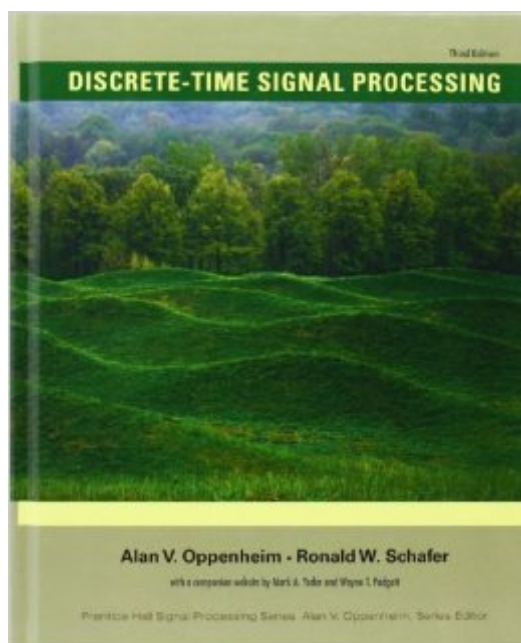


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# Discrete-Time Signal Processing (3rd Edition) (Prentice-Hall Signal Processing Series)



## Synopsis

For senior/graduate-level courses in Discrete-Time Signal Processing. Discrete-Time Signal Processing, Third Edition is the definitive, authoritative text on DSP – ideal for those with introductory-level knowledge of signals and systems. Written by prominent DSP pioneers, it provides thorough treatment of the fundamental theorems and properties of discrete-time linear systems, filtering, sampling, and discrete-time Fourier Analysis. By focusing on the general and universal concepts in discrete-time signal processing, it remains vital and relevant to the new challenges arising in the field. Access to the password-protected companion Website and myeBook is included with each new copy of Discrete-Time Signal Processing, Third Edition.

## Book Information

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## Customer Reviews

I am referring here to the Digital Signal Processing (DSP) that the authors wrote in the 1970's or earlier versus the more recent editions of Discrete-Time Signal Processing (DTSP). I have both the DSP version and the 1st edition of DTSP, and used them for coursework. From my personal recollection: I tried to take an introductory graduate-level DSP course twice, once with the old DSP text (but did not get to finish), and the second time completing the course from another college with the DTSP text. DSP, in spite of its introductory and pioneering nature, turned out to be the more readable and better organized textbook among the two. It is shorter by many pages, less verbose, less "heavy and circular in arguments", and quicker to come to the point, not to mention being

clearer, more lucid, and well-illustrated with good examples and diagrams without overwhelming the reader. The beginning chapters are well written with introduction to the applications of Complex Variables in the context of DSP as an EE subject. In short, DSP by Oppenheim and Schaffer is the less ambitious book of the two, but really accomplishes much more by doing less and focusing on the essential concepts underlying DSP. I can see why and where many beginning EE Signal Processing students tend to get frustrated. DTSP, 1st edition, is actually a rewritten version of DSP, albeit meant to be a major extension (or expansion, if you wish) with more applications appended and "heavier expositions". (This reminds me of many other books by MIT EE faculty on the market.) I find the most frustrating part of DTSP is the chapters on transcending from the Discrete Fourier Transform (DFT) to Fast Fourier Transform (FFT). Why?

This is the outstanding 3rd edition of Oppenheim's classic DSP book, which for over two decades was the only real choice for a textbook on the subject. That was too bad, since the first edition was probably the worst thing I have ever seen in print - terse, incomprehensible, and with only a few awful and poorly illustrated examples. When I decided to take a refresher course in DSP in 2006, I was horrified to see our class would be using the second edition of that horrendous text. What I found instead was a completely rehabilitated textbook! This was not a beginner's DSP textbook by any stretch of the imagination, but absolutely everything is explained and there are plenty of well worked out examples. The end-of-chapter problems were broken down into simple, intermediate, and advanced problems with quite a few mind-puzzlers in the advanced section. Plus, the answers to the first 20 problems in every chapter were in the back of the book. There is really nothing unique about the book's format. What does makes the book unique is the density and amount of material included. Just about every page is packed with well-explained important information. I highly recommend this book to anyone who has had a prior semester of an upper-level undergraduate class in Signals and Systems and wants to study DSP. An accompanying book that you might find helpful is "Understanding Digital Signal Processing" by Lyons. That book is good for getting an intuitive feel for DSP. Another book that will help you with some of the earlier concepts in this book (linear systems, DTFT, Z-transform, DFT, basic filter design) and some of the direct computations involved is "Schaum's Outline of Digital Signal Processing". does not show the table of contents, so I do that here:

1. Introduction
- 2.

This is the outstanding 2nd edition of Oppenheim's classic DSP book, which for over two decades was the only real choice for a textbook on the subject. That was too bad, since the first edition was

probably the worst thing I have ever seen in print - terse, incomprehensible, and with only a few awful and poorly illustrated examples. When I decided to take a refresher course in DSP, I was horrified to see our class would be using the second edition of that horrendous text. What I found instead was a completely rehabilitated textbook! This is not a beginner's DSP textbook by any stretch of the imagination, but absolutely everything is explained and there are plenty of well worked out examples. The end-of-chapter problems are broken down into simple, intermediate, and advanced problems with quite a few mind-puzzlers in the advanced section. Plus, the answers to the first 20 problems in every chapter are in the back of the book. There is really nothing unique about the book's format. What does makes the book unique is the density and amount of material included. Just about every page is packed with well-explained important information. I highly recommend this book to anyone who has had a prior semester of an upper-level undergraduate class in Signals and Systems and wants to study DSP. An accompanying book that you might find helpful is "Understanding Digital Signal Processing" by Lyons. That book is good for getting an intuitive feel for DSP. Another book that will help you with some of the earlier concepts in this book (linear systems, DTFT, Z-transform, DFT, basic filter design) and some of the direct computations involved is "Schaum's Outline of Digital Signal Processing". does not show the table of contents, so I do that here: 1. Introduction. 2.

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