Course Code: ZOO 405   **Course Title: Biostatistics**
Number of Credits: 2
Effective from AY: 2020 -21

Prerequisite for the Course:	Elementary knowledge of statistical approaches	
Objectives:	1. To understand fundamental concepts and techniques of descriptive and inferential statistics with applications in lifesciences. 2. To understand the principles of various study designs, and explain their advantages and limitations.	
Content:	**Module 1:** Introduction to Biostatistics, Population and samples, Sampling Types, Types of Variables, Difference between Primary and Secondary Data, Data representation, Type I and II Errors, Experimental/Study designs and its types, statistical inferences and Hypothesis Testing, Meaning of statistical Significance, Pre and Post-Hoc tests. Differences between descriptive and Inferential statistics.	12 hrs
	Module 2: Data representation and plotting, Mean, Measure of Variability, Standard deviation, Kurtosis, R programming, Correlation, Regression, Interpolation and extrapolation, Concept of Probability, Variance and Covariance, Probability distributions, Test of Hypothesis (1 tailed and 2 tailed Test of Hypothesis, p-value, (Type -1 and Type -2 error), . T-test, 1 tailed and 2 tailed T-distribution, Chi-square test, ANOVA.	12 hrs
Pedagogy:	Lectures/Tutorials/ PBL/Videos/Assignments/Group Activities/Self-study.	
Learning Outcome:	After successful completion of this course, students will be able to: 1. Understand the role of biostatistics in biological studies. 2. Use descriptive tools to summarize and display data from biological studies. 3. Identify appropriate tests to perform hypothesis testing, and interpret the outputs adequately. 4. Get familiar with statistical software and standard packages for biostatistics.	
References /Reading:	1. Sakal, R. R.; Rohlf, F. J. Introduction To Biostatistics. Second Edition (2009). Dover Publications, Inc, Mineola, New York. 2. Rosner, B. Fundamentals of Biostatistics. Eight Edition (2016). Cengage Learning, Boston, USA. 3. Winner, L. Introduction to Biostatistics. (2004), University of Florida. 4. Forthofer, R.; Eun Lee, E. Introduction to Biostatistics: A Guide to Design, Analysis and Discovery. First Edition (1995), Academic Press 5. Gurumani, N. An Introduction to Biostatistics. First Edition (2009) MJP Publishers. New Delhi.	