

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS

STAT310: Linear Regression
Term 142



Instructor: Walid S. Al-Sabah

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Office Hours:

Sunday, Tuesday, Wednesday and Thursday 11:00 am – 12:00 noon

Class meets UTR 10:00 – 10:50 am in 59-1015.

Recitation/problem Session: TBA

Check Blackboard regularly for announcements

Course Objectives: Present the basics of regression analysis

Textbook: Introduction to Linear Regression Analysis
 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
<i>Homework</i>	10%
<i>Lab</i>	10%
<i>First Major Exam - Chapters 1, 2, 3, and 4</i>	15%
<i>Second Major Exam – Chapters 5, 6 and 7</i>	15%
<i>Project</i>	20%
<i>Final Exam (Comprehensive)</i>	30%

Homework:

Will be assigned later.

Recitation:

The recitation session will be used to learn how to apply the techniques learned in the lecture using a statistical package.

Important Notes:

- It is the student's responsibility to observe the academic calendar for important dates.
- Only University issued excuses will be accepted and only within a week of return to class.
- Excessive Absences will earn you a DN in accordance with University rules.

Detailed Syllabus

Week	Topics	Exceptions
1	Chapter 1 Introduction	
2-3	Chapter 2 Simple Linear Regression	
4-6	Chapter 3 Multiple Linear Regression	3.4.3 Simultaneous Confidence Intervals on Regression Coefficients
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	
13	Chapter 9 Multicollinearity	
14	Chapter 10 Variable Selection and Model Building	
15	Project Presentations	