


CO for First Year UG  
AY 2022-23  
Revised as per NEP

Faculty of Science  
Department of Statistics

Descriptive Statistics – I	<ol style="list-style-type: none"><li>1. meaning and scope of Statistics, various statistical organizations,</li><li>2. data and types of data, various data presenting methods,</li><li>3. population, sample and various methods of sampling,</li><li>4. various measures of central tendencies and dispersion,</li><li>5. moments, skewness and kurtosis.</li></ol>
Elementary Probability Theory	<ol style="list-style-type: none"><li>1. distinguish between random and non-random experiments</li><li>2. acquire knowledge of concepts of probability</li><li>3. use the basic probability rules, including additive and multiplicative laws</li><li>4. understand concept of conditional probability and independence of events.</li><li>5. understand concept of univariate random variable and its probability distributions</li><li>6. acquire knowledge of mathematical expectation of univariate random variable.</li></ol>
Descriptive Statistics – II	<ol style="list-style-type: none"><li>1. correlation coefficient and interpret its value.</li><li>2. regression coefficients, interpret its value and use in regression analysis.</li><li>3. qualitative data including concept of independence and association between two attributes</li><li>4. vital statistics and concept of mortality and fertility and growth rates.</li></ol>
Discrete Probability Distributions	<ol style="list-style-type: none"><li>1. bivariate discrete distributions, independence of bivariate r.vs., Mathematical expectation of bivariate discrete random variable.</li><li>2. one point distribution, two point distribution, Bernoulli distribution</li><li>3. Uniform distribution, Binomial distribution, Hypergeometric distribution,</li><li>4. Poisson distribution, Geometric distribution and Negative binomial distribution.</li></ol>



  
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Class	Subject	Program outcomes
B.Sc. III	Statistics	<ul style="list-style-type: none"> <li>➤ knowledge of important univariate distributions such as Laplace, Cauchy,</li> <li>➤ Lognormal, Weibull, Logistic, Pareto, Power Series Distribution.</li> <li>➤ knowledge of Multinomial and Bivariate Normal Distribution.</li> <li>➤ knowledge of Truncated Distributions.</li> <li>➤ information of various measures of these probability distributions.</li> <li>➤ acumen to apply standard continuous probability distributions to different situations.</li> <li>➤ knowledge about important inferential aspect of point estimation.</li> <li>➤ concept of random sample from a distribution, sampling distribution of a statistic,</li> <li>➤ standard error of important estimates such as mean and proportions.</li> <li>➤ knowledge of various important properties of estimator,</li> <li>➤ knowledge about inference of parameters of standard discrete and continuous distributions.</li> <li>➤ concept of Fisher information and CR inequality.</li> <li>➤ knowledge of different methods of estimation.</li> <li>➤ knowledge of basic terms used in design of experiments.</li> <li>➤ concept of one-way and two-way analysis of variance.</li> <li>➤ knowledge of various designs of experiments such as CRD, RBD, LSD and factorial experiments.</li> <li>➤ knowledge of using an appropriate experimental design to analyze the experimental data</li> <li>➤ importance of R- programming</li> <li>➤ knowledge of identifiers and operators used in R.</li> <li>➤ knowledge of conditional statements and Loops used in R.</li> <li>➤ knowledge of quality tools used in Quality management.</li> <li>➤ knowledge of process and product control used in Quality management.</li> <li>➤ knowledge about order statistics and associated distributions</li> <li>➤ concept of convergence and Chebychev's inequality and its uses</li> <li>➤ concept of law large numbers and central limit theorem and its uses.</li> <li>➤ knowledge of terms involved in reliability theory as well as concepts and measures.</li> <li>➤ concept of interval estimation.</li> <li>➤ knowledge of interval estimation of mean, variance and population proportion.</li> <li>➤ knowledge of important aspect of test of hypothesis and associated concept.</li> <li>➤ concept about parametric and non-parametric methods.</li> <li>➤ Knowledge of some important parametric as well as non-parametric tests.</li> <li>➤ basic knowledge of complete enumeration and sample, sampling frame sampling distribution, sampling and non-sampling errors, principle steps in sample surveys, sample size determination, limitations of sampling etc.</li> </ul>

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|  | <ul style="list-style-type: none"><li>➤ concept of various sampling methods such as simple random sampling, stratified random sampling, systematic sampling and cluster sampling.</li><li>➤ an idea of conducting sample surveys and selecting appropriate sampling techniques.</li><li>➤ knowledge of comparing various sampling techniques.</li><li>➤ knowledge of ratio and regression estimators.</li><li>➤ Concept of Linear programming problem.</li><li>➤ Knowledge of solving LPP by graphical and Simplex method.</li><li>➤ Knowledge of Transportation, Assignment and Sequencing problems.</li><li>➤ Concept of queuing theory.</li><li>➤ Knowledge of simulation technique and Monte Carlo technique of simulation</li></ul> |
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Class	subject		Program outcomes
B.Sc. II	Statistics	Theory	<ul style="list-style-type: none"> <li>➤ understand concept of discrete and continuous probability distributions with real life situations.</li> <li>➤ distinguish between discrete and continuous distributions.</li> <li>➤ find the various measures of random variable and probabilities using its probability distribution.</li> <li>➤ know the relations among the different distributions.</li> <li>➤ understand the concept of transformation of univariate and bivariate continuous random variable</li> <li>➤ understand the concept of Multiple Linear Regression.</li> <li>➤ understand the concept of Multiple Correlations and Partial Correlation.</li> <li>➤ know the concept of sampling theory.</li> <li>➤ understand the need of vital statistics and concept of mortality and fertility.</li> <li>➤ know some standard continuous probability distributions with real life situations.</li> <li>➤ distinguish between various continuous distributions.</li> <li>➤ find the various measures of continuous random variable and probabilities using its probability distribution.</li> <li>➤ understand the relations among the different distributions.</li> <li>➤ understand the Chi-Square, t and F distributions with their applications and inter relations.</li> <li>➤ know the concept and use of time series.</li> <li>➤ understand the meaning, purpose and use of Statistical Quality Control, construction and working of control charts for variables and attributes.</li> <li>➤ apply the small sample tests and large sample tests in various situations.</li> </ul>
		Practical	<ul style="list-style-type: none"> <li>➤ compute probabilities of standard probability distributions.</li> <li>➤ compute the expected frequency and test the goodness of fit.</li> <li>➤ understand how to obtain random sample from standard probability distribution and</li> <li>➤ sketch of the p. m. f. / p. d. f. for given parameters.</li> <li>➤ fit plane of Multiple regression and compute Multiple and Partial correlation coefficients.</li> <li>➤ draw random samples by various sampling methods</li> <li>➤ construct various control charts.</li> <li>➤ understand the applications of Poisson, Geometric and Negative Binomial distributions.</li> </ul>



*[Handwritten Signature]*

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