

# King Fahd University of Petroleum and Minerals

## Department of Mathematics and Statistics

**STAT310: Linear Regression**  
Fall Semester 2017 (Term 171)

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**Office Hours (Tentative):** UTR. 10:55 am – 11:55 am, or by appointment

**Course Objectives:** Present the basics of regression analysis

**Textbook:** Introduction to Linear Regression Analysis by Montgomery, Peck and Vinning, 5th edition, Wiley (2012).

**Learning Outcomes:** At the end of the term a student should be able to

- Find and interpret least square estimates of parameters
- Thoroughly understand and use the single linear regression model
- Thoroughly understand, build and use the multiple linear regression
- Perform hypothesis tests and construct confidence intervals in linear regression models
- Test the appropriateness of models, and analyze data

### Assessment\*

Activity	Weight
Class Participation (home works, quizzes, attendance, bonus, project etc.)	15%
First Major Exam (Chapters 1, 2 and 3)	15%
Second Major Exam (Chapters 4, 5 and 6)	20%
Third Major Exam (Chapters 7, 8 and 9)	20%
Final Exam (Comprehensive)	30%

### Grade Assignment

Score	87 – 100	80 – 86.9	75 – 79.9	70 – 74.9	65 – 69.9	60 – 64.9	55 – 59.9	50 – 54.9	0 – 49.9
Grade	A+	A	B+	B	C+	C	D+	D	F

**Academic Integrity:** All KFUPM policies regarding **ethics** and **academic honesty** apply to this course.

### Important Notes:

- ✓ Excessive unexcused absences will result in a grade of **DN** in accordance with University rules.
- ✓ **Attendance** on time is *very* important.
- ✓ Check **Blackboard** regularly for announcements.
- ✓ **Homework** will be assigned later, and is due in class on the first **Sunday** after we finish a chapter.

### Your Responsibilities:

- ✓ Taking all exams.
- ✓ Attending all lectures.
- ✓ Completing all homework problems posted on the Blackboard.
- ✓ Reading all my e-mails in a timely manner, i.e. check your e-mail every day.
- ✓ Asking for help when you need it and not waiting until the end of the semester.
- ✓ Practice active learning instead of waiting until the day before an exam to attempt to learn the material.

# Syllabus

<b>Week</b>	<b>Topics</b>	<b>Exceptions</b>
1	Chapter 1 Introduction	
2-3	Chapter 2 Simple Linear Regression	
4-6	Chapter 3 Multiple Linear Regression	
7-8	Chapter 4 Model Adequacy Checking	
9	Chapter 5 Transformation and Weighting to Correct Model Inadequacies	5.6 Regression Model with Random Effects
10	Chapter 6 Diagnostics for Leverage and Influence	
11	Chapter 7 Polynomial Regression Models	7.3 Nonparametric Regression 7.5 Orthogonal Polynomials
12	Chapter 8 Indicator Variables	8.3 Regression Approach to Analysis of Variance
13	Chapter 9 Multicollinearity	
14	Chapter 10 Variable Selection and Model Building	
15	Project Presentations	