REQUIREMENTS / RECOMMENDATIONS

1. That at least one extra hand (preferably with computer knowledge) be provided to meet out the additional work load created due to increased syllabus and addition of computer course.

2. Each department of statistics be equipped with sufficient number of computers to enable the students to carry out their practical work.

3. Each department of statistics must have one lab. Assistant with knowledge of computers to assist the practical work in lab.

4. Some new topics have been included in the revised syllabus and therefore it is necessary that come sort of training be imparted to the teaching staff probably the form of orientation / refresher courses.

5. Use of electronic calculators is allowed in all theory papers as well as practical exams.

6. Every batch of practical must consist of 20 students.

Unified Syllabus of Statistics

Course	Instructions
B.Sc. Part- I & Part – II	There will be three papers of 3 hours duration of 50 marks in each. Practical will be of 50 marks & three hour duration in each year.
B.A Part- I & Part – II	There shall be two theory papers of three hour duration of 33 marks each. Practical will be of 34 marks & three hour duration in each year.
B.Sc Part-III	There will be three theory papers of three hour duration & 75 marks each. Practical would be of 75 marks & three hour duration.
B.A Part – III	There will be three theory paper of three hour duration & 35 marks each. Practical would be of 45 marks & three hour duration.

UNIFIED SYLLABUS OF STATISTICS
B.Sc. Part- I

Paper I: Statistical Methods:

UNIT-I

Concept of statistical population, Attributes and variables (Discrete and Continuous). Different types of scales – nominal, ordinal, ratio and interval. Primary data – designing a questionnaire and schedule, collection of primary data, checking their consistency. Secondary data, its major sources, scrutiny of data for internal consistency and detection of errors of recording. Presentation of data : classification, tabulation, diagrammatic & graphical representation of grouped data. Frequency distributions, cumulative frequency distributions and their graphical representations, histogram, frequency polygon and ogives. Stem and Leaf plot. Box Plot.

UNIT-II

Measures of central tendency – arithmetic mean, median, mode, harmonic mean, geometric mean – their properties, merits and demerits. Measures of dispersion – range, quartile deviation, mean deviation, standard deviation with their merits and demerits, coefficients of dispersion.

UNIT-III

Moments, Sheppard's correction for moments for grouped data (without derivation). Skewness and Kurtosis and their measures including those based on moments and quartiles.

UNIT-IV

Bivariate data, principles of least squares, fitting of polynomial curves and fitting of curves reducible to polynomial form.

Corrlation and Regression, Spearman's rank correlation. Partial and Multiple correlation and Multiple regression for trivariate data, their measures and related results.

UNIFIED SYLLABUS OF STATISTICS
B.Sc. Part- I

Paper – II : Probability

UNIT – I

Random experiment, trial, sample point and sample space, events, operations of events, concepts of equally likely, mutually exclusive and exhaustive events.

Definition of probability : Classical, relative frequency and axiomatic approaches. Discrete probability space, properties of probability under set theoretic approach. Independence of events, Conditional probability, total and compound probability theorems, Bayes theorem and its applications.

UNIT – II

Random variables – discrete and continuous, probability mass function (pmf) and probability density function (pdf), Cumulative distribution function (cdf). Joint distribution of two random variables, marginal and conditional distributions.

UNIT – III

Independence of random variables. Expectation of a random variable (rv) and its properties., expectation of sum of random variables and product of independent random variables, conditional expectation and related problems.

UNIT – IV

Moments, moment generating function (m.g.f.) & their properties, continuity theorem for m.g.f. (without proof). Cumulants and c.g.f., characteristics function (definition only). Chebyshev's inequality. Weak law of large numbers and Central Limit Theorem for a sequence of independently and identically distributed random variables and their applications (statement only).

UNIFIED SYLLABUS OF STATISTICS
B.Sc. Part- I

Paper – III : Probability distributions and Theory of Attributes

UNIT – I

Discrete univariate distributions : Uniform, Binomial, Poisson, Hypergeometric, Geometric and Negative binomial distributions, fitting of binomial and poisson distributions.

UNIT – II

Continuous univariate distributions : Uniform, Normal, Exponential, Gamma, Beta and Cauchy distributions, fitting of normal distribution.

UNIT – III

Exact sampling distributions : chi-square, t and F with distribution function and their simple properties.

UNIT – IV

Theory of attributes : Notion and terminology, Contingency table, class frequencies, ultimate class frequencies, consistency. Association of attributes, independence, measure of association for 2x2 table, Yule's coefficient of association. Contingency tables.

B.Sc. Part- I
PRACTICAL

The practical examination will be based on papers I, II & III and will cover the following experiments.

List of Practical Experiments

1. Graphical representation of data by Histogram, Frequency polygons, frequency curves and Ogives.

2. Calculation of measures of location.

3. Calculation of measures of dispersion.

4. Calculation of moments, measures of skewness and measures of Kurtosis.

5. Fitting of curves by method of least squares.

6. Determination of regression lines and calculation of correlation coefficient – grouped and ungrouped data.

7. Calculation of multiple and partial correlation coefficients for three variables

8. Calculation of measures of association in contingency tables.

9. Testing independence of attributes in m x n contingency table.

10. Fitting of Binomial, Poisson and Normal distributions to observed data.

REFERENCES:

1. Goon, Gupta and Dasgupta : Fundamentals of Statistics, Vol I. The Worlds Press Pvt. Ltd., Calcutta.
2. Yule, G.U. and Kendall, M.G.: An Introduction to the theory of statistics. Charles Griffin & Company Ltd.
3. Gupta, S.C. and Kapoor, V.K. : Fundamentals of Mathematical Statistics, Sultan Chand and Sons, New Delhi.
4. Parzen, E.S. : Modern Probability Theory and Its Applications.
5. Meyer, P.: Introductory Probability and Statistical Applications.
6. Mood A.M., Graybill F.A. and Boes D.C. (1974) : Introduction to the theory of Statistics, McGraw Hill.