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## Statistical theory of reliability and life testing: probability models.

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**Title :** Statistical Theory of Reliability and Life Testing: Probability Models,

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**Abstract :** This is the first of two books on the statistical theory of reliability and life testing. The present book concentrates on probabilistic aspects of reliability theory, while the forthcoming book will focus on inferential aspects of reliability and life testing, applying the probabilistic tools developed in this volume. This book emphasizes the newer, research aspects of reliability theory. The concept of a coherent system serves as a unifying theme for much of the book. A number of new classes of life distributions arising naturally in reliability models are treated systematically: the increasing failure rate average, new better than used, decreasing mean residual life, and other classes of distributions. As the names would seem to indicate, each such class of life distributions provides a realistic probabilistic description of a

physical property occurring in the reliability context. Also various types of positive dependence among random variables are considered, thus permitting more realistic modeling of commonly occurring reliability situations.

**Descriptors :** \*RELIABILITY , \*STATISTICAL ANALYSIS , MAINTENANCE , MATHEMATICAL MODELS , RANDOM VARIABLES , PROBABILITY , SYSTEMS ANALYSIS , LIFE TESTS , SPARE PARTS , DISTRIBUTION FUNCTIONS , TEXTBOOKS , REPLACEMENT THEORY

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