

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Two Year Degree Programme

(Under Credit Based Continuous Evaluation Grading System) (CBCEGS)

Master of Science (Zoology)

Session: 2026-27

Semester–II										
Course Code	Course Title	Course Type	Hours Per week L-T-P	Credits L-T-P	Total Credits	Marks				Examination time (in Hours)
						Total	Th.	P	CA	
MZOL-2334	Biostatistics	C	4-0-0	4-0-0	4	100	70	-	30	3

C-Compulsory

Master of Science (Zoology)

Semester-II

Session: 2026-27

Course Title: Biostatistics

Course Code: MZOL-2334

Course Outcomes

After the Successful Completion of the subject students will be able to

CO1: Represent and summarize statistical data using graphical and numerical methods, and interpret measures of central tendency, dispersion, skewness, and sampling techniques.

CO2: Apply the concepts of probability, conditional probability, Bayes' theorem, and analyze random phenomena using standard probability distributions.

CO3: Analyze multivariate data using correlation, regression, cluster analysis, and principal component analysis (PCA) for data interpretation and decision-making.

CO4: Evaluate random variables and probability distributions, and perform statistical inference using hypothesis testing techniques such as t-test, Chi-square test, F-test, and ANOVA.

Master of Science (Zoology)
Semester-II
Session: 2026-27
Course Title: Biostatistics
Course Code: MZOL-2334

Examination Time: 3 Hrs

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Max. Marks: 100

Theory: 70

CA: 30

Instructions for the Paper Setter:

Eight questions of equal marks (14 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

The students can use only Non Programmable & Non Storage Type Calculator and statistical tables.

Unit I

Elementary Statistics: Representation of data- discrete data, continuous data, histogram, polygons, frequency curves. The mean Variability of data, Standard deviation. Median, Quantiles, Percentile, Skewness, Box and whisker diagrams (box plots), Introduction to statistical sampling from a population, Random Sampling.

Unit II

Probability: Experimental Probability, Probability when outcomes are equally likely, Subjective Probabilities, Probability laws Probability rules for Combined events, Conditional Probability and Independent Events, Probability trees, Bayes theorem. Probability Distribution Bernoulli Distribution, Binomial Distribution Poisson Distribution Uniform Distribution Normal Distribution.

Unit III

Multivariate Analysis: Regression and correlation; Correlation & Regression, Scatter diagram, Regression function, Linear correlation and regression lines, Product moment correlation coefficient. Cluster analysis: Basics (Tree clustering), Distance Measures, Hierarchical tree, linkage rules (single and complete linkage, UPGMA), Two-way joining, k-means clustering and interpretation of results, expectation maximization. Principal Component Analysis (PCA): Principles and Applications to real life data

Unit IV

Random Variables Discrete and continuous Random variables Cumulative distribution function, Probability Mass function, Probability Density Function Expectation of random variables. Hypothesis Testing: Fischer test, Chi Square test, Student t test, One way ANOVA & Two way ANOVA

Text Books:

1. Brian S., Ripley D. and Venables W. N. (2002). Modern Applied Statistics. Springer Verlag
2. J. Crawshaw and J Chamber (2002) Advanced level Statistics, 4th Edition, Melson Thornes.
3. Kapoor V.K. and Gupta S.C. (2000) Fundamentals of Mathematical Statistics. Sultan Chand and Company, New Delhi
4. Gupta S.P. (2000). Statistical methods. Sultan Chand and Company, New Delhi.
5. Mendenhall W. and Sincich T. (1995). Statistics for engineering and sciences (IVth edition). Prentice Hall.
6. Elhance D.N. (1984). Fundamentals of Statistics. Kitab Mahal, Allahabad.