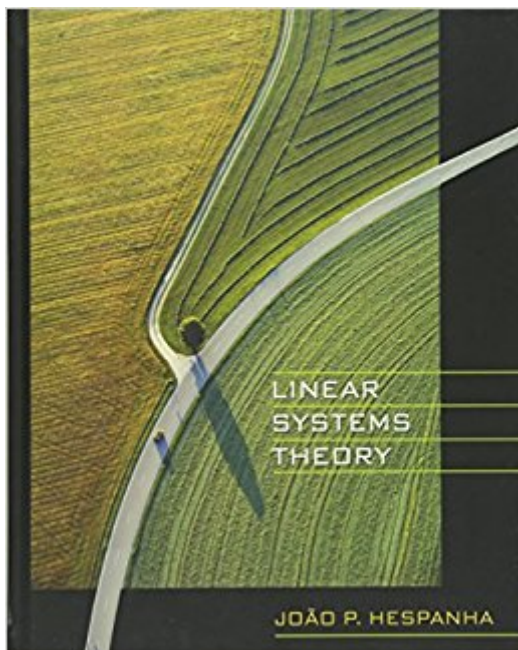The book was found

Linear Systems Theory

Synopsis

Linear systems theory is the cornerstone of control theory and a well-established discipline that focuses on linear differential equations from the perspective of control and estimation. In this textbook, JoÃƒÂ£o Hespanha covers the key topics of the field in a unique lecture-style format, making the book easy to use for instructors and students. He looks at system representation, stability, controllability and state feedback, observability and state estimation, and realization theory. He provides the background for advanced modern control design techniques and feedback linearization, and examines advanced foundational topics such as multivariable poles and zeros, and LQG/LQR. The textbook presents only the most essential mathematical derivations, and places comments, discussion, and terminology in sidebars so that readers can follow the core material easily and without distraction. Annotated proofs with sidebars explain the techniques of proof construction, including contradiction, contraposition, cycles of implications to prove equivalence, and the difference between necessity and sufficiency. Annotated theoretical developments also use sidebars to discuss relevant commands available in MATLAB, allowing students to understand these important tools. The balanced chapters can each be covered in approximately two hours of lecture time, simplifying course planning and student review. Solutions to the theoretical and computational exercises are also available for instructors. Easy-to-use textbook in unique lecture-style format Sidebars explain topics in further detail Annotated proofs and discussions of MATLAB commands Balanced chapters can each be taught in two hours of course lecture Solutions to exercises available to instructors

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Customer Reviews

"This is a splendidly written textbook; in fact, the next time I teach linear systems theory, I intend to use it. It covers the right amount of theory and presents the material at a perfect level for students. It has many exercises, most of which are well suited for beginning engineering graduate students."--Alan J. Laub, SIAM Review

"Linear Systems Theory gives a good presentation of the main topics on linear systems as well as more advanced topics related to controller design. The scholarship is sound and the book is very well written and readable."--Ian Petersen, University of New South Wales"This book provides a sound basis for an excellent course on linear systems theory. It covers a breadth of material in a fast-paced and mathematically focused way. It can be used by students wishing to specialize in this subject, as well as by those interested in this topic generally."--Geir E. Dullerud, University of Illinois, Urbana-Champaign

This collection of lecture notes organized as a textbook is perhaps the ideal textbook for teaching a course in linear systems. Although it is short on exercises, I don't think that this affects the text. There are several other textbooks with plenty of exercises to apply the concepts covered in this book. The highlights are:- Each chapter is very well organized, uncluttered, and the notation is clean and clear. The result is a balance of depth and clarity that is difficult to find in other texts.- All the results are stated for continuous and discrete time, in parallel, in a clear way. Except for the last section which covers optimal control, here, only continuous time is considered.- The author uses the side margin to introduce results from mathematics and logic that are crucial for the theory that is being discussed. For example, if a proof uses the contrapositive argument, the author includes an explanation of the logical tool on the margin. If a result from linear algebra is needed, it is introduced in the margin too. In this way, the material presented on the margins seems to 'predict' questions that come up in the reader's mind.- Matlab exercises and commands are integrated into the discussion, yet it doesn't get in the way of the theory.In summary, I think that this is a great textbook and I would like to see it become a standard for learning linear systems theory.

This is an excellent book for learning linear systems associated with Modern Control Theory, i.e. state-space control systems. It does not have many examples, and has no review section, but it

explains clearly and concisely the mathematical form for finding solutions and provides some good MATLAB examples for which to implement them. A bit too rigorous for an undergraduate course, but an excellent selection for a graduate student looking to learn about the topic.

I used this book for graduate controls courses and it was very helpful. It has matlab hints and comprehensive examples. However, the number of examples is very limited. This is critical for me since I learn best the material by following solved examples and by attempting "end of chapter exercises".

This book was used in a graduate class I took. While I thought much of the book was well written, I felt like some of the necessary explanations were terse or completely missing while others overly thorough.

Excellent!

Awesome book, first "user friendly" control book I have ever seen, has rigorous proofs, but is a very easy reading! I reallly learned linear systems with this!

After using this book for a month, I can say that this textbook is the worst (not one of the worst) textbook I have ever used. Endless typos make you confused and waste you a lot of time when you try to understand some examples or definitions. Not recommended.

This book is horrible. It is just a collection of lectures that appear to be copy and pasted from some other source. There are often the little boxes where equations should be. (Just like copying an equation from an old version of MS Word would give you) There are zero examples and the wording is too complex for its own good. I had to purchase this for a class to get the problem sets, but refer to "Modern Control Engineering" by Ogata for explanations.

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