

Flowshop Group Scheduling

Sequence Dependent Setup Times

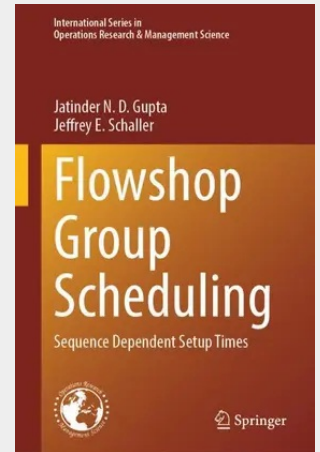
This book provides a comprehensive exploration of permutation flowshop group scheduling, focusing on sequence-dependent setup times (SDST) to minimize makespan and total completion time. Grounded in Group Technology philosophy, it bridges the gap between theoretical rigor and industrial practice, synthesizing over fifty years of research.

The text covers foundational scheduling concepts, computational complexity, and the formal classification of the Flowshop Group Scheduling Problem. It details exact and heuristic solution methodologies, including Mixed-Integer Linear Programming, sophisticated lower-bounding techniques, constructive heuristics, and metaheuristics like Tabu Search and Genetic Algorithms. Innovations include using inserted machine idle times to minimize makespan under SDST constraints.

Unique features include consideration of carryover setups, which are critical in electronics manufacturing, such as Printed Circuit Board assembly. Applications extend beyond manufacturing to service sectors like healthcare and cloud processing. Concluding with the "AI Revolution," the book recommends Deep Reinforcement Learning for real-time decision-making.

This book is designed as a definitive reference for students, researchers, and software developers, as well as professionals and consultants seeking a higher-level understanding of shop floor control and intelligent systems innovation.

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