Department of Mathematics   Jianfeng Zhang

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Math 541A, Introduction to Mathematical Statistics, Spring 2020

Instructor: Jianfeng Zhang, KAP 248E, (213)740-9805, jianfenz@usc.edu   *dornsife.usc.edu/jianfeng-zhang/*

Grader: Lernik Asserian, asserian@usc.edu

Time and location: MWF 11:00 - 11:50am, ZHS 352

Office hours: M 9:20-10:50am and W: 12:00-1:30pm at KAP 248E, or by appointment

Textbook: *Statistical Inference (2nd edition)*, by G. Casella and R. Berger

Prerequisites: One of Math 407, 408, and 505A

Exam Dates:

Midterm Exam: 3/9, Monday, 11:00-11:50am

Final Exam: 5/6, Wednesday, 11:00am-1:00pm

Course Content:

I plan to cover Chapters 1-7 in the textbook. Most of Chapters 1-4 are already in prerequisite course(s), so we will go over relatively quickly.

More specific topics include (subject to change): parametric families of distributions; multivariate distributions and transformations; order statistics; convergence concepts; sampling and derived distributions from a normal population; data reduction, sufficiency, completeness; the idea of parameter estimation, some important estimators (including method of moments, least squares, maximum likelihood), asymptotics; comparison of estimators, optimality, consistency, asymptotic efficiency. If time permits, we may also introduce computationally intensive methods: EM algorithm, jackknife and bootstrap.

Grading and Examination Policies

30% of the grade will be based on homework assignments, 25% on the midterm exam, and 45% on the final exam. The grade cutoffs will be decided after the final exam, based on the students' overall achievements.

The 50 minutes Midterm Exam will be given in regular class time. The Final Exam will be comprehensive, with an emphasis on the materials covered after the Midterm Exam. All exams are **closed book**, but students are allowed to bring one formual sheet. Calculators are not allowed (and will not be needed).

Homework problems will be assigned biweekly. No late homework will be accepted, but missed homework with valid reasons can be excused. You are permitted and even encouraged to discuss homework problems with classmates. However, you are not permitted to copy solutions from others.

Feedback and Questions

It is extremely important for me to get feedback and questions, both inside and outside class. You are very welcome to visit me during my office hours, and/or make appointments to see me at other time.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in GFS 120. Its phone number is (213) 740-0776 and website is: https://dsp.usc.edu.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code and the recommended sanctions: https://policy.usc.edu/student/scampus/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: https://sjacs.usc.edu/students/.