Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NMCD509	Biostatistics	3	0	0	3

Course Objective
• During the process of life sciences, medicinal and clinical experiments, precious data are being generated, which need careful and valid statistical analysis for drawing the meaningful conclusions.
Learning Outcomes
• The course content of this paper has been finalized so that it may be helpful to the students who are intending to join the health sector or pharmaceutical industries.

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
1	Statistical Methods in Clinical Trials: Introduction and its phases I, II, III and IV, statistical designs-fixed sample trials design and Sequential design, Randomization, Blinding.	9	Understand the principles of various study designs, and explain their advantages and limitations
2	Biological Assays, Feller's theorem. Dose-response relationships-qualitative and quantitative response.	6	Assessments, establish relationships between exposure and the adverse health outcomes under study.
3	Data editing and transformations, Transformation in general: logarithmic, square root and power transformations; transformations for proportions: angular, probit and logit transformations. Outlying observations: box plot, Test for normality - p-p plot and q-q plot and Kolmogorov-Smirnov test	12	Understanding data editing and transformation techniques to improve data quality and meet statistical assumptions, including methods like normalization
4	Categorical Data Analysis: Categorical response data, logistic regression-odds ratio, Wald's statistic, logistic regression and its diagnostics memory databases.	7	Identify appropriate tests to perform hypothesis testing, and interpret the outputs adequately
5	Repeated Measures ANOVA: One Way and Two Classified Data, Epidemiological study designs and its analysis	8	Gives the experimental designs involving repeated measurements, interpreting main and interaction effects, conducting post hoc tests.
Total		**42**	

Text Books:

1. Fundamentals of Biostatistics by V.B. Rastogi, ANE Books, India
2. Biostatistics: Basic and Advanced by Manju Pandey, Viva Books

Reference Books:

1. Biostatistical Analysis, Pearson by Jerrold H. Zar
2. Biostatistics: A Foundation for Analysis in the Health Sciences, 10th Edition by Daniel W. W and CrossL. C