Discrete Mathematics and Its Applications covers the fundamental concepts and techniques of discrete mathematics, including logic, set theory, algorithms, counting, discrete probability, graph theory, and number theory. The text is designed for students preparing for future coursework in areas such as mathematics, computer science, and engineering. It emphasizes problem-solving techniques, pattern recognition, conjecturing, induction, applications of varying nature, proof techniques, and algorithm development. The book is approachable and teaches an understanding of discrete objects and the methods of proof. It surveys highlights open questions to inspire further research. Chapters are written by experts in their fields, and extensive bibliographies are provided at the end of each chapter.