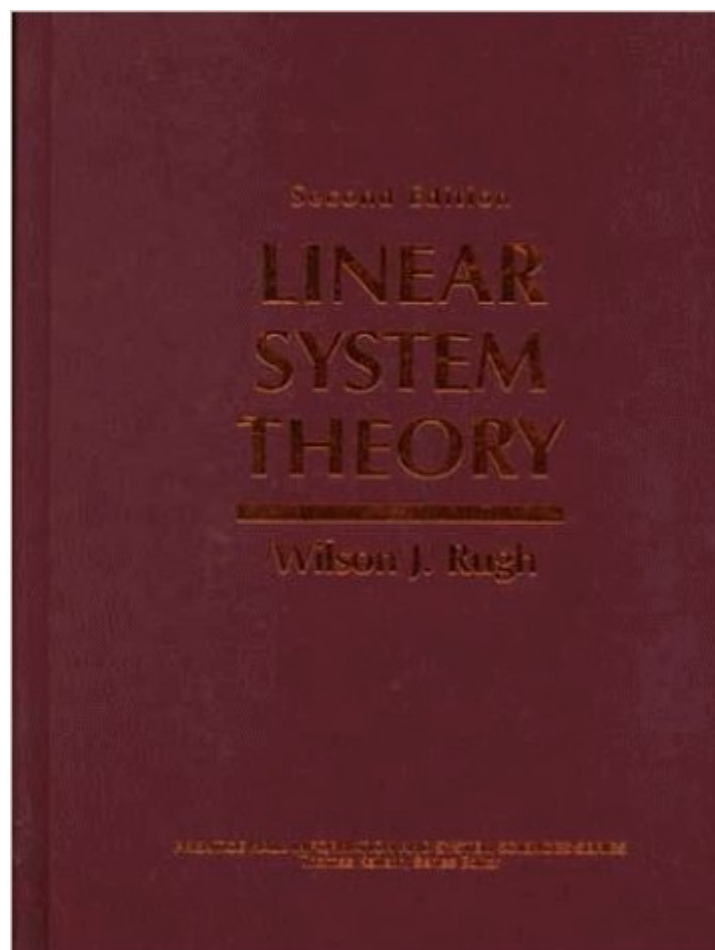


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# Linear System Theory, 2nd Edition



## Synopsis

Linear System Theory, Second Edition, outlines the basic theory of linear systems in a unified, accessible, and careful manner, with parallel, independent treatment of continuous-time and discrete-time linear systems.

## Book Information

Paperback: 581 pages

Publisher: Pearson; 2nd edition (August 13, 1995)

Language: English

ISBN-10: 0134412052

ISBN-13: 978-0134412054

Product Dimensions: 7 x 1.3 x 9.1 inches

Shipping Weight: 2.3 pounds (View shipping rates and policies)

Average Customer Review: 2.3 out of 5 stars [See all reviews](#) (6 customer reviews)

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## Customer Reviews

This is an authoritative book on linear systems theory, containing a good blend of state space methods, transfer matrix methods, and geometric theory. It is not necessarily an easy read, but it is thorough. As an example, many linear systems theory books "cheat" when presenting the solution of linear time invariant system: they assume that the structure of the solution is already known, e.g. that the solution is of the form  $x(t) = \exp(At)z(t)$  where  $z(t)$  is then shown to have the desired form. In Rugh's book, instead, few assumptions of prior knowledge are used. This necessarily makes the proof more demanding, but also leads to a more realistic problem -- for students who want to really understand how to develop new results. There are other valuable -- and simpler books. E.g. Chen's book in its third edition is very nice wrt. relating the various methods of analysis with standard linear algebra methods such as QR decomposition, etc.

This was the prescribed book for a Linear Systems course I took. The author believes in discovering various facets of the subject through the exercise problems. As a result, it is not the best book to be used for self study. Also, continuous and discrete systems are treated independently of each other, so one has to keep turning the pages back to understand various analogies. The book by Antsaklis/

Michel is a better choice. Being taught by a good instructor however does offset some of the problems. Another irritating point was the poor quality of the bind. I had pages coming out two months into the semester :(

I got the book for a course I was taking in my masters program. I had taken one Linear Systems course in my undergraduate. While I bought the book new, it didn't make it through HALF of the semester before the binding broke and pages fell out. The book omits many useful proofs, and if it doesn't omit the proof, it expects you to figure out on your own with very little prompting. It does have some useful examples but assumes the reader has a VERY broad and deep understanding about linear algebra and calculus. It's very high level and often difficult to follow.

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