Form (H)
Short course description

Course title: Linear Models	Course number and code: STAT 434
Previous course requirement: MATH 244	Language of the course: En& Ar
Course level: (Elective course)	Effective hours: 3 (3+0+0)

Course description

Review of necessary concepts of matrix algebra - Normal distribution with n-variables - Quadratic forms and their distributions - The general linear model of full rank - Estimation and hypothesis testing in the full rank model-Estimation and hypothesis testing in the less than full rank model - Computational methods - Applications in regressions - experimental design and ANOVA using statistical packages

Course objectives

The aim of this course is to teach and practically train students the bases and principals of the linear models in order to be able to apply and exercise the contents of this field in their actual life, and also to be able to pursue graduate studies.
- Reviewing concepts of probability and Statistical Inference related to linear models.
- Providing the students with the necessary theoretical background of the point estimate, confidence interval and testing hypothesis for parameters of the full rank generalized liner model.
- Providing the students with applications about the less than full rank generalized linear model in analysis of variance and generalized experimental design.
- Understanding the concept of linear Statistical Models in applications.
- Understanding how to select a "Good" linear model to analysis data and using statistical packages.
- Enable the student to give the right interpretations of the results.

Learning outcomes (understanding, knowledge, and intellectual and scientific skills)
After studying this course, the student is expected to be able to:

Knowledge:
- Understand and describe the generalized linear model for problems under investigation.
- More mathematics required to derive linear statistical models techniques for making inferences.
- The built of models and the type of analysis employed are largely determined by the objectives of the investigation.
- Understand, study and analysis problems that are arising in the administration, social, and medical sciences.
- Using statistical packages.
- Using computers instead of tables.

Cognitive Skills:

- Demonstrate capability of choosing the appropriate statistical methods for a particular application from linear Statistical Models.
- Formulate significant research questions, use appropriate statistical linear Statistical Models, and analyze and interpret the results.
- Read, evaluate, and interpret numerical, statistical and general scientific information.
- Using statistical packages.
- Apply critical thinking and hypothesis-driven methods of scientific inquiry.
- Conducting the suitable analysis to the chosen linear model.
- Reaching the appropriate conclusions from the used analysis

Interpersonal Skills & Responsibility:

- Students were encouraged to discuss their ideas and raise questions.
- Students were encouraged to participate in the class. Interest was developed to be on time in the class and not to miss a lecture.
- Working homework jointly and individually in class and out
- Encouraging students to ask questions any time during lectures and office hours.

Communication, Information Technology, Numerical:

- Short cut computation methods were illustrated in the class.
- Encouraging students to use computers instead of calculators and tables.

Textbook adopted and supporting references

Title of the book	Author's name	Publisher's name	Date of publication
Linear Models	Kango and Alshiha	King Saud University	2005
Introduction to Linear Statistical Models	F. R. Graybill	Duxbury	1976
Linear Models	Searle	John Wiley	1971
A course in linear models	A. M. Kshirsgur	Marcel Oever Inc.	1983