DEPARTMENT OF STATISTICS

Course Outcomes

Semester - I

Subject: Descriptive Statistics and Probability

Paper-I (DSC-2A)

Course Objective: The objective of the paper is to understand the descriptive statistics and the application of Probability in real time problems.

Course Outcomes:

Co1: Students will be able to draw the descriptive statistics for the data and interpret the data with the appropriate graphs.

Co2: Learn how to calculate measures of central tendency and measures of dispersion.

Co3: Gain the knowledge of skewness and kurtosis.

Co4: Use basic probability rules including Additive and Multiplicative laws using the terms independent and Mutually Exclusive events.

Co5: Translate real world problems into probability models Derive the probability density function of Transformation of random variables.

Co6: The students will be equipped with the Application of Random variables in real time problems.

Co7: Understand the concept of discrete and continuous random variables.

Co8: Get an idea of bivariate random variable, learn how to calculate joint, marginal and conditional, independence of random variables.

Co9: learn the applications of chebyshev's and Cauchy-schwartz's inequalities.

Co10: Understand the definitions of various generating functions, learn the statements of their properties with applications.

Semester - II

Subject: Probability Distribution

Paper-II (DSC-2B)

Course Objective:

The course is aimed at exposing the students to learn the various discrete and continuous probability distribution.

Course Outcomes:

Co1: Derive various descriptive statistics and verify the existence of reproductive property of distribution using generating functions, their limitations and advantages of discrete distributions.

Co2: Distinguish between discrete and continuous distribution.

Co3: Derive various descriptive statistics and verify the existence of reproductive property of distribution using generating functions, their limitations and advantages of continuous distributions.

Co4: Understand the importance and application of normal distribution.

Co5: Practical Exposure to the fitting of discrete and continuous distribution by using MS-EXCEL.

Semester - III

Subject: Statistical Methods and Theory of Estimation

Paper-III (DSC-2C)

Course Objective:

The course is aimed at exposing the students to learn the various statistical methods and Estimation of parameters in Distribution theory.

Course Outcomes:

Co1: Perform qualitative data analysis using theory of attributes.

Co2: Establish the linear relationship between the two variables by using scatter plots and other correlation methods.

Co3: Understand and apply the concepts of partial and multiple correlation coefficients.

Co4: Regression Analysis is performed by using least square methodology.

Co5: Understand the concept of characteristics of a good estimator.

Co5: Understand difference between point estimator and interval estimation.

Co6: Understand the theory of Maximum Likely hood estimation and the method of moments.

Co7: Students will be able to apply the confidence interval and estimate the unknown parameters of Normal Distribution by pivot method.

Co8: Gain the knowledge on definitions , properties and applications of chi-square , t and F distributions.

Co9: practical Exposure to the curve fitting by the method of least squares, correlation and regression lines by using MS-EXCEL.

Semester - IV

Subject: Statistical Inference

Paper-IV (DSC-2D)

Course Objective: The purpose of this paper is to draw the inference to the population parameters based on sample tests.

Course Outcomes:

Co1: Application of Large sample tests and small sample tests, Framing the hypothesis, level of significance, computation of statistic, comparison between tabulated value and calculated value, decision making and statistical inference.

Co2: Understand how to compare between parametric and non-parametric tests their advantages and disadvantages.

Co3: learn the concept of measurement scale.

Co4: Use of central limit theorem in various sample test.

Co5: learn the various non-parametric tests of one sample and two independent samples.

Co6: Practical Exposure to the small sample test, chi-square and non-parametric tests by using MS-EXCEL.

Semester – V

Subject: Sampling Theory, Time series, Index numbers and Demand Analysis.

Paper-V (DSC-2E)

Course Objectives: The objective of this paper is

1. To make students to be able to draw samples using different methods and estimate mean and variance of sampling methods.
2. To make students understand the definition, importance, and uses of time series data. Will be able to measure trend and seasonal variations.
3. The utility of index number are to provide a value useful for comparing magnitudes of related variables to each other and to measure the changes in these magnitude over time.
4. Students will be able to understand the concept of demand, supply and price. Different measures of demand analysis and elasticity of demand and supply are taught.

Course Outcomes:

Co1: Perform a Sample survey, understand the errors in sampling design, apply the necessary sampling technique based on the objective.

Co2: Understand the time series data, compute and eliminate trend component using different methods and calculate seasonal indices by various methods.

Co3: Understand how demand and supply related with the price of a product and quantity of the same product.

Co4: Acquire the knowledge of determining demand curve from time series data by Leontief's and Pigou's method.

