



## PREFACE TO THE FIRST EDITION

This is a concise textbook for a Discrete Mathematics course at an introductory level for students majoring in mathematics, computer science, engineering and technology. This textbook introduces mathematical structures and methods used to study discrete processes as opposed to continuous processes. Discrete Mathematics is a prerequisite of many courses ranging from abstract algebra, geometry, topology, combinatorics, logic and mathematical modeling to logic design and operational research. To increase readability for students specializing in science, engineering and technology the present textbook focuses on the interplay between disciplines. The

material covers such concepts as basic set theory, functions, relations, recursion, counting, propositional logic and Boolean algebra, graphs and trees. The textbook also introduces mathematical methods of proof such as proof by induction, proof by truth table, proof by Venn diagram, proof by pigeonhole principle, etc.

This textbook is based on my lectures in Discrete Mathematics that I have given for many years at the Eastern Mediterranean University. The textbook consists of ten chapters presented according to the logical precedence of the topics. For a better understanding of the material, the textbook offers 47 examples, 67 solved problems and 161 chapter-ending exercises to be solved during or after the classes. Appendix B provides answers and solutions to the chapter-ending exercises presented in this textbook. Textbook contains over 80 figures and illustrations designed to stand for reinforcement of the provided content.

### **CHANGES IN THE SECOND EDITION**

The second edition is a review with changes based on feedback from students, instructors, and author insights. In the present edition, I corrected misprints and rephrased ambiguous explanations throughout the book. Over 30 new chapter-ending exercises, both routine and challenging, have been added to clarify material where students often have difficulty. Text on highly relevant applications from check for syntax errors in computer programs to organization of recursive algorithms, have been added. The result is a new edition that offers an improved content of topics which will help students more easily learn the material. I hope that instructors and students will closely examine this new edition to discover how it might meet their needs.

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