

Essentials of Reliability Engineering

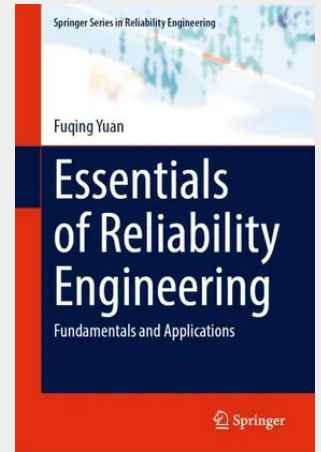
Fundamentals and Applications

This book focuses on the most salient and practical concepts and methods in reliability engineering. As a multidisciplinary field, reliability engineering spans science, engineering, and management. It introduces fundamental mathematical techniques to help readers grasp the underlying theory and, when necessary, develop their own methods. A significant portion of the book is dedicated to reliability analysis using probability and statistics, including some advanced statistical approaches. To aid comprehension of more complex techniques, simulation verification and demonstration are employed throughout.

The book also explores simulation methods for reliability analysis. Although relatively new, simulation is a highly effective and increasingly popular approach. It also covers the physics of certain failure mechanisms, which are closely tied to accelerated life testing - an essential practice in modern industry. Each chapter includes numerical examples to support hands-on practice and the application of the discussed methods.

Designed as a textbook for senior undergraduate and graduate students, the book also serves as a reference for researchers developing their own reliability methodologies. It includes detailed definitions and proofs of key mathematical and statistical theories to ensure the content is self-contained. For methods requiring programming, the book provides comprehensive algorithms to guide readers through implementation.

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