

Experimental Design

MATH 458 – Fall 2005

9.00 -10.00 MWRF STV 210

Instructor M. Indralingam

Office Hours : MWTF 11.00 AM to 1.00 P.M or by appt

Phone :

Email: mindrl@ilstu.edu

Textbook : Design and Analysis of Experiments (5th Edition) – Montgomery

Course Objectives : 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 conclusions from a specific experiment.

Computing : We will use the MINITAB, SAS statistical software .

Withdrawals:

Aug. 22– Sept. 02: Complete a form at registration. No grade is given.

Sept. 03 – Oct. 14: See the instructor for a withdrawal slip. A grade of WX is given.

No withdrawals after October 14, 2005

Assessment: There will be two hourly tests (dates will be announced in the class), homework assignments, final exam and a project. There may be individual presentations by the students. Group work is encouraged

Final Grade: The final grade is based on total of 600 points broken down into

Two exams 200 points

Homework 100 points

Final exam 200 points

Final project 100 points

The project will be ongoing throughout the semester. It will be a group project involving a written summary and a class presentation the last week of class.

Attendance : Perfect attendance is expected. If you cannot attend an exam at the assigned time, notice must be given at least a week prior to the exam in order to decide on a different (preferably earlier) time.

Homework : Homework will be due Wednesdays at the beginning of class. After class, an answer key will be made available and any home works turned in afterward will not receive credit. Exceptions may be arranged if discussed in advance. Expect around 10 hrs during the semester. They will be handed out at least a week in advance so students can work around potential conflicts. The lowest homework score will be dropped when computing the final grade.

Homework policy

When turning in your homework, each problem must be presented in order. This includes all relevant graphs and tables, which must be easily readable and appropriately labeled. You are limited to a maximum of 4 pages per problem. Any graph or figure that is turned in without comments or spans across more than one page will be ignored. Please use a word processor or editor (e.g., Word) to edit SAS output.

Course Schedule :

Chapter(s)	Description Approx.	Time
2	Overview and Hypothesis Testing	1 wk
3,12,14	Completely Randomized Design	2 wks
4	Randomized Block Designs	3 wks
5,14	Factorial Designs	1 wks
12	Mixed Models/Random Effects	2 wks
13	Nested Designs, Split Plot, Repeated Measures	4 wks
6,7,8	Fractional Factorial Designs	1 wk
11	Response Surface	1 wk

Other Helpful Texts :

- ² A First Course in Design and Analysis of Experiments - Oehlert (2000)
- ² Analysis of Messy Data - Milliken and Johnson (1984)
- ² The Design of Experiments - Mead (1988)
- ² Statistics for Experimenters - Box, Hunter, and Hunter (1978)
- ² Fundamental Concepts in the Design of Experiments - Hicks and Turner, Jr. (1999)
- ² SAS System for Linear Models - Ramon Littell (1991)