DESCRIPTION

Craig Kluever’s *Dynamic Systems: Modeling, Simulation, and Control* highlights essential topics such as analysis, design, and control of physical engineering systems, often composed of interacting mechanical, electrical and fluid subsystem components. The major topics covered in this text include mathematical modeling, system-response analysis, and an introduction to feedback control systems. Dynamic Systems integrates an early introduction to numerical simulation using MATLAB®’s Simulink for integrated systems. Simulink® and MATLAB® tutorials for both software programs will also be provided. The author’s text also has a strong emphasis on real-world case studies.

ABOUT THE AUTHOR

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FEATURES

• Alighted the course with industry practice

• Integrates powerful simulation environments to analyze complex systems, enabling students to stay motivated and develop their understanding and skills by seeing how they are used to solve complex, real-world problems

• Extensive case studies are integrated throughout the text, using journal-based research to provide an applied focus on the demonstration of fundamental concepts and the analysis of complex engineering systems

• The text presents an introduction to simulation and Simulink®, with an emphasis on connecting subsystems to create an integrated system. Dynamic Systems also includes illustrations of Simulink® block diagrams of “standard” subsystems providing students with a clear understanding of how to put together integrated systems along with the required input and output variables.

• End-of-chapter problems are grouped into the following categories:

  • Conceptual Problems are problems based on “academic” systems (ie, not based on a particular physical system)

  • MATLAB® problems involve using MATLAB® or Simulink® to verify an analytical computation

  • Engineering Application Problems involve more lengthy problems drawn from physical systems (vehicles, actuators, electrical filters, etc.) These problems typically involve a mix of analytic calculations and MATLAB®/Simulink® calculations
Text supports a flexible approach to the coverage of Laplace transform theory. Laplace transform theory is presented in chapter 8, but the majority of the text does not rely on Laplace-transform methods, so it can be omitted if desired. MATLAB® and Simulink® tutorials are included as Appendices.

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