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Elements Of Algebraic Topology CRC Press
Originally published: Philadelphia: Saunders College Publishing, 1989; slightly corrected.

Introduction to General Topology Courier Dover Publications
When the first edition of this textbook published in 2011, it constituted a substantial revision of the best-selling Birkhäuser title by the same author, A Concise Introduction to the Theory of Integration. Appropriate as a primary text for a one-semester graduate course in integration theory, this GTM is also useful for independent study. A complete solutions manual is available

for instructors who adopt the text for their courses. This second edition has been revised as follows: § 2.2.5 and § 8.3 have been substantially reworked. New topics have been added. As an application of the material about Hermite functions in § 7.3.2, the author has added a brief introduction to Schwartz's theory of tempered distributions in § 7.3.4. Section § 7.4 is entirely new and contains applications, including the Central Limit Theorem, of Fourier analysis to measures. Related to this are subsections § 8.2.5 and § 8.2.6, where Lévy's Continuity Theorem and Bochner's characterization of the Fourier transforms of Borel probability on RN are proven. Subsection 8.1.2 is new and contains a proof of the Hahn Decomposition Theorem. Finally, there are several new exercises, some covering material from the original edition and others based on newly added material.

Calculus on Manifolds CRC Press
This welcome boon for students of algebraic topology cuts a much-needed central path between other texts whose treatment of the classification theorem for compact surfaces is either too formalized and complex for those without detailed background knowledge, or too informal to afford students a

comprehensive insight into the subject. Its dedicated, student-centred approach details a near-complete proof of this theorem, widely admired for its efficacy and formal beauty. The authors present the technical tools needed to deploy the method effectively as well as demonstrating their use in a clearly structured, worked example. Ideal for students whose mastery of algebraic topology may be a work-in-progress, the text introduces key notions such as fundamental groups, homology groups, and the Euler-Poincaré characteristic. These prerequisites are the subject of detailed appendices that enable focused, discrete learning where it is required, without interrupting the carefully planned structure of the core exposition. Gently guiding readers through the principles, theory, and applications of the classification theorem, the authors aim to foster genuine confidence in its use and in so doing encourage readers to move on to a deeper exploration of the versatile and valuable techniques available in algebraic topology.

Analysis On Manifolds Springer

This is an introductory textbook on general and algebraic topology, aimed at anyone with a basic knowledge of calculus and linear algebra. It provides full proofs and includes many examples and exercises. The covered topics include: set theory and cardinal arithmetic; axiom of choice and Zorn's lemma; topological spaces and continuous functions; connectedness and compactness; Alexandrov compactification; quotient topologies; countability and separation axioms; prebasis and Alexander's theorem; the Tychonoff theorem and paracompactness; complete metric spaces and function spaces; Baire spaces; homotopy of maps; the fundamental group; the van Kampen theorem; covering spaces; Brouwer and Borsuk's theorems; free groups and free product of groups; and basic category theory. While it is very concrete at the beginning, abstract concepts are gradually introduced. It is suitable for anyone needing a basic, comprehensive introduction to general and algebraic topology and its applications.

Topology Springer Science & Business Media

Topology is a large subject with many branches broadly categorized as algebraic topology, point-set topology, and geometric topology. Point-set topology is the main language for a broad variety of mathematical disciplines. Algebraic topology serves as a powerful tool for studying the problems in geometry and numerous other areas of mathematics. Elements of Topology provides a basic introduction to point-set topology and algebraic topology. It is intended for advanced undergraduate and beginning graduate students with working knowledge of analysis and algebra. Topics discussed include the theory of convergence, function spaces, topological transformation groups, fundamental groups, and covering spaces. The author makes the subject accessible by providing more than 250 worked examples and counterexamples with applications. The text also includes numerous end-of-section exercises to put the material into context.

