

16BM202 BIostatISTICS

Hours Per Week :

L	T	P	C
3	-	-	3

Total Hours :

L	T	P	WA/RA	SSH/HS	CS	SA	S	BS
45	-	-	20	48	6	12	3	2

Course Description and Objectives:

This course is an introduction to statistical methods used in health, biological and medical sciences. The main objective of the course is to impart the knowledge about descriptive statistics and performance characteristics of diagnostic tests.

Course Outcomes:

The student will be able to:

- design valid and efficient studies to address public health and clinical problems.
- organize, summarize, and display quantitative data.
- manipulate probabilities and the Normal and Binomial distributions.
- carry out and interpret a variety of tests of significance, including two-group comparisons using t-tests, Wilcoxon tests, chi-square tests, Fisher exact tests, log-rank test, McNemar's test, ANOVA, and Kruskal-Wallis Test.
- familiar with power and sample size calculations.
- familiar with basic principles and uses of linear and logistic regression models for clinical research.

SKILLS :

- ✓ Organization of assorted data into meaningful information using statistical methods.
- ✓ Develop analytical capability to visualize data and give the pattern for data.
- ✓ Determination of various statistical procedures.
- ✓ Curve fittings.



ACTIVITIES:

- *Solve regression models and analysis.*
- *Determination of probability. And distribution.*
- *Assessment of severity state of a patient with prognosis of outcome of a disease.*
- *Hypothesize various populations.*

UNIT - 1**L-9**

CONCEPTS OF BIOSTATISTICS: Basic statistical measures, Measures of central tendency, Measures of dispersion, Variance, Standard deviation, Properties of probability, Probability distributions, Sampling distributions.

UNIT - 2**L-9**

ESTIMATION AND HYPOTHESIS TESTING: Confidence intervals for data, T distribution, Determination of sample size for estimating means and proportions; Hypothesis testing for a single population mean/proportion difference between two population means/proportions, Sample size to control type I and type II errors.

UNIT - 3**L-9**

ANALYSIS OF VARIANCE: The completely randomized design, Random sized complete block design, repeated measures design.

UNIT - 4**L-9**

REGRESSION AND CORRELATION: Simple linear regression model, Regression equation, The correlation model, Multiple linear regression model, Multiple regression equation, Multiple correlation model, Additional techniques of regression analysis.

UNIT - 5**L-9**

CHI-SQUARE DISTRIBUTION: Tests of good fit, Independence, Homogeneity, Non-parametric statistical procedures, Regression analysis.

TEXT BOOKS:

1. Stanton A. Glantz, "Primer of biostatistics", 2nd edition, Mc Graw Hill, 2004.
2. Wayne S. Daniel, "Biostatistics: A foundation for analysis in the health sciences", 6th edition, John Wiley and sons.

REFERENCE BOOKS:

1. P Mariappan, "Biostatistics: An Introduction", 1st edition, Pearson, 2013.
2. Rao.P.S.S.Sundar and Richard J, "Introduction to Biostatistics and Research Methods", 5th edition, PHI, 2012.