IE 342: Design and Analysis of Experiments
Spring 2025

Class Information

Time: TR 2:30pm –3:45pm
Classroom: Room 1120, E2-2

Instructor Information

Name: Hoseung Song
Office: Room 4103, E2-2
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Office Hours: By appointment

TA Information

TBA

Course Description

The course objective is to learn how to plan, design and conduct experiments efficiently and effectively, and analyze the resulting data to obtain objective conclusions. Both experimental design and statistical analysis issues are discussed. Opportunities to use the principles taught in the course arise in all phases of engineering and scientific work, including new product design and development, manufacturing and service process improvement, and technology development. Applications from various fields of engineering will be illustrated throughout the course.

Assignments and lecture notes will be uploaded to the KLMS page.

Topics

- Simple comparative experiments.
- Factorial design.
- Randomized block design.
- Split-Plot design.
- Full factorial design with two levels.
- Fractional factorial design with two levels.
- Robust design.
- Response surface methods and designs.

Prerequisites

Students should have a basic working knowledge of statistical methods.

Textbook

There is no required textbook for this course, but a lot of materials are based off textbooks "Design and Analysis of Experiments" by D.C. Montgomery, "Design of Experiment" by Sung Hyun Park, "Applied Linear Statistical Models" by Kutner et al., "Experiments: Planning, Analysis, and Optimization" by C. F. Jeff Wu, and lecture notes from Professor Art B. Owen at Stanford University.

Grading

The course grade is determined by the following components:

Attendance	5 %
Homework	20%
Midterm exam	35%
Final exam	40%

- It is expected that there will be 4 to 5 assignments.
- Late homeworks will receive 0 credit and no make-up assignments will be granted.
- Attendance will be checked on a sporadic basis.

Anything in this syllabus is subject to change at the discretion of the instructor.