Faculty of Science

M.Sc. / M.A. (Statistics)

DEPARTMENT OF STATISITICS & OPERATIONS RESEARCH
ALIGARH MUSLIM UNIVERSITY ALIGARH

Syllabus for M.A./M.Sc. Entrance Test in Statistics

Types of data, graphical representation of data, central tendency measures and dispersions measures, Skewness and Kurtosis. Bivariate data, correlation (simple, partial and multiple), rank correlation and regression (simple and multiple).

Probability: Definitions of probability and their properties, conditional probability, multiplication rule, independence of events, Bayes' theorem. Random variables: Probability mass function, probability density function and cumulative distribution functions, distribution function of a random variable. Joint, marginal and conditional distributions. Mathematical expectation, moments and moment generating function, characteristic function. Chebyshev's inequality.Central limit theorem.Sampling distributions: Chi-square, t and F distributions, and their properties.

Discrete and continuous distributions(pmf, pdf, cdf). Binomial, negative binomial, geometric, Poisson, hypergeometric, uniform, exponential, gamma, beta and normal distributions.Properties of a good estimator, elementary theory of estimation. Methods of estimation (maximum likelihood method, method of moments).

Basic concepts of sampling surveys, simple random Sampling, stratified random Sampling, Systematic Sampling.Principles of Design of Experiments, ANOVA, CRD, RBD and LSD. Linear Programming Problems (LPP), methods of solution, the concept of duality in LPP, Dual Simplex Method. Transportation problems and assignment problems.

Sequences and Series: Convergence of sequences of real numbers. Functions and its Properties, Limits, Continuity and Differentiability of functions, Function Optima, Increasing & Decreasing Functions. Matrix Algebra and its Properties, Elementary set theory, Vector space, Subspaces, Linear transformations, Rank, Nullity, Eigenvalues, System of linear equations.