STAT:7200 LINEAR MODELS (Fall 2018)

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.

Prerequisites STAT:5101 and STAT:5200 and STAT:5201. 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 an in-class midterm exam given on October 9 and a final exam.

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, 40%, two exams, 60% (30% 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 and multiple regression models [Chapters 4, 7 and 8]

4. Random effects and mixed effects models (time permitting) [Chapters 9, 10]

5. High-dimensional regression models
Additional UI and CLAS Policy and Procedures

**Administrative Home** The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and other policies. These policies vary by college (https://clas.uiowa.edu/students/handbook).

**Electronic Communication** Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2).

**Accommodations for Disabilities** UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student should then discuss accommodations with the course instructor (https://sds.studentlife.uiowa.edu/).

**Nondiscrimination in the Classroom** UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity at diversity@uiowa.edu.

**Academic Integrity** All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty. Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address.

**CLAS Final Examination Policies** The final exam schedule for each semester is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this final exam information. No exams of any kind are allowed the week before finals. (https://clas.uiowa.edu/faculty/teaching-policies-resources-examination-policies.)

**Making a Complaint** Students with a complaint should first visit with the instructor or course supervisor and then with the departmental executive officer (DEO), also known as the Chair. Students may then bring the concern to CLAS (https://clas.uiowa.edu/students/handbook/student-rights-responsibilities).

**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 must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, definitions, and the full University policy, see https://osmrc.uiowa.edu/.