Topology: Pearson New International Edition Springer Science & Business Media

This text is intended as a one semester introduction to algebraic topology at the undergraduate and beginning graduate levels. Basically, it covers simplicial homology theory, the fundamental group, covering spaces, the higher homotopy groups and introductory singular homology theory. The text follows a broad historical outline and uses the proofs of the discoverers of the important theorems when this is consistent with the elementary level of the course. This

method of presentation is intended to reduce the abstract nature of algebraic topology to a level that is palatable for the beginning student and to provide motivation and cohesion that are often lacking in abstact treatments. The text emphasizes the geometric approach to algebraic topology and attempts to show the importance of topological concepts by applying them to problems of geometry and analysis. The prerequisites for this course are calculus at the sophomore level, a one semester introduction to the theory of groups, a one semester introduc tion to point-set topology and some familiarity with vector spaces. Outlines of the prerequisite material can be found in the appendices at the end of the text. It is suggested that the reader not spend time initially working on the appendices, but rather that he read from the beginning of the text, referring to the appendices as his memory needs refreshing. The text is designed for use by college juniors of normal intelligence and does not require "mathematical maturity" beyond the junior level.

Functional Analysis, Sobolev Spaces and Partial Differential Equations Springer Science & Business Media

Topology continues to be a topic of prime importance in contemporary mathematics, but until the publication of this book there were few if any introductions to topology for undergraduates. This book remedied that need by offering a carefully thought-out, graduated approach to point set topology at the undergraduate level. To make the book as accessible as possible, the author approaches topology from a geometric and axiomatic standpoint; geometric, because most students come to the subject with a good deal of geometry behind them, enabling them to use their geometric intuition; axiomatic, because it parallels the student's experience with modern algebra, and keeps the book in harmony with current trends in mathematics. After a discussion of such preliminary topics as the algebra of sets, Euler-Venn diagrams and infinite sets, the author takes up basic definitions and theorems regarding topological spaces (Chapter 1). The second chapter deals with continuous functions (mappings) and homeomorphisms, followed by two chapters on special types of topological spaces (varieties of compactness and varieties of connectedness). Chapter 5 covers metric spaces. Since basic point set topology serves as a foundation not only for functional analysis but also for more advanced work in point set

topology and algebraic topology, the author has included topics aimed at students with interests other than analysis. Moreover, Dr. Baum has supplied quite detailed proofs in the beginning to help students approaching this type of axiomatic mathematics for the first time. Similarly, in the first part of the book problems are elementary, but they become progressively more difficult toward the end of the book. References have been supplied to suggest further reading to the interested student.

Introduction to Topology CRC Press

An introductory textbook suitable for use in a course or for self-study, featuring broad coverage of the subject and a readable exposition, with many examples and exercises.

The Stone- ech Compactification Pearson

This textbook is a completely revised, updated, and expanded English edition of the important Analyse fonctionnelle (1983). In addition, it contains a wealth of problems and exercises (with solutions) to guide the reader. Uniquely, this book presents in a coherent, concise and unified way the main results from functional analysis together with the main results from the theory of partial differential equations (PDEs). Although there are many books on functional analysis and many on PDEs, this is the first to cover both of these closely connected topics. Since the French book was first published, it has been translated into Spanish, Italian, Japanese, Korean, Romanian, Greek and Chinese. The English edition makes a welcome addition to this list.

American Mathematical Soc.

Building on rudimentary knowledge of real analysis, point-set topology, and basic algebra, Basic Algebraic Topology provides plenty of material for a two-semester course in algebraic topology. The book first introduces the necessary fundamental concepts, such as relative homotopy, fibrations and cofibrations, category theory, cell complexes, and si

Geometry Ingram

This book uses elementary versions of modern methods found in sophisticated mathematics to discuss portions of "advanced calculus" in which the subtlety of the concepts and methods makes rigor difficult to attain at an elementary level.

Geometry of Differential Forms Springer Science & Business Media
A readable introduction to the subject of calculus on arbitrary surfaces or
manifolds. Accessible to readers with knowledge of basic calculus and linear
algebra. Sections include series of problems to reinforce concepts.
Geometric and Topological Inference Cambridge University Press
This material is intended to contribute to a wider appreciation of the
mathematical words "continuity and linearity". The book's purpose is to
illuminate the meanings of these words and their relation to each other ---
Product Description.

Second Edition Cambridge University Press

For a senior undergraduate or first year graduate-level course in
Introduction to Topology. Appropriate for a one-semester course
on both general and algebraic topology or separate courses treating
each topic separately. This text is designed to provide instructors
with a convenient single text resource for bridging between general
and algebraic topology courses. Two separate, distinct sections (one
on general, point set topology, the other on algebraic topology) are
each suitable for a one-semester course and are based around the
same set of basic, core topics. Optional, independent topics and
applications can be studied and developed in depth depending on
course needs and preferences.

