

BTC DSC 403T

BIostatISTICS

Contact Hours: 45

Full Marks = 100 [ESE (70) CCA (30)]

Course Objective: The Biostatistics course aims to provide students with essential knowledge and skills in the field of statistics as applied to biological and healthcare sciences. Students will become proficient in understanding the characteristics and capabilities of computers, networking systems, and data types. They will learn methods of collecting and presenting statistical data, including graphical representation. This course will enable students to comprehend measures of central tendency and dispersion, as well as probability distributions. They will gain the ability to perform hypothesis testing, both for small and large sample sizes, and understand correlation and regression analysis.

UNIT 1 (10 Lectures)

Computer: characteristics and capabilities of computers; organization of a computer - input, output and memory; introduction to hardware, software and operating systems. **Networking system:** internet and intranet; LAN, WAN and MAN.

UNIT 2 (9 Lectures)

Data: types of data – qualitative and quantitative; collection of data; primary data and secondary data; methods of presentation of statistical data – textual, tabular and graphical; graphical representation of statistical data.

UNIT 3 (8 Lectures)

Measures of central tendency: mean; median; mode. **Measures of Dispersion:** absolute measures and relative measures; range; variation; mean deviation; standard deviation.

UNIT 4 (9 Lectures)

Probability distribution: classical and axiomatic definition of probability; elementary ideas of binomial, poisson and normal distributions. **Hypothesis Testing:** null hypothesis; alternative hypothesis; confidence level; significance level.

UNIT 5 (9 Lectures)

Small sample test and large sample test: t-test; chi-square test; analysis of variance (ANOVA). **Correlation and regression:** definition, properties and types.

Course Outcome: Upon completing this course, students will have a solid foundation in biostatistics. They will be able to effectively use computers for data analysis and presentation. Students will acquire the skills needed to collect and present statistical data in various formats. They will be proficient in calculating measures of central tendency and dispersion, conducting hypothesis tests, and interpreting results. Additionally, students will understand the principles of probability distributions, correlation, and regression, enabling them to apply statistical methods to real-world problems in biological and healthcare sciences.

SUGGESTED READING

1. Le, C. T., Eberly, L. E. (2016). Introductory Biostatistics. United Kingdom: Wiley.
2. Banerjee, P. K. (2007). Introduction to Biostatistics (A Textbook of Biometry). India: S. Chand Limited.
3. Antonisamy, B., Premkumar, P. S., Christopher, S. (2017). Principles and Practice of Biostatistics. India: Elsevier India.
4. Gurumani, N. (2021). An introduction to biostatistics. India, MJP Publishers.
5. Rosner, B. (2016). Fundamentals of Biostatistics. United States: Cengage Learning.
6. Kulkarni, A. P. (2019). Basics of Biostatistics. India: CBS Publishers & Distributors.