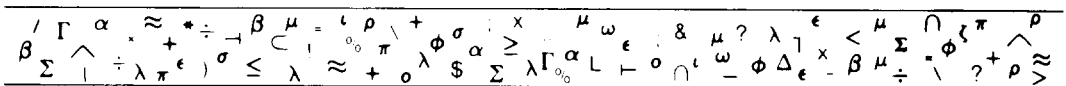# Book Reviews

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The range of books reviewed is wide, covering theory and applications in operations research, statistics, econometrics, mathematics, computers, and information systems (no software is reviewed). In addition, we include books in other fields that emphasize technical applications. Publishers who wish to have their books and proceedings reviewed should send them to Professor Benjamin Lev, School of Management, The University of Michigan-Dearborn, 4901 Evergreen Road, Dearborn, Michigan 48128-1491, BLEV@FOB-F1.UMD.UMICH.EDU. We list the books and proceedings received; not all books received can be reviewed because space and time are limited. Those who would like to review books are urged to send me their names, addresses, and specific areas of expertise. We commission all reviews and do not accept unsolicited book reviews. Readers are encouraged to suggest books that might be reviewed or to ask publishers to send me copies of such books.

VOLLMANN, THOMAS E.; BERRY, WILLIAM L.; AND WHYBARK, CLAY D., eds. 1992, *Manufacturing Planning and Control Systems*, third edition, Richard D. Irwin, Homewood, Illinois, 864 pp., $54.95.

This book is the third edition of a well-established text covering manufacturing planning and control (MPC) systems. Basically, MPC systems provide information to manage the whole manufacturing process efficiently. Typical activities supported by MPC systems include: planning capacity requirement, planning arrival of material, ensuring utilization of capital equipment, and scheduling.

This edition of the book has a clear focus on adapting the manufacturing planning and control system to "meet the dictates of the marketplace and to support overall company strategy" (p. 1). Compared with the previous editions, the authors have devoted a new chapter to advanced just-in-time concepts and modified the book somewhat to overcome an excessive bias toward material requirement

planning. They have included recent research with respect to linking the design of manufacturing planning and control systems with corporate strategy and also cover research related to integration of manufacturing requirement planning and just-in-time in existing or new systems.

The book is organized into 18 chapters. The first chapter presents the basic framework of the book and gives an introduction to the MPC field. The following five chapters introduce fundamental aspects of the MPC system: material requirement planning, just-in-time, capacity management, production activity control, and master production scheduling. Next are two chapters titled "Integrated MPC systems" and "Implementation of MPC systems"; these chapters offer important insights into organizational aspects of implementation of production systems and the integration of just-in-time with manufacturing requirement planning. Five more chapters elaborate on the fundamental aspects and have titles starting with "advanced."

The rest of the chapters are on short-term forecasting, independent demand inventory management, distribution requirement planning, demand management, and MPC frontiers. These chapters seem less central to the theme of the book and could easily be skipped.

The chapters are organized uniformly starting with an outline of the key topics of the chapter and including a set of principles, references, some discussion questions, and several pages of problems at the end. There are no references to other pages or chapters in the book. This allows the reader the flexibility to go through the material in the order best suited for a specific course.

For most of the book, no prior knowledge of operations research or management science techniques is required. Even the chapters on advanced concepts in material requirement planning and just-in-time introduce basic lot sizing models and so forth without mathematical rigor. Likewise, in the chapter on advanced concepts in production planning, for example, the authors present mathematical programming formulations of production planning problems but do not include proofs or technical discussions of the models in the book. Instead they provide references to original contributions at the end of each chapter.

Within the main text, the authors present several case studies and examples. Most of these are based on published articles describing real applications of manufacturing planning and control techniques.

When Amitabh S. Raturi [1986] reviewed the first edition of the book, he found it to be ". . . undoubtedly the best book of its kind in the market today." Since then, his judgment has been confirmed as the book has been adopted as a basic text in courses all over the world. Overall the book is an excellent introduction to the MPC field, and it is an extremely competently written book that offers useful and reasonable methods for designing and managing manufacturing planning and control systems in a variety of circumstances.

Part of the book would be suitable for an undergraduate course, or the whole book could be used for an MBA course. Further, the principles and methods out-

lined in the book should be known to everybody involved in consulting, teaching, or research in the operations management field.

Reference

Raturi, Amitabh S. 1986, "Review of *Manufacturing Planning and Control Systems*," by Vollmann, Thomas E.; Berry, William L.; Whybark, Clay D., eds. 1984, Richard D. Irwin, Homewood, Illinois, *Interfaces*, Vol. 16, No. 1, pp. 112–113.

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SHEDLAR, GERALD S. 1993, *Regenerative Stochastic Simulation*, Academic Press, San Diego, California, 401 pp., $59.95.

People trained to use a simulation language are common; however, those who can run simulation studies and provide an intelligent analysis of the results are scarce. Shedlar provides an excellent coverage of one method of analysis, regenerative stochastic simulation. He provides a complete discussion of the methodology developed by Fishman [1973], and Crane and Iglehart [1975], which is summarized in Gross and Harris's [1985] *Fundamentals of Queueing Theory*. Such books on simulation analysis as Law and Kelton's [1991] *Simulation Modeling and Analysis* and Hoover and Perry's [1989] *Simulation: A Problem Solving Approach* provide excellent although limited practical discussions. In contrast, this is the first book to concentrate solely on the method and provide a comprehensive and focused description.

The book itself is well written; the author provides elegant examples of most of the concepts he introduces. At the end of most sections, he supplements the text with several well thought out exercises. It would be excellent material for one of a series of simulation courses. Students using this book would need previous graduate level study of stochastic processes and probability theory and statistics. An appendix contains a brief guide to the limit theorems for stochastic processes. This is a good reference for those with some understanding of the material; however, it is not strong enough to serve as an initial introduction.

Chapter 1 introduces the concepts of discrete event simulations, emphasizing such methodological concerns as random-number generation, state definitions, and time advance procedures. Also included is an excellent introduction to the generalized semi-Markov processes (GSMP) with many well-chosen examples. In chapter 2, Shedlar discusses the nature of regenerative processes, starting with an overview of the regenerative property and then describing limit theorems for regenerative processes. This chapter culminates with a section bringing together all the introductory material to detail regenerative generalized semi-Markov processes.

Chapter 3 concerns using the regenerative method on simulation output, with in-depth discussion of the method of analysis and implementation considerations, discrete time conversion, computational methods for arriving at theoretical values for Markov chains, and statistical efficiency. Simulation of networks of queues is the background for the topics discussed in chapter 4. These topics include the job-stack process and the conditions for ensuring the regenerative nature of job-stack processes. The chapter concludes with a