

Program Specific Outcomes (PSOs)

B.Sc. (Statistics)

PSO1:

Apply statistical concepts, probability models, and data-analytic techniques to collect, organize, interpret, and draw valid inferences from real-world data across various domains.

PSO2:

Use modern statistical tools, programming languages, and software to perform data analysis, support decision-making, and communicate findings ethically and effectively in professional and research settings.

B.SC-STATISTICS-SEMESTER I

Course Title	Descriptive Statistics and probability
Course Code	DSC-A

Course Outcomes (COs)

CO No.	Course Outcome Statement	Bloom's Level	Level Code
CO1	Understand types of data, classification, and measures of central tendency and dispersion	Understand	L1
CO2	Apply probability concepts and theorems to solve problems related to events and sample spaces	Apply	L3
CO3	Analyze properties of random variables and their distributions	Analyze	L4
CO4	Evaluate mathematical expectation and use inequalities for statistical applications Create and interpret generating functions and apply them to solve statistical problems	Evaluate, Create	L5,L6

B.SC-STATISTICS-SEMESTER II

Course Title	Statistical Methods and Estimation
Course Code	DSC-C
Course Title	Probability Distribution
Course Code	DSC-A

Course Outcomes (COs)

CO No.	Course Outcome Statement	Bloom's Level	Level Code
C01	Understand definitions, properties, and applications of Uniform, Bernoulli, Binomial, and Poisson distributions.	Understand	L1
C02	Analyze properties and applications of Negative binomial, Geometric, and Hyper-geometric distributions.	Analyze	L4
C03	Apply concepts of moment generating functions, characteristic functions, and probability generating functions.	Apply	L3
C04	Evaluate reproductive and limiting properties of distributions including Normal distribution. Create problem-solving approaches involving continuous distributions like Rectangular, Exponential, Gamma, Beta.	Evaluate, Create	L5,L6

B.SC-STATISTICS-SEMESTER III

Course Outcomes (COs)

CO No.	Course Outcome Statement	Bloom's Level	Level Code
CO1	Understand and apply statistical methods for describing and analyzing bivariate data, correlation, and regression analysis.	Understand	L1
CO2	Analyze and interpret categorical data using measures of association and correlation coefficients.	Analyze	L4
CO3	Explain concepts of sampling, sampling distributions, and standard errors, including chi-square, t, and F distributions.	Remember, Evaluate	L1, L5
	Evaluate properties of estimators and apply point estimation techniques including bias, consistency, and efficiency.		
CO4	Create estimators using Neyman's factorization theorem, method of moments, and maximum likelihood estimation with interval estimation.	Create	L6

B.SC-STATISTICS-SEMESTER IV

Course Title	Probability distributions
Course Code	DSC-D

Course Outcomes (COs)

CO No	Course Outcome Statement	Bloom's Level	Level Code
CO1	Understand the foundational concepts of hypothesis testing, including types of errors, significance level, power, and Neyman-Pearson lemma.	Understand	L2
CO2	Apply large sample tests and Z-transformations to evaluate means, proportions, and correlation coefficients.	Apply	L3
CO3	Analyze test results using chi-square, t-tests, and F-tests for various parametric distributions.	Analyze	L4
CO4	Evaluate non-parametric tests and distinguish their use cases compared to parametric tests. Create hypothesis testing strategies for given problems using both parametric and non-parametric methods.	Evaluate, Create	L5, L6

B.SC-STATISTICS-SEMESTER V(A)

Course Title	Probability distributions
Course Code	DSC-D
Course Title	Applied Statistics – 1
Course Code	DSE-A

Course Outcomes (COs)

CO No	Course Outcome Statement	Bloom's Level	Level Code
CO1	Define basic concepts related to population, sample surveys, sampling errors, and types of sampling techniques.	Remember	L1
CO2	Understand and apply different sampling methods such as SRS, stratified and systematic sampling, and estimate population parameters.	Understand	L2
CO3	Analyze time series data using models, trend analysis, and seasonal indices methods.	Analyze	L4
CO4	Evaluate and construct control charts for quality control using both variable and attribute data. Create effective sampling and quality monitoring strategies using appropriate statistical tools and models.	Evaluate, Create	L5, L6

B.SC-STATISTICS-SEMESTER V(B)

Course Title	Analytical Statistics-1
Course Code	DSE-A

Course Outcomes (COs)

CO No	Course Outcome Statement	Bloom's Level	Level Code
CO1	Define and explain key concepts in sample surveys, sampling methods, and estimation of population parameters.	Remember	L1
CO2	Understand and apply models in time series analysis, including trends, seasonal components, and growth curves.	Understand	L2
CO3	Analyze and interpret Shewart control charts for quality control in industrial processes. Evaluate the appropriateness of different experimental designs and interpret results using ANOVA.	Analyze, Evaluate	L4, 15
CO4	Create and implement statistical strategies using DOE (Design of Experiments) and SQC for quality and efficiency improvements.	Create	L6

B.SC-STATISTICS-SEMESTER VI

Course Title	Applied Statistics-2
Course Code	DSE-B

Course Outcomes (COs)

CO No	Course Outcome Statement	Bloom's Level	Level Code
CO1	Understand and analyze the Gauss-Markoff model, Cochran's theorem, and the use of ANOVA in one-way and two-way classifications.	Understand	L2
CO2	Apply principles of experimental design and conduct statistical analysis of CRD, RBD, and LSD including missing observations. Analyze vital statistics using appropriate measures such as fertility, mortality, reproduction rates, and construct life tables.	Apply, Analyze	L3,L4
CO3	Evaluate the sources and significance of Indian official statistics, compute national income and understand challenges in estimation.	Evaluate	L5
CO4	Create and interpret index numbers for economic data, including cost of living and wholesale price indices, using appropriate statistical tools.	Create	L6

B.SC-STATISTICS-SEMESTER VI(B)

Course Title	Applied Statistics-2
Course Code	DSE-B

Course Outcomes (COs)

CO No	Course Outcome Statement	Bloom's Level	Level Code
CO1	Define and explain multivariate distributions and perform regression analysis including logistic regression.	Remember	L1
CO2	Understand and apply multivariate data analysis techniques like PCA, Factor Analysis, and Discriminant Analysis in practical contexts.	Understand	L2
CO3	Analyze vital statistics and interpret demographic indicators like fertility, mortality, and population growth using life tables.	Analyze	L4
CO4	Evaluate the role of Indian official statistics, estimate national income, and assess its limitations. Create and interpret various index numbers using statistical techniques and apply them in economic contexts.	Evaluate, Create	L5,L6