1. Record Nr. UNINA9910139466803321

Titolo	Operations research and networks [[electronic resource] /] / edited by Gerd Finke
Pubbl/distr/stampa	London, : ISTE Hoboken, NJ, : J. Wiley & Sons, 2008
ISBN	1-118-61749-5 1-282-16546-1 9786612165467 0-470-61175-8 0-470-61026-3
Descrizione fisica	1 online resource (282 p.)
Collana	Geographical information systems series
Altri autori (Persone)	FinkeGerd
Disciplina	658.4/032 658.4034
Soggetti	Network analysis (Planning) Operations research Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Operations Research and Networks; Table of Contents; Introduction; Chapter 1. Linear Programming; 1.1. Fundamental concepts; 1.2. Software; 1.3. Indivisible units; 1.4. Modeling with integer variables; 1.5. Conclusion; 1.6. Bibliography; Chapter 2. Graphs and Networks; 2.1. The concept of a graph; 2.2. Sub-structures and exploration; 2.3. Edge- and vertex-connectivity; 2.4. Directed graphs; 2.5. Valued graphs and networks; 2.5.1. The shortest spanning tree problem in a connected graph; 2.5.2. The shortest path; 2.6. Assignment and coloring; 2.6.1. Matchings; 2.6.2. Vertex colorings 2.7. Flow in networks2.8. Conclusion; 2.9. Bibliography; Chapter 3. Classical Combinatorial Problems and Solution Techniques; 3.1. Introduction; 3.2. Classical optimization problems; 3.2.1. Introduction; 3.2.2. Combinatorial optimization problems in graph theory; 3.2.3. Assignment Problems; 3.2.4. Transportation problems; 3.2.5. Location problems; 3.2.6. Scheduling problems; 3.3. Complexity; 3.4. Solution

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4.9. Conclusion4.10. Bibliography; Chapter 5. Operations Management in Transportation Networks; 5.1. Introduction; 5.1.1. A bit of history; 5.1.2. University-industry: a winning partnership; 5.2. Fundamental notions; 5.2.1. A common structure; 5.2.2. The shortest path problem with time windows; 5.2.3. Some mathematics; 5.2.4. A generic algorithm; 5.3. A mechanism of decomposition; 5.3.1. Local restrictions and global constraints; 5.3.2. The column generation method; 5.3.3. Solutions satisfying the integrality constraints; 5.4. Diversity of the local restrictions
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6.3.3. Arc routing problems with capacity constraints

Sommario/riassunto

This book presents the principal concepts of operations research (OR) as tools for the planning, support, and management of various types of networks, including both physical and logical networks. It analyzes real problems, and offers a collection of models for many application areas, together with the corresponding solution techniques. Following this, important application areas are addressed, such as project scheduling, distribution networks, telecommunication networks, and planning of satellite imaging. Anyone involved in the theory or practice in this field will find this a vital resource.