King Saud University
College of Business Administration
Quantitative Analysis Department

Statistical Methods in Health Administration

QUA 520

Instructor:

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Course Description

This course introduces biostatistical methods and applications, covering descriptive statistics, probability, and inferential techniques necessary for appropriate analysis and interpretation of data relevant to health sciences. Students will use the statistical software package (SPSS).

Course Objectives

- Familiarity with basic biostatistics terms.
- Ability to summarize data and do basic statistical analyses using SPSS.
- Ability to understand basis statistical analyses in published journals.
- Understanding of key concepts including statistical hypothesis testing – critical quantitative thinking.
- Foundation for more advance analyses.

Course Evaluation

1. Assignments and attendance (20%)
2. Midterm exams (40%)
3. Final exam (40%)

Text book

Rosner B. Fundamentals of Biostatistics, 7th ed. Brooks/Cole, Boston, MA, 2011.

Course Contents and Plan

TOPIC	WEEK	READING
Descriptive statistics — Populations and samples — Types of data — Graphic methods — Measures of location — Measures of spread	2	Ch 1 & 2
Probability and Probability distributions — Elementary probability — Elementary properties of random variables — Binomial distribution — Poisson distribution — Normal distribution — Central limit theorem — Normal approximation to the binomial — Normal approximation to the Poisson	2	Ch 3,4,5
One-sample inference — Populations and samples — Point estimation — The logic of hypothesis testing — Inference for the mean of the normal distribution — Inference for the binomial distribution — Inference for the Poisson distribution — Confidence intervals for the mean and variance — Hypothesis testing and confidence intervals — Confidence intervals for binomial and Poisson	2	Ch 6 & 7
Midterm exam 1	**06/03/2020**	
Two-sample inference — Inference for paired samples — Inference for independent samples (equal variance) — Underlying assumptions — Inference for independent samples (unequal variance) — Two-sample tests for binomial proportions — Measures of effect for binomial data	2	Ch 6 & 8
Simple linear regression and correlation — Fitting regression lines - method of least squares — Inference and prediction for regression	2	Ch 11

— Correlation		
Midterm exam 2	**10/04/2020**	
Analysis of Variance, ANOVA — One-way ANOVA — Hypothesis testing — Comparisons of Groups	1	Ch 12
Nonparametric Methods — Sign Test — Wilcoxon Signed Rank Test — Wilcoxon Rank Sum or Mann Whitney Test — Kruskall Wallis Test — chi-square test for goodness of fit — Chi-square test for independence.	1	Ch 9 & 10
Final Exam	**01/05/2020**	