Statistics and Data Analysis From Elementary to Intermediate, by A. C. TAMHANE and D. D. DUNLOP, Upper Saddle River, NJ: Prentice Hall, 2000, ISBN 0-13-744426-5, xiv + 722 pp., + disk, $85.33.

This textbook is designed to be a one-year, calculus-based coverage of statistics and data analysis for advanced undergraduates or graduate students who have completed a semester of probability and have a familiarity with matrix algebra. Tamhane and Dunlop state that they have attempted to model their work after the following notable textbooks: *Statistics*, by Freedman, Pisani, and Purves (1998); *Introduction to the Practice of Statistics*, by Moore and McCabe (1999); and *Mathematical Statistics and Data Analysis*, by Rice (1988). I believe that they did, in fact, rise to the high standard that they set for themselves. *Statistics and Data Analysis* is a readable, well-organized, and interesting textbook. It is incredibly thorough and written at an appropriate level for the target audience. The authors included a wealth of illuminating and motivating examples and exercises.

Of the three textbooks just mentioned, only the one by Rice (1988) is designed for an audience fairly similar to that of *Statistics and Data Analysis*, so I will briefly compare and contrast the two. Rabinowitz (1989) noted four unique features of the first edition of Rice's textbook that Ziegel (1995) reiterated in his review of the second edition (Rice 1994). They are worthy of mention here because Tamhane and Dunlop's work preserves each of them. Paraphrasing Ziegel, they are as follows:

The use of practical applications from many different fields
The generous use of statistical computing in examples and exercises
The introduction to survey sampling before statistical inference
The reduction of detail within some of the proofs (it is often included in optional sections)

I should point out that, although Tamhane and Dunlop do emphasize statistical computing, they have elected not to include any software instruction within the text and few example printouts are included. The authors state in the book's preface that packages are constantly evolving and that any software instruction would quickly become obsolete. They were right. According to the book's preface and Web site, one may currently elect to adopt this text bundled with SPSS Student Version 9. Anyone considering it for adoption, however, should be aware that SPSS introduced Version 10 at the end of 1999 and that representatives of the publisher with whom I have spoken are completely unaware of this bundling arrangement.

The textbook differs from the one by Rice primarily in the collection of topics presented. As with most textbooks at this level, Rice included probability in Chapters 1–6. He then addressed survey sampling in Chapter 7 and statistical inference in Chapters 8–15. Together these chapters form a two-semester course. Tamhane and Dunlop instead assume that their audience has completed a one-semester course in probability. (The authors suggest that their chapter on probability could serve as a condensed introduction to that subject in a probability and statistics course, but I believe that it is far too abbreviated for such a purpose.) By reducing the coverage of probability, the authors are able to cover several topics including data collection, many useful sample size formulas, summarizing time series data, multiple comparisons of means, computer-intensive methods like the bootstrap and jackknife methods, diagnostics, prediction, and tolerance intervals more extensively than most other textbooks. The table of contents for *Statistics and Data Analysis* follows. Clearly it is an ambitious one for a mathematical statistics textbook.

Chapter 1: Introduction
Chapter 2: Review of Probability
Chapter 3: Collecting Data
Chapter 4: Summarizing and Exploring Data
Chapter 5: Sampling Distributions of Statistics
Chapter 6: Basic Concepts of Inference
Chapter 7: Inferences for Single Samples
Chapter 8: Inferences for Two Samples
Chapter 9: Inferences for Proportions and Count Data
Chapter 10: Simple Linear Regression and Correlation
Chapter 11: Multiple Linear Regression
Chapter 12: Analysis of Single Factor Experiments
Chapter 13: Analysis of Multifactor Experiments
Chapter 14: Nonparametric Statistical Methods
Chapter 15: Likelihood, Bayesian, and Decision Theory Methods
Appendix A: Tables
Appendix B: Abbreviated Answers to Selected Odd-Numbered Exercises

My only complaint is that, in their attempt to write an all-encompassing textbook, Tamhane and Dunlop all but omit Bayesian inference. The brevity of the section, the lack of interesting practical examples, and the near absence of exercises from that section are less than satisfying considering the ever-increasing role of Bayesian methods within statistics. Despite that fact, the authors have done a marvelous job of presenting an enormous amount of material and should be applauded for doing so. They state that one of their goals was to develop both a textbook and a thorough reference book. Tamhane and Dunlop have certainly accomplished that. As the authors note, however, most curricula do not allow for a two-semester course after a prerequisite of probability. As long as that remains true, *Statistics and Data Analysis* is not likely to be widely adopted. I do, however, hope that I am wrong.

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