

G.E. Society's

RNC ARTS, JDB COMMERCE & NSC SCIENCE COLLEGE, NASHIK-ROAD

Department of Statistics

Programme Outcomes: B.Sc. Statistics

Programme Outcomes	<p>Department of Statistics runs Statistics course at subsidiary level up to second year B.Sc. By the end of the programme, learners should be able to:</p> <p>PO-1: Define statistical terms</p> <p>PO-2: Comprehend statistical concepts and relationships in the economic and social aspects among others.</p> <p>PO-3: Interpret, use and present information in written, graphical, diagrammatic and tabular terms.</p> <p>PO-4: Deduce and infer through manipulation of statistical expressions.</p> <p>PO-5: Appreciate the beauty and crucial role of statistics in national development.</p> <p>PO-6: Enable efficient use of electronic devices to solve statistical problems.</p> <p>PO-7: Develop the ability to use statistical knowledge and skills in other disciplines.</p> <p>PO-8: Use of statistical software packages for computations of data.</p> <p>PO-9: Apply laws of probability to concrete problems.</p>
Programme Specific Outcomes	<p>PSO-1: Students will understand the basic concepts of data and scale of measurement of data.</p> <p>PSO-2: Students will be enable comparison data by using measures of central tendency and dispersion.</p> <p>PSO-3: Students will be establish relationship between two or more variables and predict the value by regression analysis.</p>

	<p>PSO-4: Students will learn to calculate probability and measures of probability for discrete and continuous distributions.</p> <p>PSO-5: Students will learn to make inferences about population from sample data.</p> <p>PSO-6: Students will be enable use of statistical techniques in time series.</p> <p>PSO-7: Students will understand and develop the necessary computer skill in practical by using MS-Excel, R- software</p>
<p>Course Outcomes B.Sc. Statistics</p> <p>Semester I (2020-21)</p>	
Course Outcomes	After completion of these courses students should be able to;
ST-111 Descriptive Statistics-I	<p>CO-1: Recall the concepts of statistical population and sample.</p> <p>CO-2: Organize, manage and present data.</p> <p>CO-3: Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.</p> <p>CO-4: Analyze statistical data using measures of central tendency, dispersion and location, skewness and kurtosis.</p> <p>CO-5: Know the association between the attributes.</p>
ST-112 Discrete probability	<p>CO-1: Describe random and non-random experiments.</p> <p>CO-2: Articulate sample space for a certain random experiment and identify events and their types.</p> <p>CO-3: Illustrate different real life situations to find probability of different types of events, the theorems of probability.</p> <p>CO-4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.</p> <p>CO-5: Translate real-world problems into probability models.</p> <p>CO-6 Derive the probability density function of transformation of random variables.</p>

	<p>CO-7: Explain definition of independence of events to determine whether an assumption of independence is justifiable</p> <p>CO-8: Explain definition of conditional probability of events.</p> <p>CO-9: Justify random variable(s) of interest in a given scenario and find the probability distribution.</p> <p>CO-10: Formulate different discrete probability distributions based on finite sample space.</p> <p>CO-11: Build the interrelations between the probability distributions.</p> <p>CO-12: Apply discrete distribution to real life situations.</p>
ST-113 Practical-I	<p>CO-1: Recall various graphical and diagrammatic techniques and interpret.</p> <p>CO-2: Data interpretation from various graphs and diagrams.</p> <p>CO-3: Tabulation.</p> <p>CO-4: Compute various measures of central tendency, dispersion, skewness and kurtosis to real life data.</p> <p>CO-5: Use of random number table to draw samples.</p> <p>CO-6: Develop summary statistics of output generated by Ms-Excel.</p>
Semester II (2020-21)	
ST-121 Descriptive Statistics-II	<p>CO-1: Recall concept of bivariate data, correlation, Karl Pearson's correlation coefficient and its interpretation.</p> <p>CO-2: Determine correlation coefficient of bivariate data.</p> <p>CO-3: Explain simple regression models, fitting of second degree and exponential curves.</p> <p>CO-4: Formulate the real-life situations in terms of regression analysis.</p> <p>CO-4: Computation of price indices and study of qualitative data.</p>
ST-122 Discrete Probability Distributions	<p>CO-1: Recall the concept of discrete random variables.</p> <p>CO-2: Formulate different discrete probability distributions based on countable infinite sample space.</p> <p>CO-3: Apply discrete distribution to real life situations. (Poisson</p>

