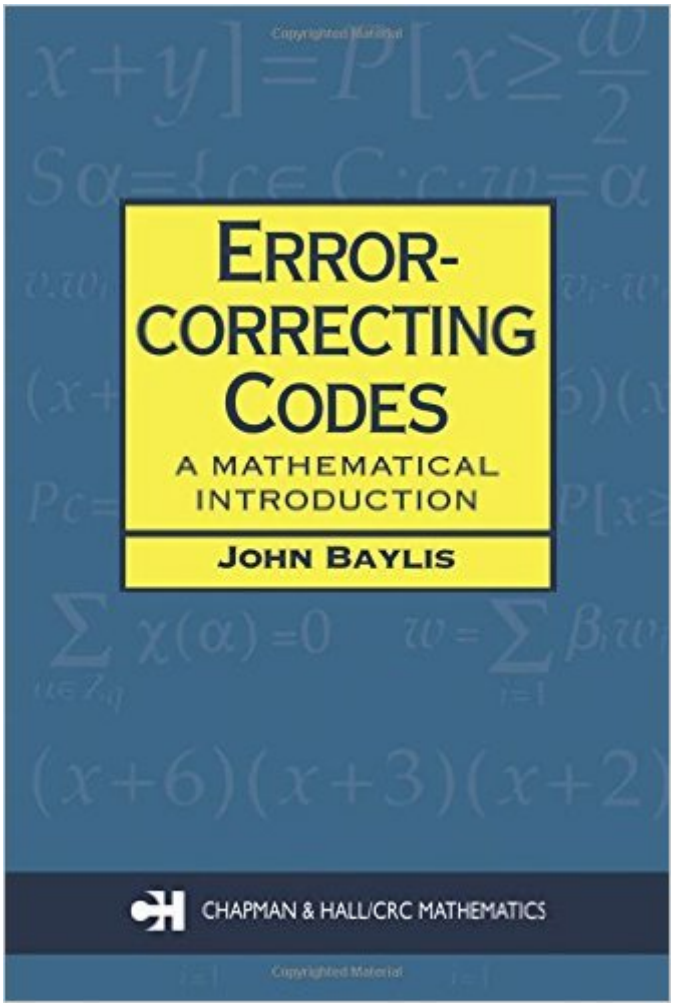
Error Correcting Codes: A Mathematical Introduction (Chapman Hall/CRC Mathematics Series)



Synopsis

Assuming little previous mathematical knowledge, Error Correcting Codes provides a sound introduction to key areas of the subject. Topics have been chosen for their importance and practical significance, which Baylis demonstrates in a rigorous but gentle mathematical style.Coverage includes optimal codes; linear and non-linear codes; general techniques of decoding errors and erasures; error detection; syndrome decoding, and much more. Error Correcting Codes contains not only straight maths, but also exercises on more investigational problem solving. Chapters on number theory and polynomial algebra are included to support linear codes and cyclic codes, and an extensive reminder of relevant topics in linear algebra is given. Exercises are placed within the main body of the text to encourage active participation by the reader, with comprehensive solutions provided.Error Correcting Codes will appeal to undergraduate students in pure and applied mathematical fields, software engineering, communications engineering, computer science and information technology, and to organizations with substantial research and development in those areas.

Book Information

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Customer Reviews

I've only read the first few chapters, but enjoy the approach: it is a readable (but mathematical) introduction to error-correcting codes.I think it is bridge between formal, theoretical mathematics and a how-to, computer book. (This is not a computer book.)The author used the book as an

undergraduate textbook.From the Preface: "For students who have been trained in traditional pure mathematics...This book is not for them. It is more for that much larger population of students who find themselves in an educational system driven by an 'application' philosophy....which regards pure mathematics foundations as an expensive luxery, in spite of all accumulated experience that such a system is short-sighted and self-defeating."The author motivates the subject well. If you send a computer message, how do you know the bits received at the other end are what you sent? How does the receipent know he/she rec'd the correct message? He works through simple ideas and possible ways to improve accuracy.This is an introduction to some of the mathematics behind this. It includes an introductin to basic number theory, linear algebra. It is readable, but importatn results are stated as Theorems and proven. He assumes little formal mathematics preparation, but some college math will probably help.If you want a practical, computer guide to error correcting codes, this is probably not the right book for you.But if you want to go a little deeper and see the mathematics and mathematical ideas at work, this could be a thoroughly enjoyable book for you.

Before borrowing this book from the school library, I was completely lost in the coding class. I can understand the equations in some other book but I can't understand why they are so. I lacked the physical meaning behind these equations and I lacked the bigger picture as well. I borrowed this book from the library hoping to fix my problems before the upcoming the mid-term, and indeed the book proved the most helpful. Don't be fooled by the small size of the book or the "a mathematical introduction" in the title. This books addresses intuition before delving into the math. The solutions of the exercises are also available in the book making this book a great tool for self-learning. Anyhow, I returned the book to the library and ordered it from . To make a long story short, HAVE THIS BOOK in your personal library.

Baylis has scored big with this book. His forward states that he wanted to produce a book for non-mathematicians, and he succeeded in every respect. I was interested principally in forward error correction - block coding - and the topic is very well presented. (There is more material, of course, but I focused only on the area I needed to understand.) In addition to examples, there are exercises at the end of every chapter, with answers listed in the back.I don't read math books unless there is no other way - I usually turn to a PhD friend who whips through this stuff like it was comic books, and is REALLY good at explaining things. I had a couple questions because I was lazy (or dense) but there were very few places where I didn't understand Baylis. I recommend this for anyone getting involved in wireless commmunications or wired high-speed data transport.

I was looking for a good mathematical support for coding theory. But this book, as an introduction doesn’t apply to codes big results from algebra. I understand that this book was write for people that did not have the background on math. If you are looking for an introduction and you don’t have math background, you will love it!

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