Zarqa University

Faculty of Allied Medical Science

Instructor:

Lecture's time:

Semester:

Course title: Biostatistics

Office Hours:

Course description:

The purpose of this course is to get students familiar with the fundamental concepts of statistics which is useful in the fields of health and medical sciences. This course represents an introduction to the field and provides a survey of data and data types. Specific topics include tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; issues of power and sample size in study designs; and random sample and other study types. While there are some formulae and computational elements to the course, the emphasis is on interpretation and concepts.

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Aims of the course:

1. Recognize and give examples of different types of data arising in public health and clinical studies
2. Interpret differences in data distributions via visual displays
3. Calculate standard normal scores and resulting probabilities
4. Calculate and interpret confidence intervals for population means and proportions
5. Perform a two-sample t-test and interpret the results; calculate a 95% confidence interval for the difference in population means
6. Select an appropriate test for comparing two populations on a continuous measure, when the two sample t-test is not appropriate
7. Understand and interpret results from Analysis of Variance (ANOVA), a technique used to compare means amongst more than two independent populations
8. Choose an appropriate method for comparing proportions between two groups; construct a 95% confidence interval for the difference in population proportions

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

  A1.ConceptsandTheories:

  Making students aware of how biostatistics is used to convey in biological sciences.

  A2.Professional Responsibility: Encourage public discussion of biostatistics issues.

B.   Subject-specific skills

C.   B1. Problem solving skills: Connecting students with different sources of information and encourage students to solve many tasks during each chapter.

   B3.Application of Methods and Tools: exercises reinforce lecture topics.

D.   Critical-Thinking Skills

   C1.Analytic skills: Develop a research project or presentation, collect and analyze data and/or develop theoretical models.

   C2.Strategic Thinking: Extracting and reorganizing information in the form of flow tables, graphs, diagrams, prose and keys.

   C3.Creative thinking and innovation: Improve logical thinking, precision, open-mindedness, and objectivity.

E.   General and Transferable Skills (other skills relevant to employability and personal development)

   D1.Communication: Effectively communicate clearly and accurately.

   D2.Teamwork and Leadership: Fostering an ability to collaborate effectively with others on scientific projects, leading to a productive outcome.

Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1	3		Introduction to biostatistics	Lecture, oral inquiry	Class participation, homework, and discussion
2	3		Descriptive Statistics	Lecture, oral inquiry	Class participation, homework, and discussion
3&4	3		Probability	Lecture, oral inquiry	Class participation, homework, and discussion
5	3		Probability Distribution	Lecture, oral inquiry	Class participation, homework, and discussion

6	3		Estimation	Lecture, oral inquiry	Class participation, homework, and discussion
7	3		Testing Hypothesis	Lecture, oral inquiry	Class participation, homework, and discussion
8	3		Chi-Square Distribution	Lecture, oral inquiry	Class participation, homework, and discussion
9	3		Analysis of Variance	Lecture, oral inquiry	Class participation, homework, and discussion
10	3		Correlation Analysis	Lecture, oral inquiry	Class participation, homework, and discussion
11	3		Regression Analysis	Lecture, oral inquiry	Class participation, homework, and discussion
12	3		Vital statistics	Lecture, oral inquiry	Class participation, homework, and discussion

References:

1. Biostatistics: A foundation for Analysis in the Health Sciences. 7th ed. 1999. By: Daniel, W. W. Publisher: John Wiley& Sons.

2. Melton, J. 1992. Statistical Methods in the Biological and Health Sciences. 2nd ed.

3. Rosner, B.1990. Fundamentals of Biostatistics.

Assessment Methods:

Methods	Grade
First Exam	25 %
Second Exam	2 5%
Final Exam	50 %