



Fundamentals of Supply Chain Theory

By Lawrence V. Snyder, Zuo-Jun Max Shen

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Fundamentals of Supply Chain Theory By Lawrence V. Snyder, Zuo-Jun Max Shen

An authoritative, quantitative approach to supply chain management

Addressing the need for the study of supply chain management to evolve at the same pace as its real-world practice, *Fundamentals of Supply Chain Theory* presents the methodology and foundations of the topic and also demonstrates how recent developments build upon classic models. The authors focus on strategic and tactical aspects of supply chain management, covering a broad range of topics from forecasting, inventory management, and facility location to process flexibility, contracting, and auctions.

Key mathematical models for optimizing the design, operation, and evaluation of supply chains are presented as well as models currently emerging from the research frontier. Following a thorough introduction, the book delves into a discussion of centralized models, including:

- Forecasting and demand modeling
- Deterministic inventory models
- Stochastic inventory models
- Multi-Echelon inventory models
- Processes for dealing with uncertainty in inventory optimization and facility location
- Facility location models
- Process flexibility

In addition, the authors present decentralized models that involve multiple parties with independent, conflicting objectives, covering topics such as:

- The bullwhip effect
- Supply chain contracts
- Auctions

Each chapter concludes with a set of problems that challenge readers to understand, interpret, and extend the discussed models and algorithms. In addition, extensive appendices provide guidance on writing proofs and also outline helpful formulas related to probability theory, calculus, and algebra.

Extensively class-tested to ensure an easy-to-follow presentation, *Fundamentals of Supply Chain Theory* is a suitable book for business and engineering courses on supply chain management at the graduate level. The book also serves as an authoritative reference for academics and practitioners working in the areas of operations research, business, management science, and industrial engineering.

This book was named the **2011 Joint Publishers Book of the Year** by the Institute of Industrial Engineers.

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Editorial Review

Review

“While geared toward students of supply-chain management at the graduate level, this book is also an authoritative reference for academics and practitioners working in the areas of operations research, business, management science, and industrial engineering.” (*Inbound Logistics*, 1 January 2013)

"I highly recommend the landmark and mathematics based book Fundamentals of Supply Chain Theory by Lawrence V. Snyder, Ph.D., and Zuo-Jun Max Shen, Ph.D., to anyone with an interest in a solid mathematical approach to supply chain management. These readers include students, graduate students, faculty, researchers, business leaders, managers, engineers, and practitioners of supply chain management. This book will provide a very strong mathematical basis for all decision making, through all phases of a supply chain, in any industry." (Blog Business World, 8 January 2011)

From the Back Cover

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material, including the data sets from the book.

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About the Author

LAWRENCE V. SNYDER, PhD, is Associate Professor in the Department of Industrial and Systems Engineering at Lehigh University, where he also serves as Co-Director for the Center for Value Chain Research. He has written numerous journal articles in his areas of research interest, which include optimization models for supply chain management with a focus on models for the design and operation of robust and reliable supply chains.

ZUO-JUN MAX SHEN, PhD, is Chancellor's Professor in the Department of Industrial Engineering and Operations Research at the University of California, Berkeley. Dr. Shen has published extensively in the areas of integrated supply chain design and management, practical mechanism design, and applied optimization.

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