



Biostatistics

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
STA	217	Biostatistics	3	2	1	1	MAT101

Objectives:

At the completion of this course, each student should be able to:

- Select statistical procedures appropriate to specific research designs and sample characteristics.
- Interpret the results from statistical procedures used in public health and biomedical practice and research.
- Describe the sampling distributions and discuss their use in inferential statistics.
- Differentiate between parametric and nonparametric tests.
- Perform various parametric statistical tests including one-sample z-test, one-sample t-test, two independent samples, and Pearson correlation coefficient.
- Interpret the components in a one-way analysis of variance (ANOVA).
- Compute and interpret a regression equation.
- Run SPSS for univariate and bivariate statistical tests and interpret the results.
- Indicate the kinds of data and circumstances that call for a chi-square test.

Syllabus:

Course introduction and overview Definition of biostatistics Scales of measurement Graphical displays/looking at data Overview of SPSS

Types of studies Sample and population Types of variables Frequency distributions

Collecting data Design of experiments Sampling Sampling distribution

Measures of central tendency Measures of variability

Fundamentals of probability Conditional probability Bayes' Rule Normal probabilities Area under the normal curve

Statistic inference Hypothesis testing Estimation Significance testing Statistical tests as decisions Power analyses

Inferences about a mean 1-sample t-test 2-sample t-test ANOVA

Inferences for proportions Comparing proportions Risk ratios Odds ratios

Categorical data analysis Analysis of 2-way tables Goodness of fit Fisher's exact test.

Non-parametric measures.

Simple linear regression

Multiple linear regression Reading the literature

References:

- Jerrold H. Zar Biostatistical Analysis, Books a la Carte Edition (5th Ed) (2009), ISBN-13: 000-0131008463
- Whitlock M. C. and D. Schluter, Roberts & Co The Analysis of Biological Data, (2009).
- Harvey J. Motulsky Intuitive Biostatistics, 2nd edition (2010)
- Resources Required: Basic Biostatistics: Statistics for Public Health Practice. By B. Burt Gerstman. 2008
IBM SPSS Statistics 19 Guide to Data Analysis. By Marija J. Norušis. (2012).

