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**Zbl 1001.62002****Georgii, Hans-Otto****Stochastics. Introduction to probability theory and statistics. (Stochastik. Einführung in die Wahrscheinlichkeitstheorie und Statistik.)** (German)  
Berlin: de Gruyter. ix, 356 S. (2002).

This book is primarily addressed to students of mathematical and neighbouring sciences and can be used as an introductory course in probability theory and statistics. It contains all major topics that usually belong to a two-semester university course. The book consists of 12 chapters and is logically divided into two equal parts.

Chapters 1-6 are devoted to the basics of probability theory. Chapter 1 introduces the notions of probability space, probability measure and random variable. In contrast to many books, no special emphasis is laid on discrete random variables. However, only necessary tools from measure theory are used. Chapter 2 is devoted to the standard models of probability theory: uniform, Poisson, exponential and normal distributions, and urn models with and without replacement. Chapter 3 deals with conditional probabilities and independence, simulation of random variables, Kolmogorov's zero-one law and Borel-Cantelli lemma. Expectation and variance are introduced in Chapter 4 together with generating functions. The law of large numbers and the central limit theorem constitute the contents of Chapter 5. The theory of discrete-time Markov chains (Markov property, stationary distributions, recurrence, etc.) appears in Chapter 6 and finishes the first part of the book.

Chapter 7 explains the subject of statistics, introduces the maximum-likelihood principle and different types of estimates. Chapter 8 is devoted to confidence intervals. Chapter 9 deals with multidimensional normal distributions and related  $\chi^2$ ,  $F$  and  $t$  distributions. Hypothesis testing is the subject of Chapter 10. Asymptotical  $\chi^2$ -tests and rank-order statistics are studied in Chapter 11. The last Chapter 12 is devoted to regression and variance analysis.

The book contains a lot of illuminating examples and figures. Each chapter ends with a set of supplementary problems (without answers and solutions).

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\*62-01 Textbooks (statistics)

60-01 Textbooks (probability theory)