THEORY OF PROBABILITY

Course No: **MM24104CR**   Total Credits: **04**
Semester: **M.A/M.Sc 1st Semester**   Total Marks: **50**
<u>Continuous Assessment: **Marks 10**, **Theory Marks: 40**</u>   Time Duration: **1½ Hrs**

Course objectives: To make the students understand random experiments and their behavior in order to measure degree of occurrence of events in various situations.

Course Outcomes: The Theory of Probability course equips students with a comprehensive understanding of the fundamental principles and concepts underlying probability theory. Upon successful completion of this course, students will have understood the core concepts of probability, including sample spaces, events, random variables, and probability distributions etc.

UNIT-I
The probability set functions, its properties, probability density function, the distribution function and its properties, mathematical expectations, some special mathematical expectations, inequalities of Markov, Chebyshev and Jensen.

UNIT-II
Conditional probability, independent events, Baye's theorem, distribution of two and more random variables, marginal and conditional distributions, conditional means and variances, correlation coefficient, stochastic independence and its various criteria.

Recommended Books:

1. Hogg and Craig, An Introduction to the Mathematical Statistics, Pearson Education, Old Edition 2006.
2. Carl Joseph West, Introduction to Mathematical Statistics, Fogotten Books, 2018.
3. Richard J. Larsen and Morris L. Marx, An Introduction to Mathematical Statistics and its Applications, United States Edition, Pearson.