

**UNIVERSITY OF KERALA**  
**Complementary Course in STATISTICS**  
for the students of BSc Degree Programme in Mathematics under CBCSS

**SYLLABUS**

Semester: **3**                                      Type of course: **Complementary**  
Course Code: **ST1331.1**                      Course Name: **DISTRIBUTION THEORY AND LIMIT THEOREMS**  
Instruction Hours/Week: **5**                Number of credits: **3**

- Module I**      Standard distributions (discrete): uniform, Bernoulli, binomial, Poisson, geometric and hypergeometric- properties
- Module II**      Standard distributions (continuous)-      rectangular triangular, exponential gamma, beta and Normal distribution- properties.
- Module III**      Law of large numbers, Chebycheff's inequality, convergence in probability, weak law of large numbers, Bernoulli's law of large numbers, central limit theorem (Lind berg-Levy form statement only).
- Module IV**      Standard multivariate distributions: multinomial, bivariate normal, marginal & conditional distributions.
- Module V**      Sampling distributions: definitions of statistic, parameter, sampling distribution and standard error. sampling distributions of mean and variance, chi-square, t and F distributions (derivation for the distribution of chi-square only), distribution of sum of squares of n independent standard normal variates. Examples of statistics following t and F distribution. Relation between normal, t, chi-square and F distributions.

**References**

1. J. Medhi: *Statistical Methods-an introductory text*, New Age International (P) Ltd.
2. John. E. Freund: *Mathematical Statistics*, Prentice Hall of India
3. S. C. Gupta and V. K. Kapoor: *Fundamentals of Mathematical Statistics*, Sultan Chand and Sons.
4. Mukhopadhaya. P: *Mathematical Statistics*, New Central Book Agency (P) Ltd, Calcutta.
5. Rohatgi V.K, *An Introduction to probability theory & Mathematical Statistics* Wiley-Eastern.

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*PS: This is only a copy of the syllabus of the course, published by the University and is primarily intended to provide an easy reference to the students of the course. As the University is the final authority, as far as the syllabus of a course is concerned, the students are advised to verify that the University has not made subsequent changes in the syllabus of the course.*