

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
Department of Biochemistry
Course Curriculum

PART- A: Introduction			
Program: Bachelor in Science (Certificate / Diploma / Degree/ Honors)		Semester - II / IV / V/ VI	Session: 2024-2025
1	Course Code	BCSEC- 01	
2	Course Title	Biostatistics	
3	Course Type	Skill Enhancement Course	
4	Pre-requisite (if, any)	As Per the Course.	
5	Course Learning Outcomes (CLO)	<p style="text-align: center;"><i>On successful completion of the course, the student shall be able to:</i></p> <ul style="list-style-type: none"> ➤ Understand the principles of collection of data in biological experiments, proper statistical analysis of the data and its presentation. ➤ Understand the importance of sample size and various variables that affect data. ➤ Know the importance of mean, standard error, standard deviation, significance in presenting the data. ➤ Knowing statistical methods will help students in improving their analytical and interpretation skill. 	
6	Credit Value	2 Credits (1C + 1C)	<i>Credit = 15 Hours – Theoretical learning and = 30 Hours Laboratory or Field learning/Training</i>
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of Teaching-learning Periods: Theory – 15 Periods (15 Hrs) and Lab. or Field learning/Training 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Theory Contents	<p>Data Collection and Presentation: Biological data management using statistical tools. Concepts of population and sample, advantages of sampling, Basic concepts in sampling and designing experiments, Modes of presenting data: Frequency distributions, Relative frequency</p> <p>Analysis of variance: Mean, median, mode; Co-efficient of variation and standard deviation.</p> <p>Probability: Laws of Probability.</p> <p>Hypothesis testing: General concepts – Null hypothesis, alternative hypothesis, Rejection of hypothesis; Type I and Type II errors; P value and sample size estimation. Chi Square Test – Observed and expected frequencies, Calculating p values, assumptions of a chi square goodness of fit; One-way ANOVA, student's t-test.</p>		15
Lab./Field Training Contents	<p>Estimation of population means and variance in simple random sampling.</p> <p>Collection of data - Random sampling method.</p> <p>Data representation - Frequency and relative frequency distribution table, Plotting of biological data in a representative graphical format.</p> <p>Data analysis - Calculating Mean, median, mode, variance, standard deviation and standard error for a given data set. S</p> <p>Standard t-test for grouped samples. Analysis of one way variance</p> <p>Chi square goodness of fit test.</p> <p>Learning to analyze data using SPSS/ Prism software</p>		30
Keywords	Sampling, Frequency and relative frequency, variance, standard deviation, Hypothesis testing.		

Name and Signature of Convener & Members of CBoS:



PART-C: Learning Resources
Text Books, Reference Books and Others
<i>Text Books Recommended –</i>
➤ Principles of Biostatistics, M. Pagano and K. Gauvreau (2000); Duxbury Thomas learnings.
➤ Analysis of Biological Data, M. Whitlock and D. Schluter (2009); Roberts and company publishers.

PART -D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	50 Marks	
Continuous Internal Assessment (CIA):	15 Marks	
End Semester Exam (ESE):	35 Marks	
Continuous Internal Assessment (CIA): (By Course Coordinator)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar +Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on learned skill - 20 Marks B. Spotting based on tools (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Coordinator as per skilling

Name and Signature of Convener & Members of CBoS:


