

STAT:7200 (22S:255) LINEAR MODELS (Fall 2013)

Time and Place TTh 9:30AM – 11:20AM, 60SH.

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Required Textbook *A First Course in Linear Model Theory*, Nalini Ravishanker and Dipak K. Dey (2002), Chapman & Hall/CRC.

A useful reference on matrix theory is *Matrix Analysis for Statistics*, 2nd ed., J. Schott (2005), Wiley.

Prerequisites The formal prerequisites for this course are 22S:164-165 and 22S:193-194, or their equivalent. Familiarity with matrix algebra, at an elementary level, is also essential.

Office Hours Tuesdays 2:30-3:30pm and Fridays 3:30-4:30pm or by appointment.

Exams There will be 2 two-hour, in-class exams. The first will be given on October 8 and the second will be given on December 12.

Homework Written assignments are an *essential* component of the course. Assignments generally consist of ~5 problems and will be assigned weekly. Assignments must be turned in by the beginning of class on the day they are due. Unless prior arrangements are made, late homework will not be accepted. You may work on homework problems together, but what you turn in must ultimately be your own work.

Attendance Attendance at lectures and participation in discussions are expected. Failure to attend class regularly will affect your grade.

Grading Homework, 30%, two exams, 70% (35% each). A plus-minus grading system will be used.

Course Objectives

1. To provide a rigorous treatment of the important topics in the linear model theory.
2. To equip Ph.D. students in statistics, biostatistics and related fields with a solid background in the linear model theory that will be helpful in their future work.

Topics to Be Covered

1. Review of matrix theory [Chapters 1, 2 and 3].
2. Multivariate normal and related distributions [Chapters 5 and 6]
3. The general linear model [Chapters 4 and 7]
4. Multiple regression models [Chapter 8]
5. Fixed effects linear models [Chapter 9]
6. Random effects and mixed effects models (time permitting) [Chapter 10]

Additional UI and CLAS Policy and Procedures

Administrative Home The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall or see the CLAS Student Academic Handbook [www.clas.uiowa.edu/students/academic_handbook/index.shtml].

Electronic Communication University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check this account frequently. (Operations Manual, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Fraud Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Student Academic Handbook.

CLAS Final Examination Policies Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

Making a Suggestion or a Complaint Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

Understanding Sexual Harassment Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment at www.uiowa.edu/~eod/policies/sexual-harassment-guide/index.html for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety website <http://www.uiowa.edu/~pubsfty/intlinks.htm>.

Student Classroom Behavior The ability to learn is lessened when students engage in inappropriate classroom behavior, distracting others; such behaviors are a violation of the Code of Student Life. When disruptive activity occurs, a University instructor has the authority to determine classroom seating patterns and to request that a student exit the classroom, laboratory, or other area used for instruction immediately for the remainder of the period. One-day suspensions are reported to appropriate departmental, collegiate, and Student Services personnel (Office of the Vice President for Student Services and Dean of Students).