Publisher’s description: Graph theory is the study of interactions, conflicts, and connections. The relationship between collections of discrete objects can inform us about the overall network in which they reside, and graph theory can provide an avenue for analysis.

This text, for the first undergraduate course, will explore major topics in graph theory from both a theoretical and applied viewpoint. Topics will progress from understanding basic terminology, to addressing computational questions, and finally ending with broad theoretical results. Examples and exercises will guide the reader through this progression, with particular care in strengthening proof techniques and written mathematical explanations.

Current applications and exploratory exercises are provided to further the reader’s mathematical reasoning and understanding of the relevance of graph theory to the modern world.

Features:

- The first chapter introduces graph terminology, mathematical modeling using graphs, and a review of proof techniques featured throughout the book.
- The second chapter investigates three major route problems: eulerian circuits, hamiltonian cycles, and shortest paths.
- The third chapter focuses entirely on trees – terminology, applications, and theory.
- Four additional chapters focus around a major graph concept: connectivity, matching, coloring, and planarity. Each chapter brings in a modern application or approach.
- Hints and solutions to selected exercises provided at the back of the book.

MSC:

- 05-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to combinatorics
- 05Cxx Graph theory

Full Text: DOI