IE 342: Design and Analysis of Experiments
Spring 2026

Class Information

Time: MW 10:30pm –11:45pm
Classroom: Room 1119, E2-2

Instructor Information

Name: Hoseung Song
Office: Room 4103, E2-2
Email: hoseung@kaist.ac.kr
Office Hours: By appointment

TA Information

Name: TBA
Email: TBA
Office Hours: 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.

Lecture slides and problem sets will be uploaded to the KLMS page. The lecture slides will be continuously updated, so please download the latest version.

Topics

- Simple comparative experiments.
- Factorial design.
- Randomized block design.
- Split-Plot design.
- Regression analysis.
- 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 %
Quizzes (2 planned)	25%
Midterm exam	35%
Final exam	35%

- Some problem sets will be provided for study purposes and will not be graded.
- All quizzes and exams will be administered during class time.
- Attendance will be checked on a sporadic basis.

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