

Handbook of Scheduling:  
Algorithms, Models, and  
Performance Analysis

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# Handbook of Scheduling: Algorithms, Models, and Performance Analysis

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Edited by  
**Joseph Y-T. Leung**



# Dedication

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To my wife Maria



# Preface

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Scheduling is a form of decision-making that plays an important role in many disciplines. It is concerned with the allocation of scarce resources to activities with the objective of optimizing one or more performance measures. Depending on the situation, resources and activities can take on many different forms. Resources may be nurses in a hospital, bus drivers, machines in an assembly plant, CPUs, mechanics in an automobile repair shop, etc. Activities may be operations in a manufacturing process, duties of nurses in a hospital, executions of computer programs, car repairs in an automobile repair shop, and so on. There are also many different performance measures to optimize. One objective may be the minimization of the mean flow time, while another objective may be the minimization of the number of jobs completed after their due dates.

Scheduling has been studied intensively for more than 50 years, by researchers in management, industrial engineering, operations research, and computer science. There is now an astounding body of knowledge in this field. This book is the first handbook on scheduling. It is intended to provide a comprehensive coverage of the most *advanced* and *timely* topics in scheduling. A major goal of this project is to bring together researchers in the above disciplines in order to facilitate cross fertilization. The authors and topics chosen cut across all these disciplines.

I would like to thank Sartaj Sahni for inviting me to edit this handbook. I am grateful to all the authors and co-authors (more than 90 in total) who took time from their busy schedules to contribute to this handbook. Without their efforts, this handbook would not have been possible. Edmund Burke and Michael Pinedo have given me valuable advice in picking topics and authors. Helena Redshaw and Jessica Vakili at CRC Press have done a superb job in managing the project.

I would like to thank Ed Coffman for teaching me scheduling theory when I was a graduate student at Penn State. My wife, Maria, gave me encouragement and strong support for this project.

This work was supported in part by the Federal Aviation Administration (FAA) and in part by the National Science Foundation (NSF). Findings contained herein are not necessarily those of the FAA or NSF.





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