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)**	*On successful completion of the course, the student shall be able to:* ➢ 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)**	*Credit = 15 Hours – Theoretical learning and = 30 Hours Laboratory or Field learning/Training*
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	**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 **Analysis of variance:** Mean, median, mode; Co-efficient of variation and standard deviation. **Probability:** Lows of Probability. **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.	**15**
Lab./Field Training Contents	Estimation of population means and variance in simple random sampling. Collection of data - Random sampling method. Data representation - Frequency and relative frequency distribution table, Plotting of biological data in a representative graphical format. Data analysis - Calculating Mean, median, mode, variance, standard deviation and standard error for a given data set. S Standard t-test for grouped samples. Analysis of one way variance Chi square goodness of fit test. Learning to analyze data using SPSS/ Prism software	**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

Text Books Recommended –

➢ 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**

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