

ST3 C13: DESIGN AND ANALYSIS OF EXPERIMENTS

UNIT I

Linear estimation: standard Gauss Markoff set up, estimability of parameters, method of least squares, best linear unbiased Estimators, Gauss – Mark off Theorem, tests of linear hypotheses.

UNIT II

Planning of experiments, Basic principles of experimental design, uniformity trails, analysis of variance, one-way, two-way and three-way classification models, completely randomized design (CRD), randomized block design (RBD) latin square design (LSD) and Graeco-latin square designs, Analysis of covariance (ANCOVA), ANCOVA with one concomitant variable in CRD and RBD.

UNIT III

Incomplete block design; balanced incomplete block design (BIBD); incidence Matrix, parametric relation; intrablock analysis of BIBD, basic ideas of partially balanced incomplete block design (PBIBD).

UNIT IV

Factorial experiments, 2^n and 3^n factorial experiments, analysis of 2^2 , 2^3 and 3^2 factorial experiments, Yates procedure, confounding in factorial experiments, basic ideas of response surface designs.

Reference Books:

1. Aloke Dey (1986) Theory of Block Designs, Wiley Eastern, New Delhi.
2. DAS M.N. and GIRI N.C. (1994) Design and analysis of experiments, Wiley Eastern Ltd.
3. Joshi D.D. (1987) Linear estimation and Design of Experiments, Wiley Eastern.
4. Montgomery C.D. (1976) Design and Analysis of Experiments John Wiley, New York.
5. Chakrabarti M.C. (1962) Mathematics of Design and Analysis of Experiments, Asia publishing House, Bombay.