Statistics 407/507 - Experimental Design - Fall 2021

Instructor: Dr. Chris Williams  
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email: chrisw@uidaho.edu  
Office Hours MWF 1:30-2:30 or by appointment. At least initially office hours will be Zoom-only.  
Meeting times: MWF 12:30-1:20  
Prerequisites: Stat 431 or equivalent coursework.

Course Text  
A First Course in Design and Analysis of Experiments - Gary W. Oehlert from the University of Minnesota. This book is freely available under a Creative Commons License.

Course Website  
https://www.webpages.uidaho.edu/~chrisw/stat507live/  
The website will contain announcements, summaries of lectures, lists of assignments, and other information. The website and blackboard complement each other and will both be used throughout the course. Be sure to use the link above, if you google the course you may end up on a previous year’s version!

Course Goals  
Define quantitatively the most efficient ways to obtain knowledge from experiments with differing constraints for number of treatments, replicates, classes of experimental objectives, and blocking procedures in terms of the general linear model. Develop a quantitative, defensible strategy for experimentation. Develop an understanding of data analysis in models with factors.

Course Learning Outcomes  
1. Be able to distinguish between common experimental designs such as Completely Randomized, Randomized Complete Block, Completely Randomized Factorial, Latin Square, Confounded Block Designs, Fractional Factorial Designs, Repeated Measures Designs, Split-Plot and related designs.  
2. Understand the issues involved in choosing between common experimental designs.  
3. Be able to analyze data arising from common experimental designs.  
4. Understand the use of response surface methods to identify important factors and settings for those factors to yield optimal responses.

Lecture Outline and Software  
We will cover most of the material in the text, to be detailed in the lecture schedule. We will use both the SAS and R computer packages, code will be available for both on the lecture page. Either choice will work fine for the course. We will use Blackboard discussions as an additional way to give comments and ask questions.
Grades
The course grade will be determined by four exams and an individual project. Two exams (the first and fourth) will be take-home only, while two others (the second and third) will have both a take-home and an in-class part. Take-home exam answers will be handed in on Blackboard. The four exams constitute 85% of the course grade, allocated as 5%, 30%, 30%, and 20% across exams 1 to 4 respectively, while the project is 15% of the course grade. The course project will be handed in on Blackboard. The usual ranges will be used for final grades (90 and above for A, between 80 and 90 for B, etc.)
There will be homework sets assigned but not collected, they will be reviewed in class and will exemplify the types of problems on the exams.
Students in the Stat 407 course can have the impact of their lowest exam score reduced by up to 20% of the course grade.

Academic Honesty
You should be aware of University of Idaho policies concerning academic honesty (see Article II of the Student Code of Conduct). Breaches of academic honesty will not be tolerated and will result in an F for the course and referral to the Dean of Students for further disciplinary action.

Center for Disability Access and Resources
Students with disabilities needing accommodations to fully participate in this class should contact Center for Disability Access and Resources (CDAR). All accommodations must be approved through CDAR prior to being implemented. To learn more about the accommodation process, visit CDAR's website at www.uidaho.edu/cdar or call 208-885-6307.

Healthy Vandals Policies
It is a longstanding tradition that Vandals take care of Vandals, and we all do our best to look out for the Vandal Family. These simple precautions go a long way in reducing the impact of coronavirus on our campuses and in our communities. With everyone engaging in these small actions, we can continue to participate in our vibrant campus culture where we are able to learn, live, and grow. Visit the University of Idaho COVID-19 webpage often for the most up-to-date information about the U of I's response to Covid-19.

- Masks are required, in all university buildings, regardless of vaccination status. Faculty may wear a face shield to lead classes and must maintain 6 feet of distance while wearing the shield. These requirements will be reviewed on a periodic basis and are subject to change.
- All classes are offered in the modality listed in the catalog.
- All Vandals are highly encouraged to be vaccinated.
- COVID-19 tests are not required to attend class in person.

Additionally, faculty and students must follow the Healthy Vandal Pledge.
University of Idaho Classroom Learning Civility Clause
In any environment in which people gather to learn, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning. Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff, the UI Counseling & Testing Center’s confidential services, or the UI Office of Human Rights, Access, & Inclusion.