KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
DHAHRAN, SAUDI ARABIA

MATH 560: APPLIED REGRESSION AND EXPERIMENTAL DESIGN

Course Outline, Semester 191

Instructor: Muhammad Riaz **Office**: (5-332)
Telephone: 013-860-7622 **Email**: riazm@kfupm.edu.sa
Office Hours: UT: 8:55 am:10:45am or by appointment.

Text and Package:

(1) **Text**: Montgomery, D.C. (2012). Design and Analysis of Experiments. 8th edition, Wiley, New York.
(2) Software: **MINITAB**

Course Objectives:
MATH 560 is intended to be a foundation course in Design and analysis of experiments and regression analysis. The emphasis is on understanding how to use experimental designs and regression analysis to solve real-world problems. Upon completion of this course you should:

- Be familiar with different experimental designs and their analysis
- Understand the basic elements of Regression analysis;
- Understand the assumptions, methods, and implications associated with various methods of experimental designs and regression analysis;
- Be proficient in using *MINITAB* and be able to interpret the associated output.

Assessment

Assessment for this course will be based upon, class work, lab, major exams, project and final exam (comprehensive), with the following weights.

Activities	Weight
Class work (Homework, attendance, Quizzes and participation)	15%
Exam 1 week 6	15%
Exam 2 week 13	15%
Project	15%
Final exam (comprehensive)	40%

Syllabus:

Week	Topic	Chapter
1	Designs of Experiments + Basic Statistical Methods	1 2
2	Designs of Experiments + Basic Statistical Methods	1&2
3	Analysis of Variance	3
4-5	Experiments with blocking Factors	4
6	Factorial Experiments	5
7-8	Two Level Factorial Designs	6
9	Blocking and Confounding for Two Level Factorial Designs	7
10	Two level Fractional Factorial Designs	8
11-12	Other Topics on Experimental Designs	9
13-14	Regression Modeling	10
15	Random Effects Model	10
16	Projects Discussions	

Notices:
Any notice about the course will be communicated to the students through blackboard.

Homework and Tutorials
Students are required to do the homework problems at home. The lab component would be devoted to show students how to use the MINITAB statistical package and to use it to solve real life problems.

Project:
The project should be based on a real data set (with complete description about variables) and a detailed statistical analysis using MINITAB. There should be some concluding remarks that refer to the real implications of your chosen problem.