

STAT 514: Experimental Design (Syllabus)

Spring 2016

Instructor	Grader	Grader
Qifan Song qfsong@purdue.edu MATH 240	Hyoeun Lee lee1487@purdue.edu	Tracy Gonzalez gonzalez@purdue.edu

Times and Location

	Day	Time	Location
Lecture-section 001	TTh	3:00-4:15PM	University Hall 003
Lecture-section 002	TTh	4:30-5:45PM	University Hall 003

Office Hours

	Day	Time	Location
Instructor	TTh	2:00pm-3:00pm	MATH 240

Software Help Session

Type	Day	Time	Location
SAS	W	6:30 -- 8:30pm	BRNG B286

Announcement

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Course Website

- <http://www.stat.purdue.edu/~qfsong/teaching/514/514.html>
- All course material (lecture notes, sample examples, homework assignment) will be posted on [Blackboard Learning](#).

Prerequisites

STAT 511 or equivalent introductory course that covers probability distributions, sampling distributions, mean, variance, confidence interval, hypothesis testing, Z-test, t-test, two-sample paired t-test, two sample independent t-test, one-way ANOVA and simple regression.

Course Objectives and Prerequisites

To be able to plan an experiment in such a way that the statistical analysis results in valid and objective conclusions. To learn a variety of experimental designs and be able to choose an appropriate design for a specific experiment. To be able to perform the proper statistical analysis and draw valid statistical conclusions from a specific experiment. Topics includes:

- Simple Designs and Analysis of Variance
- Block Designs, Latin Squares and Related Designs
- Full Factorial Designs
- Designs with Random Factors and Nested Designs
- 2-level Full Factorial and Fractional Factorial Designs

Tentative Schedule (TBD)

Textbook

- Strongly recommended textbook: "*Design and Analysis of Experiments*"(6th, 7th or 8th ed.) by Douglas C. Montgomery.
- Recommended textbook: "*An Introduction to Statistical Methods and Data Analysis*"(5th or 6th ed.), by R. Lyman Ott and Michael Longnecker.

Homework

- There are **approximately** 10 homework assignments. The schedules of the midterms and final will be announced later on. Every homework assignment will be posted on Blackboard at least one week before the due time.
- Late homework will not be accepted unless you have a documented emergent situation. Homework solutions will be posted on Blackboard. Group discussions and study sessions are encouraged but copying from each other is unacceptable.
- Clearly print your Name and Session Number in the cover page of your homework.

Software

This class will be based on using SAS 8 (and 9) to perform data analysis. The intent of using software is to allow the computer to perform routine calculations and graphing, while we focus on choosing the appropriate analysis tools and interpreting the results. Computer software is NOT a substitute for understanding the statistical methods, and you will not have access to a computer during exams. SAS is available in the Purdue computing labs. You may also obtain a copy of SAS for your own PC for class purposes free of charge by showing your student ID at ITaP office (STEW G31). Or you may choose to use [Purdue Software Remote](#).

you can go to the [Software Consultant](#) in MATH G-175 (information) except during breaks or the Wednesday evening SAS help session: Wed 6:30 to 8:30 PM in BRNG B286 except during school holidays.

Exams

- There will be two midterm exams and one final exam.
- Each exam is cumulative, but emphasizes recently covered material.
- You will need a basic calculator that has the square root function. More advanced calculators are permitted only if you do not use the advanced functionality.
- Dates, time and location:
 - Midterm Exam 1: Feb 17(Wed), 2016, 8-9pm, at WTHR 172
 - Midterm Exam 2: Mar 30(Wed), 2016, 8-9pm, at WTHR 172
 - Final Exam: TBD

Course Grade

- Total scores are computed using the following weights:
 - 20% -- Homework
 - 20% -- Midterm I
 - 20% -- Midterm II
 - 40% -- Final
- The above proportions may be adjusted by up to 5% in either direction at the instructor's discretion but will be the same for every student in the class.
- Course grades are assigned by total scores using the following scale:
 - $90\% \leq \text{score} \leq 100\% \Rightarrow A$
 - $80\% \leq \text{score} < 90\% \Rightarrow B$
 - $70\% \leq \text{score} < 80\% \Rightarrow C$

$60\% \leq \text{score} < 70\% \Rightarrow D$

$0\% \leq \text{score} < 60\% \Rightarrow F$

Course Evaluation

During the last two weeks of the semester, you will be provided with an opportunity to evaluate this course and your instructor(s).

Emergency Preparedness

Excused Absences

- Please refer to [University Regulations](#) for the requirement of attendance, Grief Absence Policy and Absences resulting due to participation in religious observances.
- Exams: To be excused the student must notify his or her instructor in writing prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class. If needed, the student must provide additional documentation substantiating the at the scheduled time you must notify the instructor *as soon as possible*. Missed exams will be a given zero points except for a Excused Absence. In that case, the instructor (at his discretion) may either administer a makeup exam or use the final exam grade to compensate for the missed exam.
- Incomplete Grade: A grade of incomplete is a record of work that was interrupted by unavoidable absence or other causes beyond a student's control, which work was passing at the time it was interrupted and the completion of which does not require the student to repeat the course in order to obtain credit. The incomplete grade is not to be used as a substitute for a failing grade.

Class Attendance

Class attendance is an important part of your success in the class. The syllabus, homework assignments, exam dates, etc. may be changed by in-class announcements. If you are absent, please check with a classmate regarding the lecture material and announcements.

Statement on Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities.

If you are a student registered with the Disability Resource Center and you are in need of academic accommodations, please see me during my office hours listed on the syllabus as soon as possible.

If you have an Accommodation Letter from the Disability Resource Center, we need to meet during my office hours to discuss your needs.

Statement on Plagiarism

The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one's own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

Academic Integrity Statement:

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, [University Regulations](#)] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]