

Outline Stat 332

Regression Analysis

Instructor: Prof. Khalaf S. Sultan

Office: 2B20 Building #4, Phone (office): 4676263

E-mail: ksultan@ksu.edu.sa

Textbook:

Applied Linear Regression Models, Fifth Edition by Kutner, Nachtsheim and Neter

Data:

<http://users.stat.ufl.edu/~rrandles/sta4210/Rclassnotes/data/textdatasets/Chapter%20%201%20Data%20Sets.html>

كتاب مترجم للطبعة الرابعة

نماذج إحصائية خطية تطبيقية (الجزء الأول)

المؤلف: نيتير وآخرون. ترجمة: د. انيس كنجو – د. عبد الحميد الزيد – د. الحسيني عبد البر

Course Scope and Contents:

This course is an introduction to applied data analysis. We will explore data sets, examine various models for the data, assess the validity of their assumptions, and determine which conclusions we can make (if any). Data analysis is a bit of an art; there may be several valid approaches. We will strongly emphasize the importance of critical thinking about the data and the question of interest. Our overall goal is to use a basic set of modeling tools to explore and analyze data and to present the results in a scientific report. We then consider simple linear regression, a model that uses only one predictor. After briefly reviewing some linear algebra, we turn to multiple linear regression, a model that uses multiple variables to predict the response of interest. For

all models, we will examine the underlying assumptions. More specifically, do the data support the assumptions? Do they contradict them? What are the consequences for inference? Also, we will explore some nonlinear models and data transformations. Finally, we discuss Linear regression based on the categorical with some applications

Course Calendar

Week	Topics Covered
1	Introduction and some basic concepts of probability and statistics
	Definition of the Simple linear regression model with some applications
2	Estimation of the unknown parameters of the simple linear regression model
	Properties of the least square method
3	Confidence estimation of the least square estimated of the coefficient of simple linear regression model.
	Hypotheses Testing of the simple linear regression model
4	The efficiency of the simple linear regression model by using ANOVA
	Predication and residual analysis of the simple linear regression model
5	Multiple linear regression model
	Estimation of the unknown parameters of the multiple linear regression model.
6	Hypothesis testing of the multiple linear regression model
	Prediction and residual analysis of the multiple linear regression model
7	Linear regression based on the categorical with some application
	Applications
	Revision

Assignments, project and Exams:

Assignments and projects	Will be given during the classes	10 marks
Midterm Exam I		25 marks
Midterm Exam II		25 marks
Final Exam		40 marks

Computing:

In this course, we will use R language.

Attendance:

Students missing more than 25% of the total class hours won't be allowed to write the final exam.