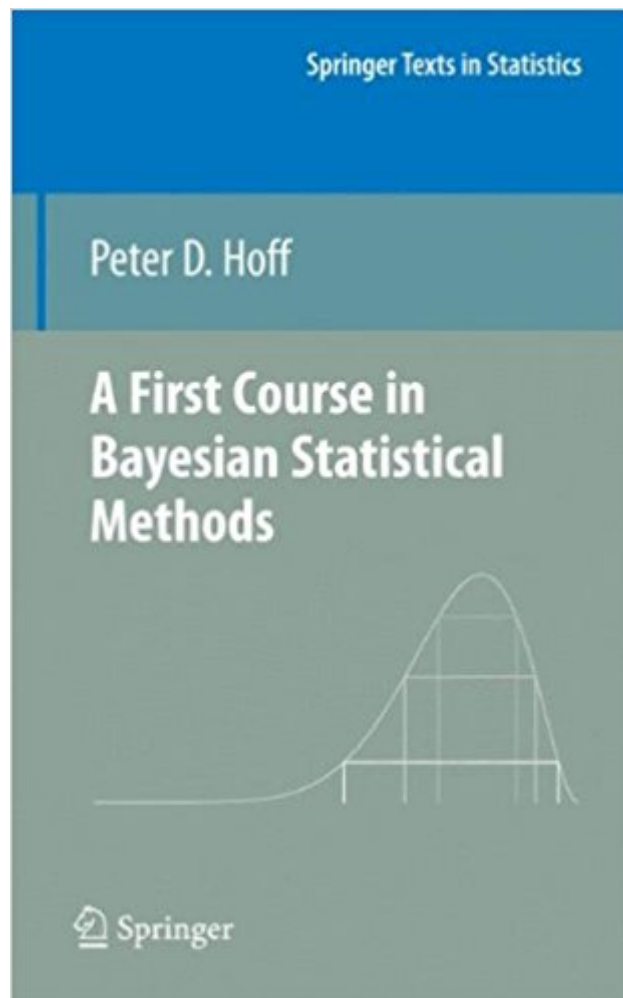




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# A First Course In Bayesian Statistical Methods (Springer Texts In Statistics)



## Synopsis

A self-contained introduction to probability, exchangeability and Bayes's rule provides a theoretical understanding of the applied material. Numerous examples with R-code that can be run "as-is" allow the reader to perform the data analyses themselves. The development of Monte Carlo and Markov chain Monte Carlo methods in the context of data analysis examples provides motivation for these computational methods.

## Book Information

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## Customer Reviews

From the reviews: This is an excellent book for its intended audience: statisticians who wish to learn Bayesian methods. Although designed for a statistics audience, it would also be a good book for econometricians who have been trained in frequentist methods, but wish to learn Bayes. In relatively few pages, it takes the reader through a vast amount of material, beginning with deep issues in statistical methodology such as de Finetti's theorem, through the nitty-gritty of Bayesian computation to sophisticated models such as generalized linear mixed effects models and copulas. And it does so in a simple manner, always drawing parallels and contrasts between Bayesian and frequentist methods, so as to allow the reader to see the similarities and differences with clarity. (Econometrics Journal) "Generally, I think this is an excellent choice for a text for a one-semester Bayesian Course. It provides a good overview of the basic tenets of Bayesian thinking for the common one and two parameter distributions and gives introductions to Bayesian regression,

multivariate-response modeling, hierarchical modeling, and mixed effects models. The book includes an ample collection of exercises for all the chapters. A strength of the book is its good discussion of Gibbs sampling and Metropolis-Hastings algorithms. The author goes beyond a description of the MCMC algorithms, but also provides insight into why the algorithms work. I believe this text would be an excellent choice for my Bayesian class since it seems to cover a good number of introductory topics and give the student a good introduction to the modern computational tools for Bayesian inference with illustrations using R. (Journal of the American Statistical Association, June 2010, Vol. 105, No. 490)

Statisticians and applied scientists. The book is accessible to readers having a basic familiarity with probability theory and grounding statistical methods. The author has succeeded in writing an acceptable introduction to the theory and application of Bayesian statistical methods which is modern and covers both the theory and practice. This book can be useful as a quick introduction to Bayesian methods for self study. In addition, I highly recommend this book as a text for a course for Bayesian statistics. (Lasse Koskinen, International Statistical Review, Vol. 78 (1), 2010)

