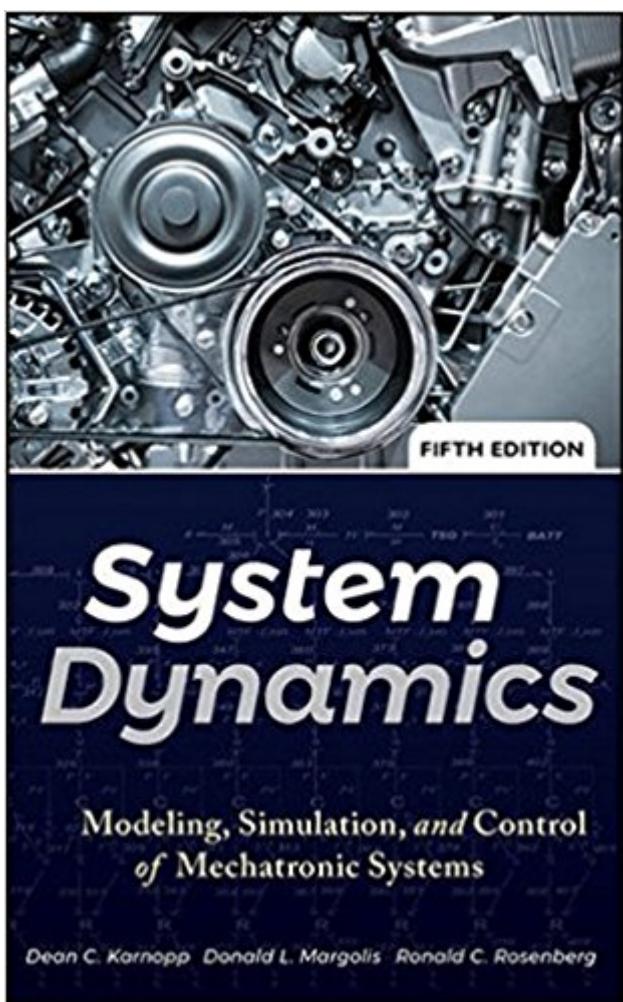The book was found

# System Dynamics: Modeling, Simulation, And Control Of Mechatronic Systems

# Synopsis

An expanded new edition of thê bestselling system dynamics book using the bond graph approach A major revision of the go-to resource for engineers facing the increasingly complex job of dynamic systems design, System Dynamics, Fifth Edition adds a completely new section on the control of mechatronic systems, while revising and clarifying material on modeling and computer simulation for a wide variety of physical systems. This new edition continues to offer comprehensive, up-to-date coverage of bond graphs, using these important design tools to help readers better understand the various components of dynamic systems. Covering all topics from the ground up, the book provides step-by-step guidance on how to leverage the power of bond graphs to model the flow of information and energy in all types of engineering systems. It begins with simple bond graph models of mechanical, electrical, and hydraulic systems, then goes on to explain in detail how to model more complex systems using computer simulations. Readers will find:  New material and practical advice on the design of control systems using mathematical models New chapters on methods that go beyond predicting system behavior, including automatic control, observers, parameter studies for system design, and concept testing Coverage of electromechanical transducers and mechanical systems in plane motion Formulas for computing hydraulic compliances and modeling acoustic systems A discussion of state-of-the-art simulation tools such as MATLAB and bond graph software Complete with numerous figures and examples, System Dynamics, Fifth Edition is a must-have resource for anyone designing systems and components in the automotive, aerospace, and defense industries. It is also an excellent hands-on guide on the latest bond graph methods for readers unfamiliar with physical system modeling.

# Book Information

Hardcover: 648 pages

Publisher: Wiley; 5 edition (February 28, 2012)

Language: English

ISBN-10: 047088908X

ISBN-13: 978-0470889084

Product Dimensions:  6.4 x 1.5 x 9.5 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review:    4.3 out of 5 stars     18 customer reviews

Best Sellers Rank: #104,667 in Books (See Top 100 in Books)   #78 inÂ Books > Science & Math > Physics > Mechanics   #115 inÂ Books > Textbooks > Science & Mathematics > Mechanics   #202

