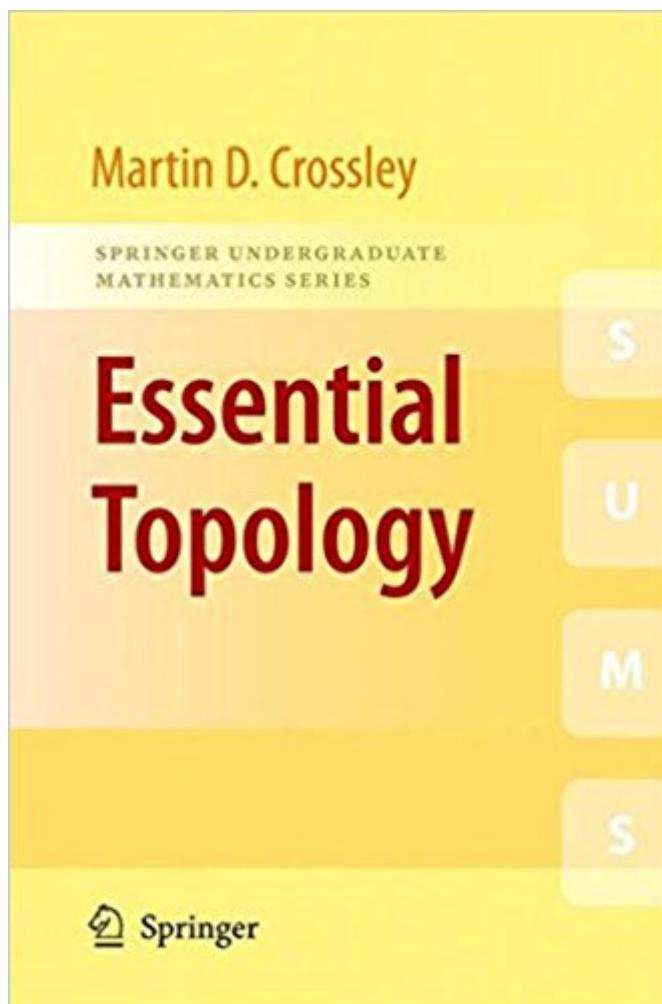


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# Essential Topology (Springer Undergraduate Mathematics Series)



## Synopsis

This book brings the most important aspects of modern topology within reach of a second-year undergraduate student. It successfully unites the most exciting aspects of modern topology with those that are most useful for research, leaving readers prepared and motivated for further study. Written from a thoroughly modern perspective, every topic is introduced with an explanation of why it is being studied, and a huge number of examples provide further motivation. The book is ideal for self-study and assumes only a familiarity with the notion of continuity and basic algebra.

## Book Information

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## Customer Reviews

From the reviews: "This book presents the most important aspects of modern topology, essential subjects of research in algebraic topology | . The book contains all the key results of basic topology and the focus throughout is on providing interesting examples that clarify the ideas and motivate the student. | this book contains enough material for two-semester courses and offers interesting material for undergraduate-level topology, motivating students for post-graduate study in the field and giving them a solid foundation." (Corina Mohorianu, Zentralblatt MATH, Vol. 1079, 2006) "This text provides a concise and well-focused introduction to point set and algebraic topology. The main purpose is to quickly move to relevant notions from algebraic topology (homotopy and homology). Throughout the book the author has taken great care to explain topological concepts by well-chosen examples. It is written in a clear and pleasant style and can certainly be recommended as a basis for an introductory course on the subject." (M. Kunzinger,

Taking a direct route, Essential Topology brings the most important aspects of modern topology within reach of a second-year undergraduate student. Based on courses given at the University of Wales Swansea, it begins with a discussion of continuity and, by way of many examples, leads to the celebrated "Hairy Ball theorem" and on to homotopy and homology: the cornerstones of contemporary algebraic topology. While containing all the key results of basic topology, Essential Topology never allows itself to get mired in details. Instead, the focus throughout is on providing interesting examples that clarify the ideas and motivate the student, reflecting the fact that these are often the key examples behind current research. With chapters on: \* continuity and topological spaces \* deconstructionist topology \* the Euler number \* homotopy groups including the fundamental group \* simplicial and singular homology, and \* fibre bundles Essential Topology contains enough material for two semester-long courses, and offers a one-stop-shop for undergraduate-level topology, leaving students motivated for postgraduate study in the field, and well prepared for it.

I have never seen such a beatiful explanation on continuity and its relations to series and sets. Now I understand why, when mathematics is lously explained,everything seemms to be so hard. I recommend strongly this book for someone for self study on topology. Hope the author can write on other topics of mathematics.

The author treats very complicated issues in a simple and comprehensive way. Although, I suggest exemplify with applications of topology in Computational Intelligence

I checked this book out of the library and like the clear exposition, so I decided to buy a copy. What was delivered was the copyright 2010 "corrected"? version, and the print quality is very bad: very light type which is not easy to read.

This is actually not that bad of a book. It is reasonably well-motivated and has tons of examples (although some are pretty tedious). Where it fails is its large number of errors. There are tons of minor errors scattered throughout, making the book more difficult to read. There are also some pretty major mistakes. The two page proof of theorem 10.11 is blatantly erroneous, and is the standout example. I should note, however, that I have the first printing of the book, so it is easily

possible that many of these issues have been resolved in the second printing. I also feel that it would make more sense to have chapters seven and eight switched, so that the chapter on homotopy groups would follow the chapter on homotopy and the chapter on simplicial homology would follow the chapter covering simplicial complexes. (The only part of chapter eight which relies on chapter seven is the statement of the Whitehead theorem, which is not proven, at the very end of the chapter.) Another complaint: His English does not always seem grammatically correct to me. (Maybe I'm sheltered living in the eastern US?) For example, "Since the arrows rotate 720 degrees as we go around the circle, so  $\deg(f) = 2$ ." does not sound like a full sentence to me. If I had only seen it once or twice I might mistake it for another typo, but this sort of sentence structure is all over the book. It really disrupts the flow for me. The first half of this book covers point-set topology, the second half algebraic. If you want to read this book in full, knowing basic algebra is an absolute must. If you have familiarity with, for example, quotient groups, free groups, and the rank/nullity theorem from linear algebra you should be fine. If you only care about the first half, knowing naïve set theory and basic operations on matrices should suffice. To summarize, the exposition is actually pretty good, but there are too many errors for me to recommend it. **IMPORTANT:** Apparently, a lot of mistakes have been corrected in the most recent printing. Please read the comments to this review for details.

The building blocks of topology are introduced in a very easy to understand manner. The prolific use of examples, some even entertaining, allows the reader to conceptualise abstract ideas and gain a better understanding of the theory.

I have a major in math, many years ago. I have moved into economics, but miss the elegance of math, hence I decided to revisit some old topics, and started with topology. As a student we used lecture notes and no real textbook, so my choice now was this textbook. It is a pure pleasure to read. I wish we had used it as a text book when I studied. The topics are well motivated. Crossley does a good job in explaining why we should care about these particular lemmas and theorems. The proofs are usually elegant. I find the esthetic pleasures a good math book should provide.

This is an excellent undergraduate text, written with a great deal of clarity and empathy to the reader. The book covers a great deal of ground, starting from the basics and going all the way to homology, in a compact package. You can't do better than this for an introductory text.

Topics are well motivated. Theorems are proved in a rigorous yet intuitive style that one feels like it was an explanation rather than a dry proof typically found in the advanced math books. Important key ideas are also sufficiently illustrated through examples and exercises. If one finds it verbose, I'd recommend a book--a bit more like the typical math books but accessible.

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