Stat 6410 (Spring 2017): Design and Analysis of Experiments

Lecturer

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Office hours in 205B Cockins Hall: Tues 1-2pm, Wed 3-4pm, or by appointment.

Grader

Zhifei Yan

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Lectures

Tue and Thu, 9.10–11.00 am in Psychology Building (PS) 010

Holidays: Spring break is Mon 13–Fri 17 Mar.

Please download notes from the class website at `http://www.stat.osu.edu/~pfc/teaching/6410/`

Lectures may not be recorded.

Class Attendance Policy

You are expected to attend all lectures.

Course Description

Statistics 6410 is a course on experimental design. It will cover the basic principles of design and the techniques used to analyze experiments which follow a number of standard experimental designs. Specific designs to be covered include one-way ANOVA, two-and-higher-way ANOVA, factorial designs, and block designs. The course will rely on knowledge from prerequisite courses. This includes the use of mathematical statistics (at the level of Stat 6201) that is needed for derivations of estimators, test statistics, and their properties, and applied statistics (at the level of Stat 6450). Please talk to me if you are concerned about the background needed for this course.

The goals for the course are for you to (1) understand the key ideas that underlie the designs we will work with, (2) appreciate the importance (and unimportance) of the assumptions that the models are based on, (3) be able to make sound decisions for an analysis, (4) understand and use appropriate statistical notation and terminology, (5) implement formal techniques flawlessly, and (6) summarize an analysis appropriately. With these goals in mind, by the end of the semester, you should be able to design and conduct an experiment of modest size, and you should be able to analyze the data from such an experiment.

Prequisites: Stat 6201 (521), 6302 (623), or 6802 (622), and 6450 (645) or 6950; or permission of instructor. Not open to students with credit for 6910 (641).

Textbook

A.M. Dean and D. Voss (1999), Design and Analysis of Experiments, Springer, NY.
(Also available at an ebook from http://link.springer.com.proxy.lib.ohio-state.edu/book/10.1007%2Fb97673)
Download the errata sheet from http://www.wright.edu/~dvoss/book/DeanVoss.html
I will highlight other useful references as the course progresses.

Computing

This class requires you to use the statistical software package called R.
More details will be given in class and on the class web site.

Evaluation

Homework	Midterm	Final exam
25%	30%	45%

Grades will be recorded on Carmen

Homework will be due at the **beginning** of class on the day it is due. **No** late homework will be accepted. You are encouraged to work together on the homework, but **do not** copy any part of a homework. Each student must produce his/her own homework to be handed in. Electronic submissions are **not** permitted. Feel free to ask me for help after you have made an attempt of the questions. The grader for the course does not have the time to provide detailed explanations on each question that is graded. To make up for this, I will endeavor to make homework solutions detailed enough to allow you to understand how the question could be approached.

Homework preparation rules: Put your name and the homework assignment number on the top right-hand corner of every page. All homework must be submitted on 8.5"x11" paper. Staple the pages together. We are not responsible for lost pages. Submit the problems in order, making sure that the computer output and discussion is placed together (do not put the computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

Exams: There will be **one midterm** and **one final exam**:

Midterm	Tues 28 Feb	in class
Final	Mon 1 May	8.00–9.45 am

All exams are closed book/closed notes. A basic calculators is allowed – tablets, laptops, and cellphones are not. The midterm covers the material up to and including Mon 27 Feb. The final will cover all the material for the course. There will be **no make-up** exams.

Academic misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/csc/).

Disability Statement

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.osu.edu/.

Disclaimer

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular I reserve the right to change due dates or the methods of assessment. Official announcements will ALWAYS be those made in class.