ISE 525 Design of Experiments   Kurt Palmer
Spring Semester 2008   Office: GER 206B
M,W 2:00 - 3:20 pm   Hours: Tu 1:00 - 3:00 pm
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Recommended Preparation: ISE 225 Engineering Statistics I (or equivalent)

Objective: In this course, you will develop the skills necessary to plan efficient data collection
activities, derive empirical models of physical systems, and perform sequential optimization studies
based upon the empirical models.

Text: Myers & Montgomery, <u>Response Surface Methodology</u>, second edition

Course Material: Chapters 1-7 and 11 of the text, plus topics discussed in lecture by the instructor

Grading Policies:
        Points Breakdown -
                Homework   90
                Project   150
                Exam #1   140
                Exam #2   120 .
                        Subtotal   500

                Final Exam   150

Course GRADES will be determined by the distribution of point totals for the class. "Natural
groupings" will be used to assign letter grades. The highest scoring group will receive A's, the next
group is the B's, and so on. A single point will not be the difference between any two letter grades.
A "gap" must exist to create a grade boundary.

HOMEWORK assignments will be due on the following Wednesdays:
                January 30; February 6, 13; March 5, 12, 26
Homework will be graded on an "all or nothing" basis. A reasonable attempt at each exercise will earn
all 15 points. Late assignments will be accepted up to one week after the original due date.

A PROJECT will be due on the following date:
                Monday, April 21
The project will involve investigation and optimization of a response surface. You will collect data
from a computer simulation, in order to model the surface. For this project, you may work either
individually or in pairs. The project assignment will be distributed about two or three weeks in
advance of the due date.

An EXAM will be given on each of the following dates:
Wednesday, February 20 and Wednesday, April 2
Each exam will cover the material presented up to and including the preceding homework assignment. Points will be assigned to each section of the exam. Partial credit will be awarded according to work shown. No re-takes will be allowed. No make-up exam will be given. If you miss an exam, you must take the final exam.

The FINAL EXAM is scheduled for **Monday, May 12**. It will be comprehensive and will be graded similarly to the other exams. A student may elect to omit the final exam, if both exams and the project have been completed.

Week	Topic(s)	Text Sections
1	Response Surface Studies, Simple and Multiple Linear Regression	1.1, 2.1 - 2.3
2	Regression Significance	2.4 - 2.5
3	Model Selection and Diagnostics	2.6 - 2.8, App. 1
4	Response Transformations, Factorial Experiments	2.10, 3.2
5	Coded Variables, Orthogonality, Lack of Replication, Center Points	3.3 - 3.6
6	Exam	
7	Blocking, Fractional Factorial Experiments	3.7, 4.2
8	Multi-factor Experiment Workshop	
9	Deconfounding, Fold-Over, Steepest Ascent	4.3 - 4.6, 5.1, 5.3, 5.5
10	Canonical Analysis, Ridge Analysis, Design Properties	5.2, 6.2 - 6.4, 7.1 - 7.2
11	Central Composite Design, Exam	7.3 (omit 7.3.3), 7.4.1
12	Central Composite Design (cont.), Multiple Responses	7.4.2 - 7.4.6, 6.6
13	Taguchi's Parameter Design	11.2 - 11.3
14	Combined Array/Response Model Approach	11.4 - 11.5
15	Project Review, Course Evaluation	

Academic Integrity:

The Department of Industrial and Systems Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe the academic integrity standards described in SCampus. Students should expect those standards to be enforced in this course.

Accomodations for Disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 am - 5:00 pm, Monday through Friday. The phone number for DSP is (213)740-0776.