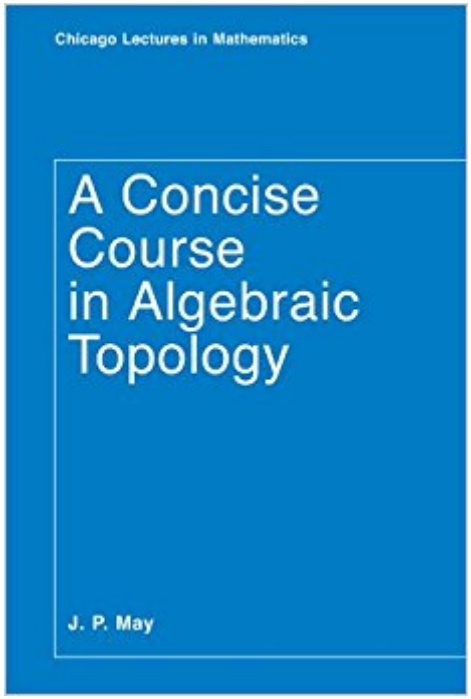
A Concise Course In Algebraic Topology (Chicago Lectures In Mathematics)



Synopsis

Algebraic topology is a basic part of modern mathematics, and some knowledge of this area is indispensable for any advanced work relating to geometry, including topology itself, differential geometry, algebraic geometry, and Lie groups. This book provides a detailed treatment of algebraic topology both for teachers of the subject and for advanced graduate students in mathematics either specializing in this area or continuing on to other fields.J. Peter May's approach reflects the enormous internal developments within algebraic topology over the past several decades, most of which are largely unknown to mathematicians in other fields. But he also retains the classical presentations of various topics where appropriate. Most chapters end with problems that further explore and refine the concepts presented. The final four chapters provide sketches of substantial areas of algebraic topology that are normally omitted from introductory texts, and the book concludes with a list of suggested readings for those interested in delving further into the field.

Book Information

Series: Chicago Lectures in Mathematics

Paperback: 254 pages

Publisher: University Of Chicago Press; 1 edition (September 1, 1999)

Language: English

ISBN-10: 0226511839

ISBN-13: 978-0226511832

Product Dimensions: 6 x 0.8 x 9 inches

Shipping Weight: 15.7 ounces (View shipping rates and policies)

Average Customer Review: 4.0 out of 5 stars 14 customer reviews

Best Sellers Rank: #450,095 in Books (See Top 100 in Books) #63 inÃ Â Books > Science & Math > Mathematics > Geometry & Topology > Algebraic Geometry #84 inÃ Â Books > Science & Math > Mathematics > Geometry & Topology > Topology #262 inÃ Â Books > Textbooks > Science & Mathematics > Mathematics > Geometry

Customer Reviews

J. P. May is professor of mathematics at the University of Chicago; he is the author or coauthor of many papers and books, including Simplicial Objects in Algebraic Topology and A Concise Course in Algebraic Topology, both in the Chicago Lectures in Mathematics series.Ã Â

If you're serious about algebraic topology, read this book.If one has a good background in abstract

algebra and point set topology and elementary homotopy theory, then this text is best suited for those who are serious about the subject. No prior exposure to algebraic topology beyond these basics is assumed. I believe this is what the author had in mind.Much of the real work in grad school takes place in filling in the gaps that authors of such rigorous textbooks deliberately leave out. Modulo the exercises, this is where a lot of the learning takes place anyway. And I see nothing wrong with supplementing a text of this caliber with others.It is probably not as geometrically motivated as, say, Hatcher, as it is pretty heavy going on (general) abstract nonsense to begin with. I appreciate how much algebra (and category theory) is infused into the text. The text certainly paves the way to "higher" algebraic topology (the sequel to this text, for instance), which renders it indispensable for aspiring algebraic topologists/homotopy theorists.This book really does pack quite a punch from a thoroughly modern point of view. Unfortunately, you don’t see many texts like these in print anymore.

The book itself is really promising - the material is not available in any other textbook, to my knowledge. I really like it as a supplement to my topology course; category theory organizes a lot of the theorems of topology so that’s a lot easier to remember just because everything fits together.However, the typos and in the book make it much less pleasant to use than it should be. For instance, in one of the commutative diagrams, Ãƒ Ã Â is supposed to be a "morphism of diagrams" aka a natural transformation. Yet there is a map drawn that shows Ãƒ Ã Â taking two objects of the underlying category to one another?The author also uses the phrase "pullback along f and g" without ever giving an explanation of what that means. Worse, the maps don’t even have the same target so even when I found somewhere that explained the phrase, it was wrong!Language from category theory is used throughout without explanation, but the real problem is that there’s no glossary or glossary of symbols.Also I bought this on and the blurb was screwed up - elongated or illegible letters in some places. Basically I use it because there’s nothing else. But a copy editor could fix everything.

Billed as notes from a required first-year graduate course honed from decades of teaching, its clear that this is a wash-out class, designed to separate the very best from the rest. Concise, clear, well-written, but definitely challenging. The text requires some real thought but is ultimately understandable.The homework problems, however, can be overwhelming if you don’t have a very strong background. One required some knowledge of loop spaces that is not at all touched on in the main text. Another required knowledge of the representation theory of free groups, something I

could guess at but didn’t know (and, again, is not at all touched on in the main text: you’d have to run to the library to educate yourself on the topic just to solve the homework problem. But I guess that’s what school is about, isn’t it?). Another reviewer recommends having previously gone through Bott & Tu, but this alone is not really enough. You’d have to have a pretty strong grounding in group theory, and perhaps a passing acquaintance with cat theory basics, such as pushouts, cones, limits, before this book becomes a pleasant read. I have NOT read Hatcher’s ’algebraic topology’, but have the sneaking suspicion its a pre-requisite as well.In short: this is a U-of-Chicago-style school-book: to get the most out of it, you’d have to supplement with readings from other texts, and have the ability to ask others when you get hung up on some or another point. Its perhaps a bit much for casual self-study at home, as I’m treating it.

clear, excellent book

This tiny textbook is well organized with an incredible amount of information. If you manage to read this, you will have much machinery of algebraic topology at hand. But, this book is not for you if you know practically nothing about the subject (hence four stars). I believe this work should be understood to have compiled "what topologists should know about algebraic topology" in a minimum number of pages.

I have always believed that the "goodness" of a mathematical textbook is inversely proportional to its length. J. P. May’s book "A Concise Course in Algebraic Topology" is a superb demonstration of this. While the book is indeed extremely terse, it forces the reader to thoroughly internalize the concepts before moving on. Also, it presents results in their full generality, making it a helpful reference work.

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