

ENTRANCE TESTS SYLLABUS FOR
Ph.D.
(Ph.D. in Statistics)

Methods of estimation. Properties of estimators. Confidence intervals. Tests of hypotheses: most powerful and uniformly most powerful tests, Likelihood ratio tests. Chi-square test of goodness of fit. Large sample tests.

Gauss-Markov models, estimability of parameters, Best linear unbiased estimators, tests for linear hypotheses and confidence intervals. Analysis of variance and covariance. Fixed, random and mixed effects models. Simple and multiple linear regression. Elementary regression diagnostics.

Multivariate normal distribution, Data reduction techniques: Principle component analysis, Discriminant analysis, Cluster analysis, Canonical correlation.

Simple random sampling, stratified sampling and systematic sampling. Probability proportional to size sampling. Ratio and regression methods.

Completely randomized, randomized blocks and Latin-square designs. Connected, Orthogonal and balanced block designs, BIBD. 2^k factorial experiments: confounding and construction. Series and parallel systems, hazard function and failure rates, censoring and life testing.