## Customer Reviews

A revision of the bestselling system dynamics book using the bond graph approach System Dynamics is a cornerstone resource for engineers faced with the evermore-complex job of designing mechatronic systems involving any number of electrical, mechanical, hydraulic, pneumatic, thermal, and magnetic subsystems. This updated Fourth Edition offers the latest coverage on one of the most important design tools todayâ "bond graph modelingâ "the powerful, unified graphic modeling language. The only comprehensive guide to modeling, designing, simulating, and analyzing dynamic systems comprising a variety of technologies and energy domains, System Dynamics, Fourth Edition continues the previous edition's step-by-step approach to creating dynamic models. The first six chapters have been improved to make the material much more understandable for those unfamiliar with physical system modeling. The presentation starts with the basic elements and leads to sophisticated mathematical models suitable for automated computer simulation. The new edition incorporates the authors' vast experience in teaching the topics to undergraduate and graduate students over many years and features expanded coverage of topics including:  New expositions of modeling methods for electrical, mechanical, and hydraulic systems New sections on mechanical systems in plane and three-dimensional motion New sections on hydraulic and acoustic systems  This Fourth Edition continues to stress all the essentialsâ "from basic hand formulation of simple bond graph models to the automatic simulation of complex mechatronic systems. It offers updated examples of multi-energy domain systems as well as: Discussions of state-of-the-art simulation software for use with bond graph models Presentations of a multiport modeling philosophy based on power and energy interactions Methods for understanding system characteristics and predicting system behaviors The use of graphical depictions of dynamic systems that can be translated automatically into complex mathematical models for computer simulation  --This text refers to the Digital edition.

DEAN C. KARNOPP and DONALD L. MARGOLIS are Professors of Mechanical Engineering at the University of California, Davis. RONALD C. ROSENBERG is Professor of Mechanical Engineering at Michigan State University. The authors have extensive experience in teaching system dynamics at the graduate and undergraduate levels and have published numerous papers on the industrial applications of the subject.

Great book to begin to understand the concepts of bond graphs. Also has chapters on deriving state equations. This book is definitely a "readers book". Its more of a book you sit down, read, and think about the material. Not so much a book filled with example problems.

Book Was in very good shape, as promised. Very little notes and comments made by the previous user, as promised.Book materiel is very well written but the subject matter is still hard. I am using it for a PhD. level class so I did expect the subject to be somehow harder than my previous classes.

I purchased this book for work as a reference for modeling vehicle ride characteristics. I had some background in bond graph modeling techniques, but needed a refresher. This book provides excellent background and step by step methods for obtaining bond graph models of mechanical and electrical systems. These models can be readily converted to systems of differential equations (state-space equations), which is what I needed for my project. This book describes techniques for both linear and nonlinear systems, more clearly than other references I had looked at.

For learning bond graphs this book is perfect especially for the very low price. This is the cheapest book I have purchased in school and I will be keeping it. The bond graph sections of this book are perfect but the equation derivation sections are lacking in terms of clarity and content. I would recommend this book for learning bond graphs and getting a brief understanding of deriving the equations and transfer functions.

This is great. It is a brand new book without any markers or notes on, which is definitely beyond my expectation under such cheap price.

This book is a comprehensive one full of usefull and practical technical details and applications. Nice and good work and Thanks!

Good

Just what I needed for school. I used it and did well in the class so i guess it did the job.

System Dynamics: Modeling, Simulation, and Control of Mechatronic Systems System Dynamics: Modeling and Simulation of Mechatronic Systems Atmospheric and Space Flight Dynamics:

Modeling and Simulation with MATLAB® and Simulink® (Modeling and Simulation in Science, Engineering and Technology) Molecular Simulation Studies on Thermophysical Properties: With Application to Working Fluids (Molecular Modeling and Simulation) Aircraft Control and Simulation: Dynamics, Controls Design, and Autonomous Systems Dynamic Systems: Modeling, Simulation, and Control Mechatronic Hands: Prosthetic and Robotic Design (Iet Control, Robotics and Sensors) Molecular Gas Dynamics: Theory, Techniques, and Applications (Modeling and Simulation in Science, Engineering and Technology) Aircraft Dynamics: From Modeling to Simulation Tunneling Dynamics in Open Ultracold Bosonic Systems: Numerically Exact Dynamics â " Analytical Models â " Control Schemes (Springer Theses) Modeling Dynamic Biological Systems (Modeling Dynamic Systems) Modeling Behavior in Complex Public Health Systems: Simulation and Games for Action and Evaluation Dynamic Systems Biology Modeling and Simulation Introduction to the Numerical Modeling of Groundwater and Geothermal Systems: Fundamentals of Mass, Energy and Solute Transport in Poroelastic Rocks (Multiphysics Modeling) Physiological Control Systems: Analysis, Simulation, and Estimation Show Networks and Control Systems: Formerly "Control Systems for Live Entertainment" Business Dynamics: Systems Thinking and Modeling for a Complex World with CD-ROM Dynamic Modeling in the Health Sciences (Modeling Dynamic Systems) Computational Electronics: Semiclassical and Quantum Device Modeling and Simulation Handbook of Digital Techniques for High-Speed Design: Design Examples, Signaling and Memory Technologies, Fiber Optics, Modeling, and Simulation to Ensure Signal Integrity