Mathematical and Experimental Modeling of Physical and Biological Processes (Textbooks in Mathematics)

H.T. Banks, H.T. Tran
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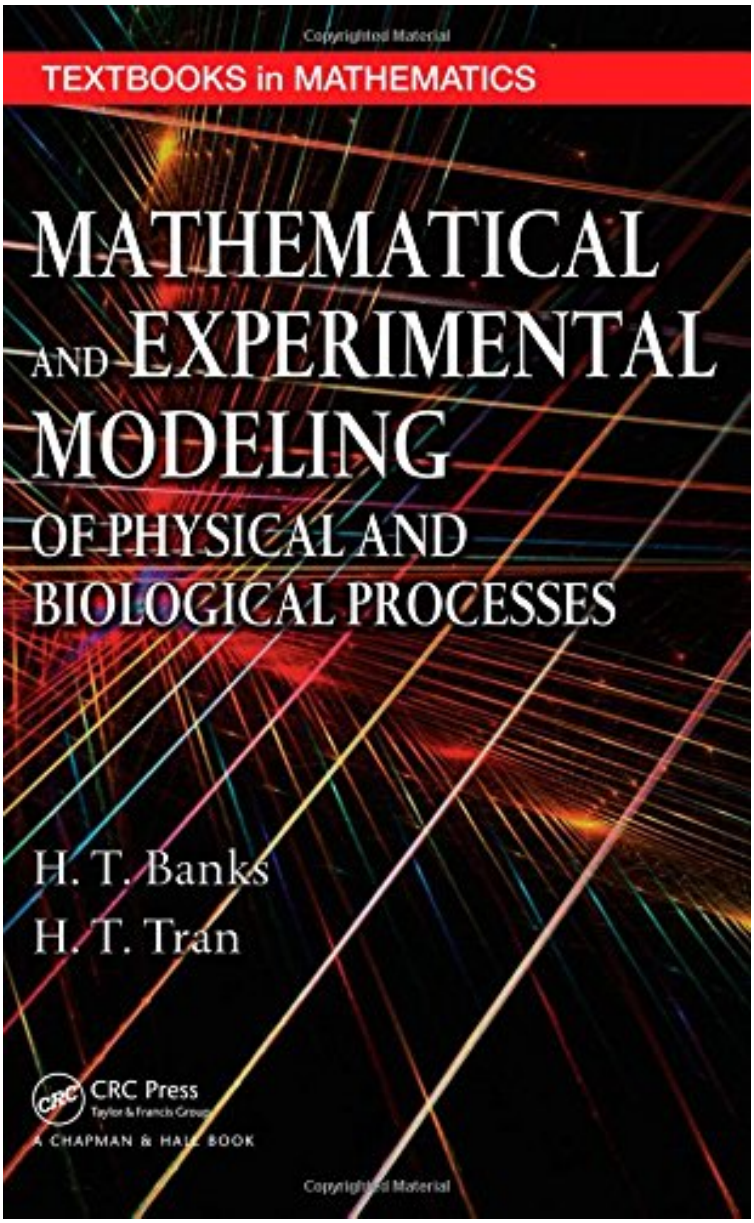

#2092745 in Books Chapman and Hall/CRC 2009-01-12Original language:EnglishPDF # 1 .80 x 6.10 x 9.30l, 1.30 #File Name: 1420073370298 pages | File size: 22.Mb

H.T. Banks, H.T. Tran : Mathematical and Experimental Modeling of Physical and Biological Processes (Textbooks in Mathematics) before purchasing it in order to gage whether or not it would be worth my time, and all

praised Mathematical and Experimental Modeling of Physical and Biological Processes (Textbooks in Mathematics):

Through several case study problems from industrial and scientific research laboratory applications, Mathematical and Experimental Modeling of Physical and Biological Processes provides students with a fundamental understanding of how mathematics is applied to problems in science and engineering. For each case study problem, the authors discuss why a model is needed and what goals can be achieved with the model. Exploring what mathematics can reveal about applications, the book focuses on the design of appropriate experiments to validate the development of mathematical models. It guides students through the modeling process, from empirical observations and formalization of properties to model analysis and interpretation of results. The authors also describe the hardware and software tools used to design the experiments so faculty/students can duplicate them. Integrating real-world applications into the traditional mathematics curriculum, this textbook deals with the formulation and analysis of mathematical models in science and engineering. It gives students an appreciation of the use of mathematics and encourages them to further study the applied topics. Real experimental data for projects can be downloaded from CRC Press Online.

would I buy this textbook? Again, absolutely yes! The concise and clear style in which the background is written for each chapter will be invaluable as a quick, before the lecture is given refresher. Most of the topics covered are those which have arisen out of the research projects that the authors have conducted themselves. This is the kind of hands-on experience that a lecturer would need in order to make the laboratory experiences for the students enjoyable and rewarding. the true value of this textbook, namely, [is that] it provides a stimulus package to provoke the reader to adopt a similar teaching philosophy.Mathematical s, Issue 2010f The aim of this book is twofold: to develop some standard models of physical and biological processes (the transport equation, heat conduction, the beam equation, fluid dynamics, and structured population models) in mathematical language, and probably more importantly, to show how and why to design concrete engineering experiments for comparing numerical results of models with specific experimental data. The book can be recommended to advanced undergraduate students for whom mathematics is a bit more than just proving theorems. Teachers can find suggestions for motivations for introductory parts of lectures on ordinary differential equations and partial differential equations.EMS Newsletter, September2009About the AuthorNorth Carolina State University, Raleigh, USA University of Maryland, College Park, USA