

OBJECTIVES:

1. The sampling techniques deals with the ways and methods that should be used to draw samples to obtain the optimum results, i.e., the maximum information about the characteristics of the population with the available sources at our disposal in terms of time, money and manpower to obtain the best possible estimates of the population parameters
2. This paper throw light on understanding the variability between group and within group through Analysis of Variance
3. This gives an idea of logical construction of Experimental Design and applications of these designs now days in various research areas.
4. Factorial designs allow researchers to look at how multiple factors affect a dependent variable, both independently and together.

COURSE LEARNING OUTCOMES : The students shall get

- 1) Introduced to various statistical sampling schemes such as simple, stratified and systematic sampling.
- 2) An idea of conducting the sample surveys and selecting appropriate sampling techniques,
- 3) Knowledge about comparing various sampling techniques.
- 4) Carry out one way and two way Analysis of Variance,
- 5) Understand the basic terms used in design of experiments,
- 6) Use appropriate experimental designs to analyze the experimental data.

COURSE :

UNIT I : SIMPLE RANDOM SAMPLING (with and without replacement): Notations and terminology, various probabilities of selection. Random numbers tables and its uses. Methods of selecting simple random sample, lottery method, method based on random numbers. Estimates of population total, mean and their variances and standard errors, determination of sample size, simple random sampling of attributes.

UNIT II : STRATIFIED RANDOM SAMPLING: Stratified random sampling, Advantages and Disadvantages of Stratified Random sampling, Estimation of population mean, and its variance. Stratified random sampling with proportional and optimum allocations. Comparison between proportional and optimum allocations with SRSWOR.

SYSTEMATIC SAMPLING: Systematic sampling definition when $N = nk$ and merits and demerits of systematic sampling - estimate of mean and its variance. Comparison of systematic sampling with Stratified and SRSWOR.

UNIT III : ANALYSIS OF VARIANCE: Analysis of variance (ANOVA) –Definition and assumptions. One-way with equal and unequal classification, Two way classification.

DESIGN OF EXPERIMENTS: Definition, Principles of design of experiments, CRD: Layout, advantages and disadvantage and Statistical analysis of Completely Randomized Design (C.R.D).

UNIT IV : Randomized Block Design (R.B.D) and Latin Square Design (L.S.D) with their layouts and Analysis, Missing plot technique in RBD and LSD. Efficiency RBD over CRD, Efficiency of LSD over RBD and CRD.

UNIT V : FACTORIAL EXPERIMENTS – Main effects and interaction effects of 2^2 and 2^3 factorial experiments and their Statistical analysis. Yates procedure to find factorial effect totals.

TEXT BOOKS:

1. Telugu Academy BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by Prof.K.Srinivasa Rao, Dr D.Giri. Dr A.Anand, Dr V.PapaiahSastry.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC.PHI.

REFERENCE BOOKS:

1. Fundamentals of applied statistics: VK Kapoor and SCGupta.
2. Indian Official statistics – MR aluja.
3. Anuvarthita Sankyaka Sastram - Telugu Academy.

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