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INTRODUCTION TO OPERATIONS RESEARCH

Holden-Day, Inc., San Francisco, 1980 (3-d edition)

This work is a textbook of exception in the field of operational research. It serves as a support of the lectures held especially to the students from the Stanford University (U.S.A.) The book is at its 3-d edition, a fact which grants it an even greater interest for being consulted and used.

The book is divided into three distinct parts treating on: mathematical programming, probabilistic models, advanced topics in mathematical programming.

Chapters 1 through 5 present extendedly the formulation and basic problems of linear programming. First of all a geometric exposition of the solving modalities of a linear programming model is made, and then the algebrical foundations for solving this programming type are given. The problems of transport, of assignment and purpose programming are extensively presented.

PERT type network analysis models and critical path method are presented in chapter 6, and they are solved by using the linear programming model.

Dynamic programming is extensively investigated within chapter 7, by analysing the determinist and probabilistic dynamic programming.

The theory of games is treated within the following chapter; mixed strategy games are then dealt with, and they are solved through graphical and linear programming methods.

The second part of the textbook treates amply the probabilistic model. Thus, chapter 9 contains an introduction into the probability theory.

Chapter 10 deals with waiting sequence (quencing) models and subsequently chapter 11 presents applications of waiting sequence theory.

The models of the theory of stocks with determinist and stochastic request are included in chapter 12.

Chapter 13 describes Marcoff decision models, including some specific applications in the field of assigning water resources, as well as stock models.

Safety in operation of complex technical structures is investigated in chapter 14.

The decision analysis is also included as probabilistic model, where decision trees, utility functions a.s.o. are presented (chapter 15).

Simulation and its specific methods play a special part within chapter 16.

Advanced problems in mathematical programming are given within IIId part. Thus, chapter 17 presents specialized algorithms for solving linear programming, especially for large dimension systems.

The whole programming problem is treated in chapter 18, where methods branch-and-bound and yes-not decision problem are presented.

The non-linear quadratic and convex programming is included in chapter 19.

The last chapter offers an opening of the future problems within operational research.

The present work is completed by the authors with examples and problems proposed for solving. The clarity of presentation, achieved by the authors, is remarkable, and so is the fact that they made the book very attractive, by gradually introducing the reader in the very complex themes of the operations research.

The book is meant for people who are interested in using operations research, in solving a great variety of practical problems.

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