

Form (H)
Short course description

Course title: Design and Analysis of Experiments	Course number and code: STAT 337
Previous course requirement: STAT 328	Language of the course: English / Arabic
Course level: 6 / Year 3	Effective hours: 3(2+0+2)

Course description

Introduction, Review of statistical inference. Main principals of experimental design (Replication -Randomness – Blocks), Simple comparisons experiments, t-test and alike tests.

Single Factor Experiments: Completely randomized design - Model adequacy checking - Contrasts and orthogonal contrasts - Comparing pairs of treatment means.

Block designs: Randomized complete block design - Latin square design - Graeco-Latin square design.

Factorial designs. Two-Factor factorial design.

Three-Factor factorial design. General factorial designs.

Course objectives

The aim of this course is to teach and practically train students the bases and principals of the design and analysis of experiments 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.

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

Knowledge:

- Understanding and describing Design and Analysis of Experiments for problems under investigation.
- More mathematics required to derive Design and Analysis of Experiments techniques for making inferences.
- Building of models for Design and Analysis of Experiments and the type of analysis employed are largely determined by the objectives of the investigation.
- Understanding, studying and analyzing 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 Design and Analysis of Experiments.
- Formulate significant research questions, use appropriate Design of the

- experiments, 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 Design of Experiments.
 - 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
Design and Analysis of Experiments	D. C. Montgomery	Wiley and Sons	2009
Experimental Design (Second ed.)	Cochran, W. G. and G. M. Cox	Cochran, W. G. and G. M. Cox	(Second ed.)
Statistical principles in experimental design	Winer, B. J.,	J., McGraw-Hill	