

Department : Statistics
Semester : B.Sc. I
Subject Name & Code : 1.1: UNIVARIATE DATA ANALYSIS AND
PROBABILITY

Students are able to learn & understand the following concepts

CO1.Introduction about the statistics

CO2.Purpose of measures of location. Definition of A.M, G.M, H.M and their properties (with proof) Mean Median and Mode, partitioned values.

CO3.Purpose of measures of dispersion, definition of Range, Quartile deviation, Mean deviation, Standard deviation, concepts of skewness & kurtosis

CO4.Basic concepts of probability .Definition of probability in 3 different approaches. Addition and Multiplication law of probability .Baye's theorem (with proof)

CO5.Concept of Random variable & their types, the various types of probability functions with examples i.e. p.m.f, p.d.f, Moment generating function(m.g.f) and its properties

Department : Statistics
Semester : B.Sc. II
Subject Name & Code : 2.1 BIVARIATE DATA ANALYSIS AND
PROBABILITY DISTRIBUTIONS

Students are able to learn & understand the following concepts

- CO1. Bivariate distribution function: Joint, Marginal, Conditional distributions for discrete and continuous variate.
- CO2. Definition and derivation of simple correlation coefficient, Rank correlation coefficient, Regression correlation coefficient with their properties.
- CO3. Definition of standard discrete distributions like Uniform, Bernoulli, Binomial, Poisson, Negative binomial, geometric distributions, Hyper geometric distribution.
- CO4. Derivation of Recurrence relation for probabilities and moments of Binomial and Poisson distributions.
- CO5. Definition of standard continuous distributions like Uniform, Gamma, Exponential, Beta distribution of I and II Kind, Normal distribution.
- CO6. Construction of Index numbers and their computation, interpretations, Simple aggregate and Weighted average methods

Department : Statistics
Semester : B.Sc. III
Subject Name & Code : 3.1: SAMPLING DISTRIBUTION AND LARGE
SAMPLE & NON PARAMETRIC
TESTS.

Students are able to learn & understand the following concepts

- CO1.** Sampling of x & s^2 for sample from normal distribution. Central Limit Theorem(without proof) & Large sample tests
- CO2.** Definition & derivation of Chi-square distribution, Properties, recurrence relation, Applications of chi-square distribution
- CO3.** Definition & derivation of t- distribution, Properties, recurrence relation, Applications of t-distribution
- CO4.** Meaning of order statistics, Explanation of the different types of Non-parametric tests.
- CO5.** Multiple and Partial Correlation and Regression.

Department : Statistics
Semester : B.Sc. IV
Subject Name & Code : 4.1 STATISTICAL INFERENCE

Students are able to learn & understand the following concepts

CO1. Basic concepts of parameter, estimator, estimate and standard error, relative efficiency.

CO2. MVUE, Neymann-Factorization theorem with proof, Fisher information Function.

CO3. Properties of MLE and MME.

CO4. Meaning of confidence interval. Confidence coefficient, Discussion of confidence intervals for mean, difference between means for large and small samples.

CO5. Concepts of testing of hypothesis, MP, UMP, Neymann -Pearson Lemma.

CO6. UMP and Likelihood Ratio Tests

Department : Statistics
Semester : B.Sc. V
Subject Name & Code : 5.1 PAPER-I: ANOVA, DESIGN OF EXPERIMENTS AND SPRT.

Students are able to understand and implement the following concepts

CO1. Analysis of Variance, conducted the ANOVA for one-way, two-way classified data.

CO2. Basic principles, CRD, RBD, LSD, layout, models, least squares estimates of parameters, hypothesis, test procedures and ANOVA tables.

CO3. Factorial Experiments like 2^2 and 2^3 factorials.

CO4. Split-Plot design

CO5. Need for sequential tests, Construction of SPRT for Binomial, Poisson, Normal distribution.

Department : Statistics
Semester : B.Sc. V
Subject Name & Code : 5.2 PAPER-II: SAMPLING AND DEMOGRAPHY

Students are able to understand and implement the following concepts

CO1. Concepts of population and sample, Need for sampling.

CO2. Need for sampling. Complete enumeration vs Sample surveys. Non probability and probability sampling

CO3. Explanation of the SRSWR&SRSWOR

CO4. Derivation of the sampling variance, Standard errors of the estimators, Variance of the estimators and their estimation.

CO5. Compared the $V(\text{ran})$, $V(\text{prop})$ and $V(\text{opt})$ ignoring f p c. Estimation of gain in precision due to stratification.

CO6. Expressed the variance with intra class correlation.

CO7. Sources of demography & the basic concepts of Mortality&Fertility rates

Department : Statistics
Semester : B.Sc. VI
Subject Name & Code: 6.1 PAPER-I: STATISTICAL QUALITY
MANAGEMENT AND ECONOMETRICS

Students are able to learn and implement the following concepts

CO1. Pioneers of Statistical Quality Control

CO2. Discussed the Theoretical basis and practical background of control Charts for variables. control limits like 3 -sigma limits, Warning limits & Probability

CO3. Construction of np-chart, p-chart c-chart and u-chart with interpretation.

CO4. Components of time series, Constructed seasonal indices by simple averages.

CO5. Simple linear regression model with assumptions, OLS, properties of OLS

Department : Statistics
Semester : B.Sc. VI
Subject Name & Code: 6.2 PAPER-II: OPERATIONS RESEARCH

Students are able to learn and implement the following concepts

- CO1. Basic Concepts and Formulation of an LPP
- CO2. Mathematical form of general LPP, Standard LPP, Simplex algorithm-
Big-M-Method with Examples.
- CO3. Transportation problem with mathematical model.
- CO4. Analyzed the different methods of finding optimum solution of
transportation problem.
- CO5. Assignment problem with mathematical model.
- CO6. Analyzed the different methods of finding optimum solution of
assignment problem.
- CO7. Basic concepts of inventory theory,EOQ model