Co5: Computation of simple and weighted index numbers by using various methods.

Co6: Know the changes in the price level in the current year w.r.t. to the base year.

Co7: Construction of Cost of Living Index numbers.

Co8: Understand the concept of Base shifting, Splicing and deflation of index numbers.

Co9: Practical Exposure to the measurement of trend by the method of least squares and moving averages and determination of seasonal indices by various methods in MS-EXCEL.

Co10: Construction of Lorenz curve and fitting of pareto law to income data by using MS-EXCEL.

Subject: Statistical Quality Control and Reliability

Paper – VIA (DSE-2E)

Course Objectives:

1. Definition, uses and applications of SQC are taught. Students will be able to understand the concept of process control and can use various variable and attribute charts to draw interpretations to the given data.
2. Product control: Accepting sampling plans, single sampling plan, double sampling plan with their properties are taught.
3. Definition of reliability, series and parallel configurations in system reliability are taught.

Course Outcomes:

Co1: Students will be able to apply the control charts for variables and attributes to the problem to ensure that the production process is under control or not.

Co2: Understand the concept of natural tolerance limits , specification limits, process capability index and modified control charts.

Co3: To arrive on the decision regarding the sample size while implementing Acceptance Sampling Plans.

Co4: Understand Definitions of Producer risk and consumer risk , AQL and LTPD

CO5: Gain the knowledge of single and double sampling plans for their attributes and their OC and ASN functions.

Co6: Analyse the statistical experiments leading to reliability modelling.

Co7: Practical Exposure to the control charts for variables and control charts for attributes by using MS-EXCEL.

Semester – VI

Subject: Design of Experiments, Vital Statistics, Official Statistics and Business Forecasting.

Paper – VII (DSC-2F)

Course Objectives:

1. Students will be able to understand the concept of ANOVA and will be able to apply ANOVA one way and two way to real life applications.
2. Setting null and alternative hypothesis to one way and two way ANOVA, expectations of various sum of squares and calculating missing observations are taught.
3. Designs of experiments: CRD, RBD and LSD are taught.
4. To make students understand the functions of important statistical organisations like NSSO and CSO.
5. Students acquire knowledge on the concept of national income.
6. Students are taught different measures of fertility, mortality and population growth.

Course Outcomes:

Co1: Design the experiments through the principles ,Perform ANOVA and interpret the results.

Co2: Acquire skills to use life tables and calculate survival rates , birth rates.

Co3: Know the Functioning of various statistical organisations.

Co4: To understand the selection of method of forecasting based on the objective.

Co5: Gain the knowledge of various measures of population growth.

Co6: To perform ANOVA by using CRD, RBD, and LSD in MS-EXCEL.

Co7: Construction of mortality rates fertility rates and life tables by using   MS-EXCEL.

Subject: Operations Research

Paper – VIIIA (DSE-2F)

Course Objectives:

1. Students will be able to find optimum solution to a given linear programming problem using various methods.
2. Optimum solutions for Transportation problem, Assignment problems and travelling salesman problems are taught.
3. Students are taught how to find the optimum sequence to a given job sequencing problem.

Course outcomes:

Co1: To formulate the LPP and solve the same by using Graphical, Simplex and artificial variable techniques.

Co2: Obtain IBFS to the transportation problem by using NWCR, VAM, and Matrix Minima method and hence obtain optimum solution by using MODI method.

Co3: To frame the assignment problem as a special case of TP and obtain optimal solution through Hungarian method.

Co4: To obtain optimal sequence of N jobs on two and three machines without passing.

Co5: Practical exposure to the problems in operations research by using TORA .

Program Outcomes

PO1: Acquire understanding of theoretical and practical aspects of statistics and to be able to relate them to real life.

PO2: Analyse statistical data by applying various statistical tool to draw inferences from the studies.

PO3: To provide exposure to latest tools & technologies in the area of statistics and enable students to effectively use statistical software's to problems relating to different spheres of life.

PO4: Acquire the ability to engage in independent and life- long learning in the broadest context of socio, economic and technological changes.

Program specific outcomes

- To select modern computing tools and techniques to meet the desired needs of the society such as safety, security and applicability.

- Recognize the need for and have the ability to engage in independent, lifelong learning and adapt to technological changes to be globally competent.
- Using Statistical software leading and applying logical and analytical skills to solve real life problems in related areas.
- Gain knowledge on theorems in Algebra, Analysis, Differential Equations and Linear Algebra and enhance themselves in mathematical skills for better employability

Head of the Department   Principal