



University of Southern California
Department of Mathematics

MATH 408 Mathematical Statistics
Spring 2013

Lectures: MWF 12:00-12:50 pm in ZHS 352
Instructor: Konstantin Zuev
Office: KAP 470A
Email: kzuev@usc.edu (please include "408" in the subject line)
Office Hours: MWF 1:30-2:30 pm, or by appointment
Discussions: Tue, Thu 9:00-9:50 am, 10:00-10:50 am in KAP 165
Teaching Assistant: Grigory Sokolov (gsokolov@usc.edu, KAP415)

Course Description

Mathematical Statistics is the branch of applied mathematics that studies ways of drawing inferences from limited data. The main goal of this course is to give an introduction to the fundamental concepts, ideas, and methods of Statistics.

Prerequisites

MATH 407 Probability Theory

Textbook

J. Rice, *Mathematical Statistics and Data analysis*, 3rd edition, 2007.

Course Plan

The plan is to cover most of Chapters 6-11. Topics will include: the sample mean and the sample variance and their properties; estimation of population parameters under simple random sampling and stratified random sampling; confidence intervals; fundamental concepts of statistical inference; method of moments; method of maximum likelihood; Cramer-Rao lower bound; sufficient statistics; testing hypothesis; likelihood ratio test and goodness of fit; probability plots; descriptive methods for summarizing data; comparing two samples; parametric and non-parametric methods.

Grading

Homework	10%
Quizzes:	10%
First Midterm:	20%
Second Midterm:	20%
Final:	40%

Homework

Homework problems and due dates will be posted on the course website every other Friday (for exact dates see "Important Dates" below). These problems will be collected in Discussion class on Thursday. Late homework will not be accepted for any reason.

Quizzes

A quiz will be given every other Tuesday (for exact dates see "Important Dates" below). All quizzes are closed-book. Calculators are allowed.

Midterm Exams

There will be two (one hour) midterm exams: Wednesday, February 13 (exam 1) and Monday, March 25 (exam 2). The 2nd exam will cover the material after the 1st exam. Both exams will be given in regular class time. The place will be announced later. Both exams are closed-book, but you are allowed to bring one sheet of formulas. Calculators are allowed.

Final Exam

The final exam will be comprehensive and it will be held at the time specified in the University Schedule of Classes: Friday, May 10, 11am-1pm, location to be announced. The final exam is closed-book, but you are allowed to bring one sheet of formulas. Calculators are allowed.

Important Dates

Quizzes: Jan 22, Feb 5, 19, Mar 5, Apr 2, 16, 30
Homework: Jan 25(due 31), Feb 8(14), 22(28), Mar 8(14), 29(4), Apr 12(18), 26(2)
First Midterm: Wednesday, February 13
Second Midterm: Monday, March 25
Final: Friday, May 10, 11am-1pm

Expectations

Official announcements, homework assignments, due dates, and solutions will be posted on the course website. You are expected to check the course website on a regular basis. You are encouraged to read the appropriate sections of the textbook in advance and discuss the homework assignments with other students.

Behavior

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action. In particular, the use of cell phones during class or conversation is disruptive behavior.

Academic Integrity

All students are responsible for maintaining standards of academic integrity. The university regards cheating as a very serious issue and recommends F in the course for any violation. In particular, collaboration, use of notes, or any electronic devices during quizzes, midterms or the final are strictly prohibited.

Course website

<http://www-bcf.usc.edu/~kzuev/teaching/2013Spring/Math408.html>