



Mechanical Systems: A Unified Approach to Vibrations and Controls

By Roger F. Gans

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This essential textbook concerns analysis and control of engineering mechanisms, which includes almost any apparatus with moving parts used in daily life, from musical instruments to robots. A particular characteristic of this book is that it presents with considerable breadth and rigor both vibrations and controls. Many contemporary texts combine both of these topics in a single, one term course. This text supports the more favorable circumstance where the material is covered in a one year sequence contains enough material for a two semester sequence, but it can also be used in a single semester course combining two topics. “Mechanical Systems: A Unified Approach to Vibrations and Controls” presents a common notation and approach to these closely related areas. Examples from the both vibrations and controls components are integrated throughout this text.

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Editorial Review

From the Back Cover

This essential textbook covers analysis and control of engineering mechanisms, which include almost any apparatus with moving parts used in daily life, from musical instruments to robots. The text presents both vibrations and controls with considerable breadth and depth using a unified notation. It strikes a nice balance between the analytical and the practical. This text contains enough material for a two semester sequence, but it can also be used in a single semester course combining the two topics. *Mechanical Systems: A Unified Approach to Vibrations and Controls* presents a common notation and approach to these closely related areas. Examples from the both vibrations and controls components are integrated throughout this text.

This book also:

- Presents a unified approach to vibrations and controls, including an excellent diagram that simultaneously discusses embedding classical vibrations (mechanical systems) in a discussion of models, inverse models, and open and closed loop control
- Makes a careful connection of the Lagrangian approach and state space
- Introduces the reader to a formal approach to linearization, something that every engineering student should know, but which is not included in many programs or undergraduate textbooks
- Discusses simulation of nonlinear systems for comparison with and evaluation of the usual linear approximations
- Features a concise discussion of DC motors, affording a more realistic approach to controls using voltage inputs instead of disembodied forces and torques
- Includes a final chapter that addresses feedback linearization generally and in the context of robots with purely revolute joints

About the Author

Dr. Roger Gans is Professor Emeritus of Mechanical Engineering at the University of Rochester

Users Review

From reader reviews:

Barbara Wheat:

Mechanical Systems: A Unified Approach to Vibrations and Controls can be one of your beginning books that are good idea. We recommend that straight away because this reserve has good vocabulary which could increase your knowledge in terminology, easy to understand, bit entertaining however delivering the information. The article author giving his/her effort that will put every word into enjoyment arrangement in writing Mechanical Systems: A Unified Approach to Vibrations and Controls although doesn't forget the main point, giving the reader the hottest along with based confirm resource details that maybe you can be

one of it. This great information can draw you into completely new stage of crucial imagining.

Morris Sampson:

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