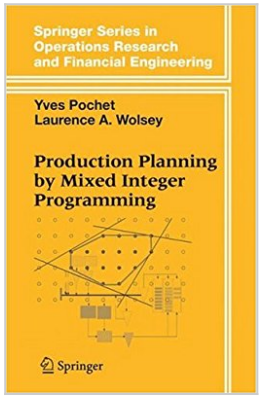

Production Planning by Mixed Integer Programming (Springer Series in Operations Research and Financial Engineering)

By Yves Pochet, Laurence A. Wolsey

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This textbook provides a comprehensive modeling, reformulation and optimization approach for solving production planning and supply chain planning problems, covering topics from a basic introduction to planning systems, mixed integer programming (MIP) models and algorithms through the advanced description of mathematical results in polyhedral combinatorics required to solve these problems. This book addresses solving real life or industrial production planning problems (involving complex production structures with multiple production stages) using MIP modeling and reformulation approach. It is based on the twenty years worth of research in which the authors have played a significant role. One of the goals of this book is to allow non-expert readers, students in business, engineering, applied mathematics and computer science to solve such problems using standard modeling tools and MIP software. To achieve this the book provides an introduction to MIP modeling and to planning systems, as well as a unique collection of reformulation results, integrating them into a comprehensive modeling and reformulation approach, as well as an easy to use problem-solving library. Moreover this approach is demonstrated through a series of real life case studies, exercises and detailed illustrations. Graduate students and researchers in operations research, management, science and applied mathematics wishing to gain a deeper understanding of the formulations and mathematics underlying this approach will find this book useful because of its detailed treatment of the polyhedral structure of the basic lot-sizing problems and simple mixed integer sets that arise in more complicated problems. Reading this book will allow the reader to improve formulations of non-standard MIP models much more effectively and produce state-of-the-art models and algorithms.

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Editorial Review

Review

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"The book provides a complete overview of different models existing in the literature as well as in practice. … The authors also analyze MIP (mixed integer programming) based algorithms … . Practitioners who are interested in using MIP … can use the book to identify the most efficient way to formulate the problems and to choose the most efficient solution method. … it also can serve as a good reference for students and researchers. Overall, this is an excellent book." (Panos M. Pardalos, Mathematical Reviews, Issue 2006 k)

"Recently published Production Planning by Mixed Integer Programming by Yves Pochet and Laurence Wolsey has raised considerable expectations. Firstly, problems of production planning are among the most interesting in Operations Research. … Secondly, both authors are renowned experts in the field. … There is no doubt that this volume offers the present best introduction to integer programming formulations of lot-sizing problems, encountered in production planning." (Jakub Marecek, The Computer Journal, September, 2007)

From the Back Cover

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