Department of Statistics.
Course objectives and Outcomes

F.Y.B.Sc.

Sem.-I		
Paper	**Objectives**	**Outcome**
ST - 101: Descriptive Statistics - I	Basic concepts of Statistics, Role of statistics in Science, Society, and for National Development, Descriptive statistics.	After successful completion of this course, students are expected to: Acquire knowledge of statistics and its scope and importance in various areas such as Medical, Engineering, Agricultural and Social Science, Finance etc. Information about various Statistical Organizations in India and their functions for societal developments. Knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion, etc. Insights into preliminary exploration of different types of data.
ST - 102: Probability and probability Distributions-I	To learn basic concepts of probability, conditional probability and independence, probability distribution of a discrete random variable.	After successful completion of this course, the students are expected to: Acquire ability to distinguish between random and non-random experiments.

		Knowledge to conceptualize the probability of events including frequentist and axiomatic approach. Knowledge related to concept discrete random variable and its probability distribution including expectation and moment.
ST - 103: Statistics Practicals-I	Introduction of MS-EXCEL software. Introduction to various statistical sampling schemes such as simple, stratified and systematic sampling. Graphical representation of statistical data: Histogram, Simple bar diagram, Multiple bar diagram. Computation of various measures of central tendency and dispersion for ungrouped and grouped data.	This course is based on ST-101 and ST-102 and will provide practical knowledge to the students on various concepts elaborated in these two courses. The learning outcomes will similar to ST-101 and ST-102. Standard software package namely MS-EXCEL is introduced and also used in the practical course.
Sem.-II		
ST - 201: Descriptive Statistics - II	To acquaint students with basic concepts of correlation and regression, theory of attributes, skewness and kurtosis, measures of inequality.	After successful completion of this course, the students are expected to: Knowledge of correlation and regression analysis Knowledge of other types of data reflecting qualitative characteristics including concepts of independence and association between two attributes.

ST - 202: Probability and probability Distributions-II	To acquaint students with basic concepts of mathematical expectation for univariate and bivariate random variable and various standard discrete probability distributions such as discrete uniform, Bernoulli, Binomial and hypergeometric.	After successful completion of this course, the students are expected to: Knowledge of important discrete probability distributions such as discrete uniform, Bernoulli, Binomial and hypergeometric. Acumen to apply standard discrete probability distributions to different situations.
ST - 203: Statistics Practicals-II	Computation of skewness and kurtosis. Drawing of scatter diagram for bivariate data and computation of correlation coefficient. Fitting of lines of regression, second degree curve and exponential curve. Fitting of binomial distribution and computation of probabilities. Model sampling from discrete uniform, Binomial and hypergeometric probability distributions.	This course is based on ST-201 and ST-202 and will provide practical knowledge to the students on various concepts elaborated in these two courses. The learning outcomes will similar to ST-201 and ST-202. Standard software package namely MS-EXCEL is introduced and also used in the practical course.

S.Y.B.Sc.

Sem.-III		
ST - 301: Probability Distributions-I	To introduce some continuous probability distributions which are highly useful in modeling real life uncertain issues.	After successful completion of this course, students are expected to: Acquire knowledge related to continuous random variables and their probability distributions

		including expectation and higher order moments. Knowledge of important continuous distributions such as normal, exponential and Gamma. Acumen to apply standard continuous probability distributions to different situations. Ability to handle transformed random variables and derived associated distributions. Ability to use and interpret Normal probability.
ST - 302: Statistical Methods-I	To learn some common and simple concepts of applied statistics which will be useful to them while analyzing data sets obtained from different scientific experiments.	After successful completion of this course, the students are expected to: Demonstrate theory in multiple regression model, time series and statistical process control. Know the basic concepts of statistical process control such as control chart for variables and attributes. Able to draw control chart for variables and attributes. Ability to check whether the given process is under statistical control using different criteria. Know about time series data, its application to various fields. Understand the different components and models of time series. Understand different

		methods for measurement of trend and seasonal variations. Know about fitting of trend by Least square method and Moving Average method.
ST - 303: Statistics Practical-III	To apply normal distribution in real life situations. To obtain model sample from normal distribution. To fit regression equation, to compute and interpret multiple and partial correlation coefficient. To construct and interpret control charts for quality control purposes. To determine trend values and seasonal indices for the given time series data.	This course is based on ST-301 and ST-302 and will provide practical knowledge to the students on various concepts elaborated in these two courses. The learning outcomes will similar to ST-301 and ST-302. All standard software packages namely EXCEL, R are introduced and also used in the practical course.
ST 304 SEC- I: Statistical data Analysis using R	To acquaint students with basic concepts in R programming such as basics of R, operators in R, working with data objects and using functions and graphics.	After successful completion of this course, the students are expected to: R programming with some basic notions for developing their own simple programs and visualizing some graphics in R.
Sem.-IV		
ST - 401: Probability Distributions-II	To acquaint students with basic concepts bivariate continuous probability distribution, Chi-square, Student's t and Snedecor's F distributions and their interrelationships.	After successful completion of this course, the students are expeted to: Knowledge of bivariate continuous probability distribution, their associated distributions, characteristics, marginal and conditional

		distribution. Knowledge of important continuous distributions such as Beta distribution of fist and second kind, Chi-square, Student's t and Snedecor's F distributions.
ST - 402: Statistical Methods-II	To acquaint students with basic concepts sampling distributions, testing of hypotheses, large sample tests and small sample tests.	After successful completion of this course, the students are expected to: Acquire concept of random sample from a distribution, sampling distribution of a statistic, standard error of important estimates such as mean and proportions. Knowledge about tests of hypotheses and associated concepts. Acquaint with various basic concepts on sampling distributions and large sample tests based on normal distribution. Acquaint with small sample tests based on Chi-square, Student's t and Snedecor's F distributions.
ST - 403: Statistics Practical-IV	To apply large and small sample tests in real life situations. To sketch pdf and cdf of different distributions.	This course is based on ST-401 and ST-402 and will provide practical knowledge to the students on various concepts elaborated in these two courses. The learning outcomes will similar to ST-401 and ST-402. All standard software packages namely EXCEL, R are introduced and also used in the practical

		course.
ST - 404: SEC-II: Applied Statistics	To acquaint students with basic concepts related to Index numbers (INs)such as meaning , utility, limitations, weighted and unweighted Ins, Fixed and chain based Ins, various types of Ins, testing for adequacy of Ins. To acquaint students with basic concepts of vital Statistics.	After successful completion of this course students are expected to: Expose to computation of different types of Index numbers, consumer price index number. Get ideas about commonly used measures of Demography pertaining to its three basic aspects viz.the fertility, mortality and migration. Real data implementation of various demographic concepts through numerical examples.