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Stochastic processes with applications to reliability theory.

Springer Series in Reliability Engineering. New York, NY: Springer (ISBN 978-0-85729-273-5/hbk; 978-0-85729-274-2/ebook). ix, 251 p. (2011).

The addressed readership of this book is the reliability engineering community, especially engineers looking for a "book written in an easy style on stochastic processes to be able to understand readily reliability theory". Chapter headings and some additional remarks: Poisson processes (homogeneous and nonhomogeneous, compound); renewal processes (alternating); Markov chains (discrete- and continuous-time); semi-Markov and Markov renewal processes; cumulative processes (damage models, replacement); Brownian motion and Levy processes (damage models); redundant systems (recalling many of the processes from the previous chapters with a view towards applications). The book can serve as a first attempt to find needed facts in the area of stochastic processes, in my opinion its value lies in the included pointers to more detailed works. It can be recommended as a first step into the field if one needs help on the theory and applications of stochastic processes. Because each chapter includes a substantial list of references, I think it might be helpful in this direction. Nevertheless, the book itself provides many exercises and examples which might be helpful for reliability engineers interested in becoming more familiar with stochastic processes on a level above introductory courses. In my view, there is also another audience for this book: teachers of courses in stochastic processes on an undergraduate or graduate level who want to include examples of applications of stochastic processes in reliability. In this direction, I find this book a valuable source of examples which will be helpful for students, although I would not recommend to use the book as a textbook for such courses.

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Classification: K10
Keywords: Poisson processes; renewal processes; Markov chains; semi-Markov and Markov renewal processes; cumulative processes; Brownian motion and Levy processes
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