STAT:5201 Applied Statistics II

Time & Place: MWF 12:30-1:20pm 30 Schaeffer Hall

Prerequisites: STAT:5200

Required Text

> Dean, A., Voss, D., and D. Draguljic (2017). *Design and Analysis of Experiments (Springer Texts in Statistics)* **2nd edition**, Springer International Publishing.

Other Texts (no-cost)

> **(1)** Oehlert, G.W.(2000). *A First Course in Design and Analysis of Experiments.* New York: W.H. Freeman and Company.
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> > NOTE: The above book is out of print, but is available online as a free download:
> > > http://users.stat.umn.edu/∼gary/Book.html
> > (c) 2010 under Creative Commons license.
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> **(2)** Lenth, R.V., *Design, Data, and Deduction: An Introduction to Experimental Design.* Self-published.
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> > NOTE: Available on the class ICON website in 'Files' tab.

Class website: http://homepage.stat.uiowa.edu/∼rdecook/stat5201.html

Instructor: Rhonda DeCook, 211 Schaeffer Hall, 335-3249, rhonda-decook@uiowa.edu
Office Hours: Monday & Wednesday 9:30 - 11am, or by appointment.
Department: Statistics and Actuarial Science
    DEO - Kung-Sik Chan, Chair, 241 SH   kung-sik-chan@uiowa.edu   335-0712

Course Goals and Objectives:

This is the second course in the graduate applied statistics sequence, emphasizing design and analysis. In this course we will learn the basics of experimental design and statistical analysis of data obtained from a number of experimental designs using primarily SAS, but some R as well.

How the data were collected affects how the data should be analyzed.

When designing an experiment, one considers the *sources of variation* involved. Some sources of variation are of interest (e.g. treatment), while others can be considered a nuisance (e.g. subject-to-subject variation in some cases).

In designed experiments, we try to minimize the error in estimating the parameters (or effects) of greatest interest.

Topics: The earlier part of the course emphasizes intuitive ideas in experimental design. The later part of the course goes into more detail in modeling and analysis. Topics from Dean, Voss, Draguljic (2017), will tentatively include all or parts of chapters 1-7, 9, 10, 17, 18, and 19

Computer Software: We will use SAS as the primary tool for data analysis. We may also use some web-based Java applets provided by Professor Emeritus Russell Lenth that are used for simulations and sample-size determination, and some R code may also be given (but SAS is the primary program in this course).

Coursework: There will be weekly assignments (so about 14 altogether), three midterm exams, and a comprehensive final. Tentative dates for the midterm exams are in the next section. No late homework will be accepted (unless you have an excused university absence).

Some of the homework *may* be mini-projects, like maybe you will have to design an experiment and collect the data using software (presently depends on the availability of such software). Most homework questions will be from the Oehlert book, but some will come from other sources.

Grading Policy: Assessment in this course will be based on the following components:

Homework	....	20%
Exam 1	Wednesday February 26* (week 6)	20%
Exam 2	Wednesday April 1* (week 10)	20%
Exam 3	Wednesday April 29* (week 14)	20%
Final Exam	TBD (week 16)	20%

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*Exams dates are tentative.

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Formulas deemed necessary for exams will either be provided to you (and given to you beforehand for prior knowledge), or you will make handwritten notes for exams. But, keep in mind that you will not have a formula sheet when taking the MS comprehensive exam.

	90-100	A
	80-90	B
As an approximate guide, grades will be given as:	70-80	C
	60-70	D
	Below 60	F

Plus and minus grades will be given as deemed appropriate.

*No make-up exams will be given unless there is an absence due to unavoidable circumstances as stated by University policy (documentation will be required in such a case). Missed exams will receive a score of 0.

– See course website for 3rd page of syllabus stating Teaching Policies & Resources
   $http://homepage.stat.uiowa.edu/\sim rdecook/stat5201/syllabus\_5201.pdf$

Administrative Home of the Course:
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).

Academic Honesty:
All CLAS students 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.

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 Universitys Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity at diversity@uiowa.edu or diversity.uiowa.edu.

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/.

CLAS Final Examination Policies:
The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

Making a Suggestion or 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).