measured with error. The role and effect of measurement errors in mixed effects models is discussed in Chapter 11. Chapter 12 investigates the effect of measurement errors in time series models including random-walk and linear auto-regressive models. The material that is presented in these two chapters is, to my knowledge, not available in any other book on this area. The last chapter is brief and covers background material that is needed to understand the mathematical and statistical details of topics covered in the earlier chapters of the book. The derivations of the results appearing in all the chapters are moved to separate sections in the respective chapters. This helps those readers who are only interested in the application of the methodologies. All the topics are illustrated and supplemented with data-based examples in all the chapters.

This book should be of immense help to those who are interested in the theoretical as well as applied aspects of measurement error models. Parts of the book are quite technical and the reader would require a substantial mathematical and statistical background to understand them. Some topics in the book may be used to teach advanced graduate courses. There are no exercises in the chapters: some would have been very useful for teaching and would have opened research problems for learners in this area. The book is overall well written, presents updated developments in the area of measurement error models and is an excellent guide to applications. I am sure that it will stimulate researchers in and newcomers to this area.

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Time Series Analysis with Applications in R, 2nd edn
J. D. Cryer and K. Chan, 2008
492 pp., £64.99
New York, Springer
ISBN 978-0-387-75958-6

This book is a comprehensive time series analysis text covering fundamental concepts such as stationarity and auto-correlation, all the way up to complex generalized auto-regressive conditional heteroscedastic financial modelling and spectral analysis. It is specifically intended to be used in conjunction with the programming language R and, although the theory is relevant to all analysts, a major benefit of the book would be lost to those users who do not intend to use R for their analysis.

The R package `TSA` which accompanies the book contains all the basics necessary for carrying out time series analysis and auto-regressive integrated moving average modelling, along with the data sets that are used in the book. It also includes new and useful functions such as `eacf` (which computes the extended auto-correlation function of a time series) and `prewhiten` (which allows the cross-correlation of two time series to be investigated in a meaningful way by transforming the data to approximate white noise).

The exercises in the book mainly focus on using R code, enabling the reader to gain a deeper understanding of the concepts and functions under consideration. However, there is also plenty in Chapters 1–6 to reinforce the readers' understanding of the algebra and theory which form the basis for the more complex analysis to come. One drawback with the book is that to access the exercise answers one has to have 'instructor' rights on the publisher's Web site. Although this is a sensible way of ensuring that students for whom this is a set text genuinely work through the exercises, it is frustrating for those readers who are undertaking self-study and would benefit from being able to check their answers.

The layout of the book makes it easy to use as a reference text, with technical appendices included at the end of each relevant chapter. Extensive use of graphical analysis of both simulated and observed data sets helps the reader to gain a good understanding of how to interpret real life results. A section of the book provides a brief overview of the R software, and there are detailed explanations of the code throughout. For readers who are not familiar with R though, it is likely that some further introductory notes would be necessary; however, plenty of documentation is freely available on line if this were so.

Overall I would recommend this as an easy-to-use R manual for time series analysis; it assumes little prior knowledge but manages to convey both the basics and more complex theory in a very accessible manner.

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Fundamentals of Probability: a First Course
A. Dasgupta, 2010
New York, Springer
xvi + 494 pp., €89.95
ISBN 978-1-441-95779-5

This book is principally written as a textbook and aims to provide a solid background on probability theory and related topics to students entering the field of statistics at an undergraduate level. The book offers a compact, self-contained and complete view of topics of probability theory. Many other books are available on the topics that are covered in this book but it has some advantages which enhance the value of the book. The chapters start with motivating examples and all the topics are also explained with many examples. This keeps alive the interest of a reader to learn the topics of probability theory throughout the book. Wherever possible, the author has demonstrated the use of computers in understanding the theoretical topics. This gives a perfect blend of use of modern techniques to understand the classical theories. At the end of every chapter, the author has presented a synopsis of the results in the chapter. This will be very helpful for a student to review the various definitions and results quickly. There are many worked examples and exercises. The unsolved exercises range from simple to difficult problems and the difficult problems are marked separately.

The book has 15 chapters. Chapter 1 introduces the notation and basics for the development of probability theory in further chapters. The birthday and matching problems are briefly described in Chapter 2. The concepts of conditional probability are introduced in Chapter 3. Various definitions and topics related to a discrete random variable are discussed in Chapter 4. Chapter 5 briefly introduces generating functions. Some discrete distributions and their properties are presented in Chapter 6. Various concepts and topics related to continuous random variables are discussed in Chapter 7 and some continuous distributions are detailed in Chapter 8. Different aspects of the normal distribution are illustrated in Chapter 9. Chapter 10 covers the central limit theorem and the normal approximation to the binomial, Poisson and gamma distributions. The concepts, definitions and distributions in a multivariate set-up for discrete and continuous random variables are explained in Chapters 11 and 12 respectively. Convolutions and transformations of random variables are detailed in Chapter 13. Chapter 14 addresses topics that are related to Markov chains in reasonable detail. Lastly, various concepts related to urn models which are primarily used in physics and genetics are detailed in Chapter 15.

The language of the book is simple to understand. The concepts of probability theory are described with motivating examples and the description of mathematical development is sufficiently detailed to understand. This book strikes a very good balance at the level of description of contents and the detail of explanation of concepts that students at undergraduate level need. I strongly recommend it as a textbook. In summary, the book provides a good introduction to the various topics of probability theory to mathematically able students and will achieve its goal of teaching the basics of probability theory to beginner students in statistics.

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Nonparametric Statistical Inference, 5th edn
J Dickinson Gibbons and S. Chakraborti, 2010
Boca Raton, Chapman and Hall–CRC Press
xx + 630 pp., $99.95
ISBN 978-1-420-07761-2

This is the fifth edition of the much-celebrated classical textbook authored by Professor Gibbons in 1971, published by McGraw Hill. There are no doubts that this book laid the foundations of teaching non-parametric statistics at undergraduate level. The previous editions of this book have been widely reviewed and received much appreciation. This is an introductory text and aims to lay the foundation for learning the topics and concepts in non-parametric inference. There have been many more books covering topics that are similar to this one but its many qualities, e.g. the clear style of writing and presentation of topics and simple language to grasp, cater for readers very fruitfully and it will remain the preferable choice.

Chapter 1 introduces the fundamentals for understanding the concepts of non-parametric inference and provides a sound basis for the rest of the book. Chapter 2 is devoted to order statistics and related concepts. Tests of randomness based on the theory of runs and tests of goodness of fit are presented in Chapters 3 and 4 respectively. Tests based on signs and ranks of observations in one sample and paired samples are detailed in Chapter 5. Various well-known tests, i.e. the Wald–Wolfowitz runs test, Kolmogorov–Smirnov test, median test, control median test and Mann–Whitney test, and their related aspects for two-sample problems are discussed in Chapter 6. The next three chapters concern the linear rank statistic, and its properties are discussed in Chapter 7. Various tests based on linear rank statistics for location and scale problems are described in Chapters 8 and 9 respectively. Several tests for the equality of more than two independent samples are covered in Chapter 10. Chapters 11 and 12 concern measures of association in bivariate samples and multiple classifications respectively. Chapter 11 deals with Kendall's τ-coefficient and Spearman's rank correlation coefficient, whereas