This textbook is uniquely written with dual purpose. It cover cores material in the foundations of computing for graduate students in computer science and also provides an introduction to some more advanced topics for those intending further study in the area. This innovative text focuses primarily on computational complexity theory: the classification of computational problems in terms of their inherent complexity. The book contains an invaluable collection of lectures for first-year graduates on the theory of computation. Topics and features include more than 40 lectures for first year graduate students, and a dozen homework sets and exercises.

My Personal Review:
In 1991 I took a class at Cornell called CS681 The Design and Analysis of Algorithms ([Koz92]). At that time, Professor Kozen had finalized his manuscript for a book by the same name based on the class. I wanted to follow this class up with its sequel, CS682 Theory of Computation, but instead I went out and started a career in software engineering. Now that I am back in graduate school (at a different institution), I was pleased when I learned that the lectures for CS682 were available in the book Theory of Computation by Dexter Kozen ([Koz06]). Although the class which the book is based on has CS681 as a prerequisite, I would say that it would be a mistake to say that one needs to read [Koz92] in order to understand [Koz06]. I am only halfway through [Koz06], but it seems to me that the only prereqs required for this book are an ordinary graduate-level class in algorithms (such as CS482 at Cornell or CS600 at Stevens), a class on automata and some exposure to the NP-hierarchy and reductions. The latter is covered in CS681 at Cornell but can be learned in a wide variety of other forums including CS601 Algorithmic Complexity at Stevens. All the material required to understand this book can be found in the qualifying exams or courses for most computer science programs.
Although I have only read through lecture 20 (of 41), I have found immediate applications of the material in this book to my research. In fact, last night after reading lecture 18 I was able to add a footnote to a journal submission directing the reader to this lecture for a 7/8-approximation algorithm and a proof that MaxSAT is polynomially solvable iff P=NP. These are both results that my paper cites from separate research papers and it pleased me that I was now able to point the reader to a text for further study. I also have learned about many exotic complexity classes and problems in this book, some of which I had encountered in research-level seminars in the past few years. Having a single text that I can read to learn about all of these results is a godsend.

I strongly recommend this book to anyone who is pursuing study or research in computer science at the doctoral level, particularly if they have an interest in theory, complexity or cryptography. This book has already been enormously useful to me. I would like to teach a class someday based on this book.

For More 5 Star Customer Reviews and Lowest Price:
Theory of Computation (Texts in Computer Science) by Dexter C. Kozen - 5 Star Customer Reviews and Lowest Price!