

Reviews

Kai Velten, *Mathematical Modeling and Simulation*, Wiley-VCH (2009, 1st Revised Reprint 2010, Chinese Edition 2012).

„...Very solid introductory text at the undergraduate level aimed at wide audience. Perfectly fits introductory modeling courses at colleges and universities that prefer to use open-source software rather than commercial one, and is an enjoyable reading in the first place. Highly recommended both as a main text and a supplementary one... This delightful book has two unbeatable features that should absolutely win the audience ... First of all, it illuminates many important conceptual ideas of mathematical modelling... Second, ... this book enthusiastically promotes open-source software that works on most computers and operating systems and is freely available on the web... Professor Velten suggests an elegant approach to mathematical modeling, carefully going through all important steps from identification of a problem, definition of the associated system under study and analysis of the system's properties to design of a mathematical model for the system, its numerical simulation and validation...“

Yuri V. Rogovchenko (University of Kalmar, Sweden) in: Zentralblatt MATH (European Mathematical Society)

„... Given the wide range of potential users, the examples used reflect a corresponding breadth of different applications, domains and environments, from physical and mechanical systems (automobiles) to biochemical (photosynthesis, wine fermentation) to physical (heat diffusion). This should be of use to potential users interested in finding problem definitions similar to their own. (...)

My recommendation would be for the experienced scientist or engineer interested in the possibility of using M&S (modeling and simulation) to aid in the effort to define, measure and validate theoretical constructs (“models”) upon which scientific theories could be based, or to explore possible alternative solutions to specific engineering issues. For undergraduates, I would recommend it for advanced students in either science or engineering, as again a guide to the application of M&S to their research...“

Joe Saur (Georgia Tech Research Institute, USA) in: ACM SIGSOFT Software Engineering Notes 34(5), 2009 (Association for Computing Machinery, New York, USA)

Mathematical modeling and simulation is essential in both science and engineering disciplines, and the author draws from his experience in those fields and from his experience as a consultant. (...) The text is well-written and the book is formatted for convenience and emphasis.

Fingerman, Susan (2011), "Sci-Tech Book News Reviews," Sci-Tech News: Vol. 65: Iss. 1, Article 13 (Publisher: Thomas Jefferson University, Philadelphia, USA) Also published in SciTech Book News, 2010, Vol 34 No. (4), 35 (Portland, USA)

„... An interesting aspect of this book is that Velten uses only freely available software packages, including Maxima, R, Code-Saturne, and Salome-Meca... Recommended ...“

Brian Borchers (New Mexico Institute of Mining and Technology, USA) in: Choice, 10/2009 (American Library Association)

„... The author takes up quite a large number of topics – he is clearly an enthusiastic

teacher ... (he) has broad experience and expertise to share with students ... there are a number of good examples ...“

Bill Satzer (3M Company, USA) in: Reviews of the Mathematical Association of America, 6/09

„... The book is certainly a reference for those, beginners or professional, who search for a complete and easy to follow step-by-step guide in the amazing world of modelling and simulation ... A number of examples, exercises and software commands (along the text and in the Appendix) enrich the text, helping the reader to approach the world of modelling and simulation ... The reader is introduced into the programming but most important in the problems that may arise in the modelling process, in the numerical treatment of the models and in their interpretation ... It is shown that mathematical models and simulation, if adequately used, help to reduce experimental costs by a better exploration of the information content of experimental data...

Marcello Vasta (University of Chieti-Pescara, Italy) in: International Journal of Theoretical and Applied Mechanics (Meccanica), 44(3), 2009

„... With its focus on applications, this book is for readers with just a basic knowledge of mathematics. The chapters develop any advanced theory that is required...“

Idalia Flores in: Computing Reviews, 5/2009

"...This concise and clear introduction to the topic requires only basic knowledge of calculus and linear algebra – all other concepts and ideas are developed in the course of the book. Lucidly written so as to appeal to undergraduates and practitioners alike, it enables readers to set up simple mathematical models on their own and to interpret their results and those of others critically. (...) many examples from various fields such as biology, ecology, economics, medicine, agricultural, chemical, electrical, mechanical and process engineering are discussed in detail."

Janez Grum (University of Ljubljana, Slovenia) in: International Journal of Microstructure and Material Properties 5(2/3), 302-3

„*Mathematical Modeling and Simulation* by Professor Kai Velten is a comprehensive introduction to both mathematical modeling and freely available software for computational modeling. Beginners will learn the logic of problem formulation, data analysis and interpretation and easily become self-sufficient mathematical modelers. Readers already familiar with mathematical modeling will find it an enjoyable resource where they can pick up new tips and techniques. This innovative text modernizes and enriches the teaching of mathematical modeling...it should be on all modelers bookshelves.“ **Oscar A. Linares (University of Toledo, USA)**

„I really appreciated reading the book, even if I knew most of the technical content ... it really helped me to formalize the concepts of models / experiments and the different classes of mathematical models! Great!“

Joël Cugnoni (EPFL Lausanne, Switzerland)