**STATISTICS**

**COURSE OUTCOME**

**(Honours**)

**PAPER: STA-HC-1016**

1. Students will be acquintant with some basic concepts of Statistics.

2. Enable to analyse data using measures of Central tendency, Dispersion, Method of moments

and to interpret them

3. Able to fit bivariate data by the principle of least squares and orthogonal polynomials.

4. Understand the concept of correlation co efficient, correlation ratio, intra -class correlation,

partial and multiple correlation and regression.

5. To learn about different types of Index Numbers.

**PAPER: STA-HC-1026**

1. Learn the basic concept of differential calculus.

2. Understand the terms and applications of Definite integrals, Double integral, Beta and Gamma functions.

3. Have an idea of Exact differential equations and Higher order differential equations.

4. Able to know formation and solution of Partial differential equations.

**PAPER: STA-HC-2016**

1. Understand the basic concept of probability and its applications.

2. Acquintant with the concept of expectation, variance, co variance and their properties.

3. Able to find joint, marginal and conditional probability functions.

4. Made familiar with Probability Generating Function, Characteristic Functions and their

functions.

5. Learn the concept of some standard probability distributions.

**PAPER: STA-HC-2026**

1. Learn different aspects of theory of equations.

2. Understand the algebra of matrices.

3. Able to find determinant of a matrix and its use in solution of linear equations.

4. Able to find rank, characteristics roots and vectors of a matrix.

**PAPER: STA-HC-3016**

1. Acquintant with the idea of order statistics and its distribution.

2. Understand the basic idea of sampling distribution of statistics and tests related to it.

3. Would have a good idea of exact sampling distribution and its test of significance.

4. Understand the application of different sampling distribution and the relationship between

them.

**PAPER: STA-HC-3026**

1. Acquire the concept of basic terms of sampling.

2. Understand the probability and non-probability sampling techniques.

3. Know the different estimation procedures, bias in estimates and standard error of estimates.

4. Understand the technique of optimum design, proportional and optimum allocation in stratified

random sampling.

5 Acquintant with different official statistics of India and the role of organizations like MOSPI, CSO, NSSO etc.

**PAPER: STA-HC-3036**

1. Understand real analysis and different terms related to it.

2. Able to understand the infinite series and different comparison tests.

3. Able to find out limit, continuity and differentiability of functions of several variables.

4. Acquintant with different terms and theorems of numerical analysis.

**PAPER: STA-HC-4016**

1. Acquintant with the properties of good estimators and minimum variance unbiased estimator.

2. Know the methods of maximum likelihood, moments, minimum chi-square and their properties.

3. Will have the knowledge of tests of significance.

4. Have basic idea of sequential probability ratio test.

**PAPER: STA-HC-4026**

1. Understand the theory of linear estimation and concept of Gauss Markov Theorem.

2. Learn about Regression analysis with hypothesis testing.

3. Equipped with the knowledge of analysis of variance and co-variance for fixed effect models.

4. Have the concept of prediction from a fitted model and their remedies by transformation.

**PAPER: STA-HC-4036**

1. Know the concept of statistical quality control, control chart, and rational sub-grouping.

2. Understand the technique of preparing control chart for variables and attributes.

3. Acquire the knowledge of acceptance sampling plan with graphical interpretations.

4. Have the concept of 6-sigma.

**PAPER: STA-HC-5016**

1. Know about generating function and introduction to stochastic process.

2. Have the concept of Markov chain and classification of states and chains.

3. Acquire the knowledge of Poisson process and its properties.

4. Understand the concept of queuing model m/m/1 with finite and infinite system capacity

**PAPER: STA-HC-5026**

1. Understand the history and importance of C- programming .

2. Know the basic data types , symbolic constants, overflow and underflow of data.

3. Have the concept of arithmetic , relational, logical expressions.

4. Acquire the knowledge of decision making and branching using different loops.

5. Know the concept of arrays and strings.

**PAPER: STA-HC-6016**

1. Understand the basic principle of design of experiments and basic terms.

2. Have the concept of CRD, RBD, LSD—layout, model and statistical analysis.

3. Know the technique of split plot design, strip plot design and introduction to BIBD.

4. Have the knowledge of factorial experiments and their advantages.

**PAPER: STA-HC-6026**

1. Have the knowledge of bi-variate and multivariate distributions.

2. Understand the technique of multivariate normal distribution and their properties.

3. Will understand the basic idea of Hotellig t-square and its applications.

4. Acquire the knowledge of different non-parametric test.

**PAPER: STA- HE- 5016**

1. Have knowledge about different phases of Operations Research, model building, different types of operation research problems.

2. Acquire knowledge about mathematical formulation of Linear Programming Problem (L.P.P),

solve L.P.P. through different methods.

