

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS**  
**DEPARTMENT OF MATHEMATICS & STATISTICS**  
**DHAHRAN, SAUDI ARABIA**  
**MATH 560: APPLIED REGRESSION AND EXPERIMENTAL DESIGN**  
*Course Outline, Semester 211*

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**Text and Package:**

(1) **Text:** Montgomery, D.C. (2017). Design and Analysis of Experiments. 9<sup>th</sup> 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**

<b>Activities</b>	<b>Weight</b>
Class Activities (Assignments, Quizzes and participation)	20%
Mid Term	30%
Final exam (comprehensive)	40%
Project	10%

**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.

**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.