CH 207 Jan 1:0

Applied probability and design of experiments

Instructor

K. Kesava Rao
Email: kesava@iisc.ac.in

Teaching Assistant

Email:

Department: Chemical Engineering

Course Time: Mon 3-4 p.m.

Lecture venue: class room in the Chemical Engineering department

Detailed Course Page:

Announcements

Brief description of the course

This course is useful for students with a background in engineering who wish to learn about using statistical

methods to analyze data. It is not an advanced course in the sense that some of the results will not be proved,

but taken from the literature.

Prerequisites

Elementary probability and calculus

Syllabus

Overview of statistics; introduction to probability and conditional probability; independence; discrete and

continuous random variables and distributions; point estimation and sampling distributions; confidence

interval; hypothesis testing for a single sample; statistical inference for two samples; linear regression and

correlation; design and analysis for single-factor experiments; design of experiments with several factors

Course outcomes

Students will be able to construct point and interval estimates for the population mean and interval estimates

for the population variance for single samples, test hypotheses about a single sample and the difference in the

means of two samples, learn about P-values, use linear regression to fit data and construct confidence intervals for the slope and the intercept, and perform analysis of variance for single factor and multiple factor experiments.

Grading policy

Assignments (3): 25%, Tests (2): 25%, Final examination: 50%

Assignments

Resources

Montgomery, D.C. and Runger, G.C., Applied Statistics and Probability for Engineers, 6th ed. Wiley, Singapore (2014)

Montgomery, D.C., Design and Analysis of Experiments, Wiley, New York (1976)

Box, G.E.P., Hunter, W.G., and Hunter, J.S., Statistics for Experimenters, Wiley, New York (1978)