· **2** Springer Science & Business Media
Recent research has produced a large number of results concerning the Stone-
Cech compactification or involving it in a central manner. The goal of this
volume is to make many of these results easily accessible by collecting them in a
single source together with the necessary introductory material. The author's
interest in this area had its origin in his fascination with the classic text Rings of
Continuous Functions by Leonard Gillman and Meyer Jerison. This excellent
synthesis of algebra and topology appeared in 1960 and did much to draw
attention to the Stone-Cech compactification {3X as a tool to investigate the
relationships between a space X and the rings $C(X)$ and $C^*(X)$ of real-valued
continuous functions. Although in the approach taken here {3X is viewed as the
object of study rather than as a tool, the influence of Rings of Continuous
Functions is clearly evident. Three introductory chapters make the book
essentially self-contained and the exposition suitable for the student who has
completed a first course in topology at the graduate level. The development of
the Stone Cech compactification and the more specialized topological
prerequisites are presented in the first chapter. The necessary material on Boolean
algebras, including the Stone Representation Theorem, is developed in Chapter
2. A very basic introduction to category theory is presented in the beginning of
Chapter 10 and the remainder of the chapter is an introduction to the methods of
categorical topology as it relates to the Stone-Cech compactification.
A First Course World Scientific
Learn the basics of point-set topology with the understanding of its real-
world application to a variety of other subjects including science,
economics, engineering, and other areas of mathematics. KEY TOPICS:
Introduces topology as an important and fascinating mathematics
discipline to retain the readers interest in the subject. Is written in an
accessible way for readers to understand the usefulness and importance of
the application of topology to other fields. Introduces topology concepts
combined with their real-world application to subjects such DNA, heart
stimulation, population modeling, cosmology, and computer graphics.
Covers topics including knot theory, degree theory, dynamical systems
and chaos, graph theory, metric spaces, connectedness, and compactness.
MARKET: A useful reference for readers wanting an intuitive
introduction to topology.
A Modern Approach to Classical Theorems of Advanced Calculus CRC
Press
This book begins with the basics of the geometry and topology of
Euclidean space and continues with the main topics in the theory of
functions of several real variables including limits, continuity,
differentiation and integration. All topics and in particular, differentiation

and integration, are treated in depth and with mathematical rigor. The classical theorems of differentiation and integration such as the Inverse and Implicit Function theorems, Lagrange's multiplier rule, Fubini's theorem, the change of variables formula, Green's, Stokes' and Gauss' theorems are proved in detail and many of them with novel proofs. The authors develop the theory in a logical sequence building one result upon the other, enriching the development with numerous explanatory remarks and historical footnotes. A number of well chosen illustrative examples and counter-examples clarify matters and teach the reader how to apply these results and solve problems in mathematics, the other sciences and economics.Each of the chapters concludes with groups of exercises and problems, many of them with detailed solutions while others with hints or final answers. More advanced topics, such as Morse's lemma, Sard's theorem , the Weierstrass approximation theorem, the Fourier transform, Vector fields on spheres, Brouwer's fixed point theorem, Whitney's embedding theorem, Picard's theorem, and Hermite polynomials are discussed in stared sections.

Cohomology of Groups Cambridge University Press

A rigorous introduction to geometric and topological inference, for anyone interested in a geometric approach to data science.

Elementary Differential Topology Springer Science & Business Media

Topology

Pure and Applied Springer Nature

Manifolds, the higher-dimensional analogs of smooth curves and surfaces, are fundamental objects in modern mathematics. Combining aspects of algebra, topology, and analysis, manifolds have also been applied to classical mechanics, general relativity, and quantum field theory. In this streamlined introduction to the subject, the theory of manifolds is presented with the aim of helping the reader achieve a rapid mastery of the essential topics. By the end of the book the reader should be able to compute, at least for simple spaces, one of the most basic topological invariants of a manifold, its de Rham cohomology. Along the way, the reader acquires the knowledge and skills necessary for further study of geometry and topology. The requisite point-set topology is included in an appendix of twenty pages; other appendices review facts from real analysis and linear algebra. Hints and solutions are provided to many of the exercises and problems. This work may be used as the text for a one-semester graduate or advanced undergraduate course, as well as by students engaged in self-study. Requiring only minimal undergraduate prerequisites, 'Introduction to Manifolds' is also an excellent foundation for Springer's GTM 82, 'Differential Forms in Algebraic Topology'.