Statistics 407/507 - Experimental Design - Fall 2020

Instructor: Dr. Chris Williams  
Room 414 Brink Hall, Phone: 885-2802 or 885-6742  
email: chrisw@uidaho.edu  
Zoom Office Hours (Zoom only for Fall 2020): MWF 1:35-2:30 or by appointment.  
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.
The HyFlex Model for Fall 2020
The hyflex model is designed to allow in-person interaction with instructors while providing a safe learning environment. My implementation of this model for Fall 2020 for this MWF class is to have roughly one-third of the students attend each meeting in-person. An announcement from Blackboard will let you know which day you should attend. All main course lectures will be pre-recorded and online, so class meetings can be used to clarify issues and answer questions. The class meetings will also be recorded and posted in case you cannot attend. The course grading structure has also been modified as explained below.

Grades
The course grade will be determined by three common project sets and an individual project. The project sets will be handed in on Blackboard and will be due at approximately the $5^{th}$ week, the $10^{th}$ week, and during finals week, and are worth 30%, 30%, and 20%, respectively, of the course grade. The course project is worth 20% of the grade, and will be handed in on Blackboard in two parts. A first part will be due before Thanksgiving break, giving you a chance to incorporate my comments on it for the final submission during finals week. There will be homework sets assigned but not collected, they will be reviewed in class and will exemplify the types of problems on the common project sets.
Students in the Stat 407 course can have their lowest common project score reduced to half of its usual weight.

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
University of Idaho’s Center for Disability Access and Resources recommends that faculty and instructors include on all syllabi a statement informing students with disabilities of their right to request reasonable accommodations in the classroom.
Center for Disability Access and Resources (CDAR) coordinates services to meet the educational needs of students with temporary or permanent disabilities. CDAR works with students and faculty to arrange reasonable accommodations and promote an environment that is inclusive for all learners.
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/cedar or call 208-885-6307.

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.