The book under review covers a balanced choice of topics presented with a focus on the interplay between Bayesian thinking and the underlying mathematical concepts. The book by Peter D. Hoff appears to be an excellent choice for a main reading in an introductory course. After studying this text the student can go in a direction of his liking at the graduate level. (Krzysztof ÅatuszyÅ„ski, Mathematical Reviews, Issue 2011 m)

The book is a good introductory treatment of methods of Bayes analysis. It should especially appeal to the reader who has had some statistical courses in estimation and modeling, and wants to understand the Bayesian interpretation of those methods. Also, readers who are primarily interested in modeling data and who are working in areas outside of statistics should find this to be a good reference book. It should appeal to the reader who wants to keep with modern approaches to data analysis. (Richard P. Heydorn, Technometrics, Vol. 54 (1), February, 2012)

This book provides a compact self-contained introduction to the theory and application of Bayesian statistical methods. The book is accessible to readers having a basic familiarity with probability, yet allows more advanced readers to quickly grasp the principles underlying Bayesian theory and methods. The examples and computer code allow the reader to understand and implement basic Bayesian data analyses using standard statistical models and to extend the standard models to specialized data analysis situations. The book begins with fundamental notions such as probability, exchangeability and Bayes' rule, and ends with modern topics such as variable selection in regression, generalized linear mixed effects models, and semiparametric copula estimation.

Numerous examples from the social, biological and physical sciences show how to implement these methodologies in practice. Monte Carlo summaries of posterior distributions play an important role in Bayesian data analysis. The open-source R statistical computing environment provides sufficient functionality to make Monte Carlo estimation very easy for a large number of statistical models and example R-code is provided throughout the text. Much of the example code can be run ``as is'' in R, and essentially all of it can be run after downloading the relevant datasets from the companion website for this book. Peter Hoff is an Associate Professor of Statistics and Biostatistics at the University of Washington. He has developed a variety of Bayesian methods for multivariate data, including covariance and copula estimation, cluster analysis, mixture modeling and social network analysis. He is on the editorial board of the *Annals of Applied Statistics*.

The text is fine, although as another reviewer mentioned - the homework is frustrating. None of it is the sort of problem where you can go back and follow along with work done in the chapter. Not at all good for someone who prefers to learn by first mimicking, and then exploring. No, the BIG problem is that many of the formulas are stored as images since equations are incompatible with the file format. If you try to increase the text size so you can actually read them, the formulas stay the same tiny size. Trying to use the windows accessibility tools just results in a pixelated illegible formula. I would love to have all my texts in electronic format, but not until this issue can be fixed.

Good Bayesian stat book but not really intro...Concepts are clear and examples are decent. But this is not an easy book. Definitely not intro.

This is an appropriate practical introduction to Bayesian methods for someone who has taken both a college-level probability and statistics course. The multidimensional examples may require a bit of linear algebra. It doesn't include much comparison with frequentist techniques, so some familiarity there would help the reader put the ideas in context. Compared to a book like Christian Robert's excellent *The Bayesian Choice*, this book may appear inadequate, because it is less than half the size, is often less dense and scholarly, and is (currently at ) almost double the price. However, I'm happy I have both because Hoff's book is more practical for someone who actually wants to use Bayesian statistics in practical situations. Hoff spends a lot of time discussing simple examples with wide application, and he actually shows the R code to compute the answers with MCMC techniques. However, after reading the book, I still don't feel totally prepared to apply R in real-life Bayesian situations. It would be nice for a practical book like Hoff's to include some hands-on tips

about how to do these problems (R packages to use, basic modeling strategies, common pitfalls, speed concerns, assessing convergence, etc.).

Peter does a great job explaining material clearly. However, I really wish he offered solutions to problems in the back of the book. This would make self-learning easier.

This is an excellent book but will be easier to understand if you have a M.S. level knowledge of classical (frequentist) statistics. It is clear, concise, and has good examples.

This is a great introductory book for someone wanting an understandable, practical overview of the subject. I am currently half-way through the book, but have so far been very pleased. The book has clear and useful examples scattered throughout the chapters which help illuminate the ideas and procedures (I am doing this self-paced, not as part of a course). The book also appears to cover a wide variety of topics; several of my coworkers are very familiar with Bayesian Statistics and looking through the table of contents they seemed interested in reading it after I was done. Overall, I find this a good intro book. It doesn't focus on proofs and theorems, but on using the mechanisms presented.

The book is used for my Bayesian stats class. I think it's easy to read and very clear. But you should make sure you do have some prior knowledge about statistics and probability, because the author takes it as granted.

The identity on p. 94 alone is worth the price of admission, but a few of the others sections--like the one on missing data--standout as well.

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