Publisher’s description: Probability theory is a discipline that studies the quantitative regularity of random phenomena. The fact that random phenomena arise, especially in the era of big data and artificial intelligence, determines the importance of this discipline. This volume introduces various concepts that quantitatively describe random phenomena, including probability, random variables, distribution functions, density functions, mathematical expectations, variances, moments, and characteristic functions. It finishes off by presenting probability limit theory, including various convergences.

Throughout the volume, great importance is attached to the elaboration of probability thoughts. For this reason, some practical examples to illustrate the introduced concept are always used. In order to meet the needs of different levels of readers, there is a section on Supplements and Notes at the end of each chapter to enhance and expand the content in the body of the textbook. This volume contains a large number of problems of varying levels for the reader with the purpose to review, consolidate, deepen and expand their knowledge.

As the only branch of mathematics that studies the quantitative regularity of random phenomena, probability theory has not only theoretical significance, but it is also a main theoretical basis of mathematical statistics. Therefore, it will be of interest to scholars from other disciplines related to random phenomena.

MSC:
60-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to probability theory
60A05 Axioms; other general questions in probability
62-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to statistics
62A01 Foundations and philosophical topics in statistics
97K50 Probability theory (educational aspects)

Full Text: DOI