	<p>and Geometric distributions)</p> <p>CO-4: Illustrate the concept of two dimensional discrete random variables, bivariate probability distributions.</p> <p>CO-5: Calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.</p> <p>CO-6: Compute mathematical expectation of bivariate probability distributions.</p>
<p>ST-123 Practical-II</p>	<p>CO-1: Recall the concepts of bivariate data, correlation, Karl Pearson's correlation coefficient and its interpretation.</p> <p>CO-2: Explain simple regression models, fitting of linear regression model.</p> <p>CO-3: Fit of second degree and exponential curves.</p> <p>CO-4: Fit discrete distribution (Binomial, Poisson) to real life data.</p> <p>CO-5: Identify different discrete probability distributions.</p> <p>CO-6: Apply discrete distribution (Binomial, Poisson) to real life situations.</p> <p>CO-7: Model sampling from discrete distributions.</p> <p>CO-8: Analyze different types of indices.</p> <p>CO-9: Analyse correlation coefficient, line of regression and second degree curve through Ms-Excel.</p>
<p>Semester-III (2020-21)</p>	
<p>ST-231 Discrete probability distributions and time series</p>	<p>CO-1: Recognise the situations of Negative binomial distribution.</p> <p>CO-2: Apply negative binomial distribution.</p> <p>CO-3: Concept and illustration of multinomial distribution.</p> <p>CO-4: Concept of Truncated distribution.</p> <p>CO-5: To study various truncated distributions.</p> <p>CO-6: Concept and models of time series.</p> <p>CO-7: Analyze time series data.</p>

	CO-8: Compare fitted models based on residual analysis and coefficient of determination.
ST-232 Continuous probability distributions	<p>CO-1: Extend the concept of discrete probability distributions to continuous probability distributions.</p> <p>CO-2: Define continuous random variable, probability density function and its characteristics.</p> <p>CO-3: Apply different methods to obtain probability distribution of transformation of random variables.</p> <p>CO-4: Concept and characteristics of continuous bivariate distributions.</p> <p>CO-5: Calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.</p> <p>CO-6: Explain the theory and application of important continuous Distributions (Uniform, Normal, Exponential)</p> <p>CO-7: Analyze the real life situations of continuous probability distributions.</p>
ST-233 Practical	<p>CO-1: Fitting of discrete and continuous distributions.(Negative Binomial and Normal)</p> <p>CO-2: Make judgments or comparisons through Normal probability plots for testing Normality of data obtained in real life situations.</p> <p>CO-3: Apply various discrete and continuous distributions. (Negative Binomial, Multinomial and Normal)</p> <p>CO-4: Model sample by various methods from continuous distributions.(Exponential and Normal)</p> <p>CO-5: Analyze Time series data.</p> <p>CO-6: Find probabilities and fitting of distributions using Ms-Excel.</p> <p>CO-7: Fitting trend to time series data using Ms-excel.</p>
Semester-IV (2020-21)	
ST-241 Tests of significance and statistical methods	CO-1: Define various terms like statistic, parameter, hypothesis, type-I, type-II error, p-value and terms used in testing of hypotheses.

	<p>CO-2: Identify the distributions of various test statistics.</p> <p>CO-3: Evaluate and decide the appropriate hypotheses for testing the population parameters like mean, proportion..</p> <p>CO-4: Recall the linear regression for bivariate data.</p> <p>CO-5: Articulate the idea of regression for trivariate data. Discuss the concept of multiple and partial correlation.</p> <p>CO-6: Apply the regression models for forecasting and analysing given real life situations. Compute probabilities of type I and type II error.</p> <p>CO-7: Study Demography terms and concepts.</p> <p>CO-8: To calculate different fertility and mortality rates.</p> <p>CO-9: Concepts regarding queuing model and its application.</p>
<p>ST-242 Sampling Distributions and exact tests</p>	<p>CO-1: Define gamma distribution and its applications.</p> <p>CO-2: Define chi-square distribution and its applications.</p> <p>CO-3: Define t distribution and its applications.</p> <p>CO-4: Define Snedecor's F distribution and its applications.</p> <p>CO-5: Build the interrelations between the probability distributions.</p> <p>CO-6: Explain the theory of sampling distribution of statistics.</p> <p>CO-7: Analyze the real life situations using sampling distribution.</p> <p>CO-8: Construct the tests regarding goodness of fit, independence of attributes, population variance.</p> <p>CO-9: Construct the tests regarding population means, paired t-test.</p> <p>CO-10: Construct the tests regarding population variances.</p>
<p>ST-243 Practical</p>	<p>CO-1: Recall the commands of R software.</p> <p>CO-2: To find summary statistics using R software.</p> <p>CO-3: Discuss the procedures of fitting a plane of regression to given data using R software.</p> <p>CO-4: Compute partial , multiple correlation coefficients using R software.</p>

	<p>CO-5: Analyze practical situations using statistical tests for various population parameters and compute probabilities using command of R-software.</p> <p>CO-6: Apply chi-square tests, t-tests and F-taet to real life situations.</p> <p>CO-7: To compute GRR and NRR.</p>
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