



## Theory of Modeling and Simulation, Second Edition

By Bernard P. Zeigler, Herbert Praehofer, Tag Gon Kim

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**Theory of Modeling and Simulation, Second Edition** By Bernard P. Zeigler, Herbert Praehofer, Tag Gon Kim

The increased computational power and software tools available to engineers have increased the use and dependence on modeling and computer simulation throughout the design process. These tools have given engineers the capability of designing highly complex systems and computer architectures that were previously unthinkable. Every complex design project, from integrated circuits, to aerospace vehicles, to industrial manufacturing processes requires these new methods. This book fulfills the essential need of system and control engineers at all levels in understanding modeling and simulation. This book, written as a true text/reference has become a standard sr./graduate level course in all EE departments worldwide and all professionals in this area are required to update their skills.

The book provides a rigorous mathematical foundation for modeling and computer simulation. It provides a comprehensive framework for modeling and simulation integrating the various simulation approaches. It covers model formulation, simulation model execution, and the model building process with its key activities model abstraction and model simplification, as well as the organization of model libraries. Emphasis of the book is in particular in integrating discrete event and continuous modeling approaches as well as a new approach for discrete event simulation of continuous processes. The book also discusses simulation execution on parallel and distributed machines and concepts for simulation model realization based on the High Level Architecture (HLA) standard of the Department of Defense.

- Presents a working foundation necessary for compliance with High Level Architecture (HLA) standards
- Provides a comprehensive framework for continuous and discrete event modeling and simulation
- Explores the mathematical foundation of simulation modeling
- Discusses system morphisms for model abstraction and simplification
- Presents a new approach to discrete event simulation of continuous processes
- Includes parallel and distributed simulation of discrete event models
- Presents a concept to achieve simulator interoperability in the form of the DEVS-Bus

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Review

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In addition to students of general and mathematical systems theory or of computer and information sciences, Zeigler (electrical and computer engineering, U. of Arizona) argues that students of any science and of business also benefit from knowing the theory of modeling. For students with a solid background in mathematics at the graduate or senior undergraduate level, he constructs a framework in which the concepts can be sketched in abstract forms and embodied in concrete modeling situations to further illuminate them. The first edition was published by Wiley Interscience in 1976; the second has been almost totally rewritten, for which task Zeigler has conscripted Herbert Praehofer (systems science, Johannes Kepler U., Linz, Austria) and Tag Gon Kim (electrical engineering, Korea Advanced Institute of Science and Technology, Taejeon). Book News, Inc.®, Portland, OR

From the Publisher

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- \* Explores the mathematical foundation of simulation modeling
- \* Discusses system morphisms for model abstraction and simplification
- \* Presents a new approach to discrete event simulation of continuous processes
- \* Includes parallel and distributed simulation of discrete event models
- \* Presentation of a concept to achieve simulator interoperability in the form of the DEVS-Bus
- \* Complete coverage necessary for compliance with High Level Architecture (HLA) standards

From the Author

A review appears at the following link:

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