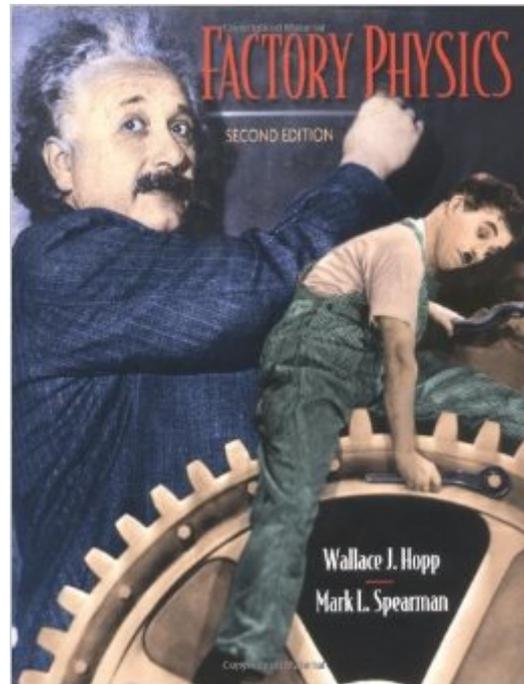


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# Factory Physics Second Edition



## Synopsis

Comprehensive Introduction to Manufacturing Management text covering the behavior laws at work in factories. Examines operating policies and strategic objectives. Hopp presents the concepts of manufacturing processes and controls within a "physics" or "laws of nature" analogy--a novel approach. There is enough quantitative material for an engineer's course, as well as narrative that a management major can understand and apply.

## Book Information

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## Customer Reviews

As a supply chain consultant, oftentimes the quality of my work is directly impacted by the reference aids in my own personal library. "Factory Physics" is such a reference aid that has my work has benefitted from several times. The book covers all of the traditional manufacturing topics you would expect in sufficient detail: inventory control, JIT, production scheduling, capacity planning, shop floor control, etc. But given that you can buy any number of other suitable, standard P&IC textbooks on these topics, that's not where the value is. The value in "Factory Physics" lies in the unique content which presents manufacturing management in a "scientific" context. For example, there are chapters on 'Basic Factory Dynamics,' 'Variability Basics,' and 'The Corrupting Influence on Variability.' These chapters demonstrate how manufacturing managers and engineers can move away from the rule-of-thumb, heuristics-based approach to operations planning and control (which is so often is either a guessing game or not based on empirical data) to a more formal, rule- and data-driven approach. For example, I have been in many factories where management had only a

SWAG approach to modeling equipment reliabilities, cycle times and throughput volumes, which drive queues and thus impact shop floor inventory. This book gives you the tools to properly understand these dynamics, if these are important issues to you. The content in the book on the corrupting influence of variability is a welcome harkening back to the ideas of Edward Deming, who consistently preached about the damage that variation can do when introduced into stable production environments.

I have kilos of books on manufacturing and as a long practising and experienced Industrial Engineer, I would ditch 90% of them for "Factory Physics". Why ? For many good reasons; The authors succinctly state the condition of manufacturing in the USA today and its underestimated role in its contribution to the national economy. This condition is mirrored in other industrial economies. But that is just the start; there is the history of manufacturing management that puts its role in perspective; then the authors put the acronyms and fads in their place along with the messiahs and the missions and messages. They sort the wheat from the chaff. The heart of "Factory Physics" is the authors' explanations of the dynamics of factory systems and their interactions; which are logically revealed and well exemplified. Further MRPs, JIT / Kanbans are constructively criticised and put into their appropriate roles and functions. No authors have previously so constructively questioned the validity of these programs and techniques and then come up with very logical and applicable alternatives. But more ! In "Factory Physics" are the "Laws" of manufacturing systems; about 20 of them; These are the Laws that govern the 'behaviour' of factories and even the behaviour of the people's that run them. One can see these Laws in evidence in manufacturing plants at any time, anywhere and with any product. The text of "Factory Physics" is a solid foundation for the understanding of manufacturing; the basics; the necessary 'instincts' to build on and the guiding models to synthesise solutions to classic production problems.

This book provides you with the fundamental insights of manufacturing and assembly. Even though I do not like statistics too much, the book is written in a understandable manner and provides the fundamental knowledge to understand what is going on in manufacturing. Based on this knowledge, the flaw of MRP-systems are even explained as well as the basics of JIT/Lean. The book provides mainly the hardfacts of this science and for practical people, reading first Quick-Response-Manufacturing (from Rajan Suri) might be the easier way for many of us and gives you the motivation to take a deeper look later on - as provided by Factory Physics. Factory Physics describes not only how to describe a single workstation and the interactions between many of them,

than as well the great importance of variability reduction in a production line and how to analyse it. CONWIP-lines, as a mix of push-pull, are a central key in this book and a simple way to analyse the performance of any system is provided by the book. This book, together with Quick-Response-Manufacturing (this book includes important softfactors as well) have changed drastically my way of operational thinking and given me a sense, which system to apply (QRM or JIT/Lean) and why. The insight can even be used for services as well. One central point is the utilisation of a workstation and the knowledge, that the more you reduce variability in arrivals and processing, the higher the utilisation can be - still achieving low lead times. You will find as well important and simple laws helping you out in the daily business (Little's law and queueing theory).

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