

Syllabus

Course Web Page: <http://rohan.sdsu.edu/~rlevine/Stat670B>

Meeting Time: Lectures: MW 5:30 - 6:45 p.m. in GMCS 325

Instructor: Professor Richard Levine
GMCS 565
email: rlevine@sciences.sdsu.edu
Office Hours: MW 3:30 - 4:30 p.m.; T 3:00 - 4:00 p.m.

Reference: The textbook for the course is

Casella, G. and Berger, R. L. (2002). *Statistical Inference*, 2nd Edition. Duxbury, California.

Objectives: Mathematical statistics is the backbone of methods applied and developed in statistical practice and research. This course will provide you with the mathematical machinery and underlying statistical theory to understand and evaluate statistical routines, expand/manipulate existing or establish new procedures, communicate statistical ideas, and read the scientific, particularly statistically-related, literature to critically judge the relevance of research results. The goal is to bring together your understanding of statistical methods into a coherent conceptual and theoretical framework within which you may gain a greater comprehension and appreciation of statistical inference and thinking. Additionally, the material will teach you how to approach statistical problems from a mathematical perspective as a complement to the computational and data analytic training you receive in more applied courses and work.

Homework: Homework assignments will be regularly available on the course web page. The homework will contain a series of practice problems which *will not* be handed in nor graded. All material covered on the assignments will be questioned on the exams. The homework serves as a tool to review and practice the material covered in class.

Exams: There will be three in-class exams on the Wednesdays February 11, March 10, and April 14. All exams are closed book. A hand calculator is necessary for all exams.

Each exam will be worth 100 points. You will be allowed to drop your lowest exam grade. **No makeup exams are given- no exceptions.**

The final exam will be given Wednesday May 5 from 4:00 p.m. to 6:00 p.m. in GMCS 325. The final will be cumulative. **No makeup final exam will be given- no exceptions.**

Project: As part of the course you will be asked to do a group project. The project grade will be based in part on a 15-20 minute presentation (depending on the size of the class) during the last week of classes and a 3-5 page extended abstract in journal style format (i.e., 12 *pt* font, one inch margins, single-spaced, figures and tables clearly presented and labeled at the end of the abstract, page limit does not include figures, tables, nor bibliography). The abstract must be submitted electronically to Professor Levine by April 23 for dissemination to the class prior to the presentation. You may wish to use this opportunity to learn \LaTeX to type the abstract.

You are required to attend *all* project presentations. Attendance at the presentations will be a part of your project grade.

The project groups will comprise of two students. I will ask you to form the groups on your own by the seventh week of the semester. Each group will study a topic in mathematical statistics not covered in the course. I will give a list of potential topics during the fifth week or so of the semester. In consultation with me, each group may choose one of these topics or another area/problem in mathematical statistics of interest. The specific project must be decided upon by the eighth week of the semester. As part of the project, expect to read articles in the literature about the area chosen and perform mathematical analyses for a thorough understanding of and to illustrate the techniques/methods studied.

Grading: The grade for the class is based on a score composed of the following.

Project	15%
Three Exams (Best 2 out of 3)	50%
Final Exam	35%

Topics to be covered: basic outline; topics may be added and/or dropped as the semester proceeds.

1. Estimation theory
 - a. Constructing estimators
 - b. Evaluating estimators
2. Hypothesis testing
 - a. Constructing decision rules
 - b. Evaluating testing procedures
3. Interval estimation
 - a. Constructing interval estimators
 - b. Evaluating interval estimators
4. Special topics
 - a. Maximum likelihood large sample theory
 - b. Robust methods
 - c. Decision theory
 - d. Regression: linear, logistic, nonparametric, ANOVA

Prerequisite: STAT 670A

Tardiness and Early exits: The class time is from 5:30 - 6:45 p.m. As common courtesy to your fellow students, we would appreciate if you show up to class on time and leave when dismissed at 6:45. If you must leave early, please inform me and sit on the aisle near an exit so as not to disturb students listening to and trying to learn from the lectures.

Code of Academic Conduct on Examinations and Assignments: “At San Diego State University, students are invited to be active members of the educational community. As with any community, its members serve a vital role in determining acceptable standards of conduct, which includes academic conduct that reflects the highest level of honesty and integrity.” The “Statement of Student Rights and Responsibilities clarifies for students their role as members of the campus community, setting forth what is expected of them in terms of behavior and contributions to the success of our university.” “Inappropriate conduct by Students . . . is subject to discipline on all San Diego State University Campuses. The Center for Student Rights and Responsibilities coordinates the discipline process and establishes standards and procedures in accordance with regulations contained in Sections 41301-41304 of Title 5 of The California Code of Regulations, and procedures contained in Executive Order 628, Student Disciplinary Procedures for The California State University.” See <http://www.sa.sdsu.edu/judicial> for more information.

Other information: See course web page: <http://rohan.sdsu.edu/~rlevine/Stat670B>