

Name of the Programme: M.Sc. Biotechnology

Course Code: GBT-522

Title of the Course: BIOSTATISTICS

Number of Credits: 2

Effective from AY: 2022-23

Pre-requisites for the Course:	No prerequisite is required.	
Course Objectives:	This course aims to introduce students 1) to statistical methods and help them understand underlying principles 2) to understand practical guidelines of “how to do it” and “how to interpret” statistical data.	
Content:	<u>MODULE I</u> • Scope of Biostatistics • Brief description and tabulation of data and its graphical representation, and frequency distributions. • Measures of Central Tendency and dispersion: mean, median, mode, range, standard deviation, variance, coefficient of variation, skewness, kurtosis • Displaying data: Histograms, stem and leaf plots, box plots • Probability analysis: axiomatic definition, axioms of probability: addition theorem, multiplication rule, conditional probability, and applications in biology.	No. of hours 15
	<u>MODULE II</u> • Counting and probability, Bernoulli trials, Binomial distribution, and its applications, • Poisson distribution • Normal distribution, z, t, and chi-square tests, levels of significance • Testing of hypotheses: null and alternative	15

	hypotheses, Type I and Type II errors • Simple linear regression and correlation • Analysis of variance	
Pedagogy:	Lectures, tutorials, assignments.	
References/ Readings:	1. P.N. Arora and P.K. Malhan, Biostatistics. Himalaya Publishing House., 2006. 2. C. R. Kothari, Quantitative Techniques, Vikas Publishing House, 2013. 3. B.K. Mahajan, Methods in Biostatistics: for Medical Students and Research Worker. Jaype Brothers, 2018. 4. S. Rao K, Biostatistics for Health and Life Sciences, Himalaya Publishing House, 2010. 5. V. B Rastogi, Fundamentals of Biostatistics. Ane Books Pvt Ltd. ,2009. 6. S, J.A. Witmer Statistics for the Life Sciences. Prentice Hall, 2016.	
Course Outcomes:	Upon completing this course, students would be able to – 1. understand how to summarize statistical data; 2. apply appropriate statistical tests based on an understanding of the study question, type of study, and type of data; 3. organize and interpret the results of statistical tests. 4. use the theoretical statistics knowledge to apply it to statistical software	