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Book review of Project Scheduling with Time Windows and Scarce Resources: Temporal and Resource-Constrained Project Scheduling with Regular and Non-regular Objective Functions 2nd Edition. By K. NEUMANN, C. SCHWINDT and J. ZEMMERMANN (Springer-Verlag, 2003), xiii + 385 pp. (hbk), EUR 84.95, £65.50, SFr 141.00, US$ 89.95, ISBN 3-540-40125-3

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Book review

Project Scheduling with Time Windows and Scarce Resources: Temporal and Resource-Constrained Project Scheduling with Regular and Non-regular Objective Functions 2nd Edition. By K. NEUMANN, C. SCHWINDT and J. ZEMMERMANN (Springer-Verlag, 2003), xiii + 385 pp. (hbk), EUR 84.95, £65.50, SFr 141.00, US$ 89.95, ISBN 3-540-40125-3.

This book provides a comprehensive, up-to-date, and in-depth analysis of deterministic resource-constrained-project scheduling models, algorithms, and applications. The unique feature of this book is the particular emphasis on time windows, which arise from temporal constraints on the minimum and maximum time lags between project activities. Another important feature is the large number of discussed application areas of resource-constrained project scheduling, including operations management, investment projects, manufacturing and process industries, and hierarchical planning.

The book has three chapters. In Chapter 1, the concepts of time windows, temporal constraints, and temporal project scheduling are introduced. Chapter 2 is dedicated to resource-constrained project scheduling for minimum project duration and other regular objective functions, i.e. non-decreasing functions of activity start times. Structural analysis, exact and heuristic solutions, generalizations, and applications of the problem are presented. In Chapter 3, several non-regular objective functions, including net present value, earliness–tardiness, resource investment, changeover time, and resource leveling are analysed. After classifying all resource-constrained project scheduling objectives, algorithms are presented and complexity is discussed for each class.

The book is well written and organized. The material is based on the authors' long and on-going teaching and research involvement in project scheduling, and represents the state-of-the-art in this field. The mathematical presentation is extensive, including numerous definitions, remarks, propositions, lemmas, theorems and proofs. The book has 385 pages, 120 figures, 60 tables, 216 references, 43 solved examples, and 44 pseudo-code algorithm descriptions. The references are comprehensive and very recent, 74 of which are published in the 2000–2003 period.

The book does not contain problems and exercises for teaching purposes. Simultaneous scheduling of project activities and manpower, which is closely related to the calendarization problem of Section 2.11, is not discussed. However, the book is a valuable reference for researchers, teachers and all professionals in the area of resource-constrained project scheduling, especially those interested in temporal project scheduling. It is an excellent choice for a textbook or a reference book for a graduate course in project scheduling.

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