3. Know to solve the Transportation Problems.

4. Have knowledge about Game Theory.

5. Acquire knowledge about Inventory Management like EOQ model with its variations, ABC

analysis.

**PAPER: STA- HE- 5026**

1. Have knowledge about Time series data, its components, applications in real life data.

2. Able to determine the Trend values using different methods.

3. Know to determine and eliminate Seasonal variations presents in a data set using different

methods.

4. Acquire the knowledge to forecast and smooth a Time series data.

**PAPER: STA-HE- 6024**

1. Have the knowledge of Population composition, dependency ratio etc.

2. Acquire the knowledge of different mortality measurements like Crude death rate(CDR), Specific death rate(SDR), Standardized death rate (STDR), Infant mortality rate (IMR).

3. Able to develop Life tables, have knowledge of stationary and stable population, central

mortality rates and force of mortality etc.

4. Have the knowledge of different fertility measurements like Crude birth rate (CBR), General

fertility rate(GFR), Total fertility rate(TFR), Gross reproduction rate (GRR), Net reproduction

rate(NRR).

**PAPER: STA- HE- 6046**

1. Have knowledge to identify a real life problem for project.

2. Able to collect data from real life situation, propel them to dwell on some theory.

3. Acquire the knowledge to Present and analyse the data from various angle.

4. Have the knowledge to prepare a statistical report.

**STATISTICS**

**COURSE OUTCOME**

**(General**)

**PAPER: STA-HG/RC-1016**

1. Have the knowledge of collection and presentation of data both tabular and graphical

form.

2. Know the different measures of central tendency and dispersions.

3. To have the knowledge about finite difference.

4. Have the knowledge of correlation and regression.

5. To have the knowledge of consistency, independence and association of data.

**PAPER: STA-HG/RC-2016**

1. Learn the concept of probability and related terms.

2. Understand different types of random variables and their expectations, variance,

moment generating functions.

3. Have the knowledge of convergence in probability and central limit theorem.

4. Acquire the knowledge of discrete and continuous standard distributions.

**PAPER: STA-HG/RC-3016**

1. Know the concept of testing of hypothesis and non-parametric tests.

2. Understand the concept of categorical data analysis, tests of association and goodness of fit.

3. Have the concept of analysis of variance and basic terms of design of experiments.

4. Learn the technique of analysis of CRD and RBD.

**PAPER: STA-HG/RC-4016**

1. Learn the concept of time series, different components and their measurements.

2. Understand the concept of index number, different types and their constructions.

3. Acquire the knowledge of statistical quality control, control charts for variables and

attributes.

4. Have the knowledge of measurement of population, fertility, and reproduction and

population growth.

5. Know the concept of demand analysis and the technique of determination of elasticity if demand.

**PAPER: STA-RE-5016**

1. Know the concept of operation research, LPP, graphical and simplex method of solving LPP.

2. Understand the techniques of solving transportation problem using different methods.

3. Have the idea of game theory and basic terms.

4. Acquire the knowledge inventory management, EOQ model and related terms.

**PAPER: STA-RE-6016**

1. Have the concept of Econometric models for two or more variable.

2. Know the least square assumptions and estimation of regression parameters.

3. Have an idea of multiple regression analysis, estimation and inference.

4. Understand the concept of multi co linearity and autocorrelation.

**PAPER : STA— SE— 4024**

1. Learn to identify the research problems, its necessity and significance.

2. Have knowledge about different survey methodologies, target populations, sampling frames etc.

3. Acquire knowledge about data analysis and its interpretation, precautions to be taken in

interpretation of analysis of data.

4. Able to develop a questionnaire and collect survey data relating to a research problem.

**STA-SE- 3014-Theory**

1. Acquire knowledge about graphical presentation of a data set through software packages like Excel, SPSS.

2. Learn to generate automated reports giving detailed descriptive statistics.

3. Able to generate random numbers using software packages.

4. Learn to fit polynomials of different degrees , exponential curves etc.

5. Able to carry out statistical analysis of projects, import data, code editing, can compute p- values and confidence intervals.

**STA-SE-3014—Practical**

Have the practical knowledge of data generation, data presentation, data analysis and report presentation using MS Excel.

**STA-SE- 4024-Theory**

1. Learn to identify the research problems, its necessity and significance.

2. Have knowledge about different survey methodologies, target populations, sampling frames etc.

3. Able to develop a questionnaire and collect survey data relating to a research problem.

4. Acquire knowledge about data analysis and its interpretation, precautions to be taken in interpretation of analysis of data.

**STA-SE-4024 –Practical**

Learn the technique of finding the research problems and how to meet the problem with the statistical tools.