particular quiz. Make-up quizzes will **not** be assigned.

**Exams:**

   - Midterm exam: Thursday October 29
   - Final exam: Monday December 7, 12-3pm

Both the midterm and final exam will be in-class. Both of the exams as well as the quizzes will be closed-book, closed-notes, but you may bring up to two (letter size) pieces of paper with formulas on both sides. The final exam will be comprehensive.

**Re-grade requests:** We will consider re-grade requests for the midterm exam and the quizzes. In all cases, the request will be considered only within a week after returning the exam/quiz papers (except, of course, for outright grading mistakes). You must provide your written request along with the exam/quiz paper.

**Course grade:** Quizzes: 30%; Midterm exam: 30%; Final exam: 40%