

G. Kosniowski

A first course in algebraic topology



Algebraic Topology A First Course

William Fulton



Algebraic Topology A First Course:

Algebraic Topology William Fulton, 1997-09-05 To the Teacher This book is designed to introduce a student to some of the important ideas of algebraic topology by emphasizing the relations of these ideas with other areas of mathematics Rather than choosing one point of view of modern topology homotopy theory simplicial complexes singular theory axiomatic homology differential topology etc we concentrate our attention on concrete problems in low dimensions introducing only as much algebraic machinery as necessary for the problems we meet This makes it possible to see a wider variety of important features of the subject than is usual in a beginning text The book is designed for students of mathematics or science who are not aiming to become practicing algebraic topologists without we hope discouraging budding topologists We also feel that this approach is in better harmony with the historical development of the subject What would we like a student to know after a first course in topology assuming we reject the answer half of what one would like the student to know after a second course in topology Our answers to this have guided the choice of material which includes understanding the relation between homology and integration first on plane domains later on Riemann surfaces and in higher dimensions winding numbers and degrees of mappings fixed point theorems applications such as the Jordan curve theorem invariance of domain in terms of vector fields and Euler characteristics fundamental groups *Algebraic Topology* Max K. Agoston, 1976 A

First Course in Algebraic Topology B. K. Lahiri, 2005 Includes basic notions of category functors and homotopy of continuous mappings including relative homotopy In this book simplexes and complexes are presented in detail and two homology theories simplicial homology and singular homology have been considered along with calculations of some homology groups

Algebraic Topology Marvin J. Greenberg, 2018-03-05 Great first book on algebraic topology Introduces cohomology through singular theory *A First Course in Algebraic Topology* Czes Kosniowski, 1980-09-25 This self contained introduction to algebraic topology is suitable for a number of topology courses It consists of about one quarter general topology without its usual pathologies and three quarters algebraic topology centred around the fundamental group a readily grasped topic which gives a good idea of what algebraic topology is The book has emerged from courses given at the University of Newcastle upon Tyne to senior undergraduates and beginning postgraduates It has been written at a level which will enable the reader to use it for self study as well as a course book The approach is leisurely and a geometric flavour is evident throughout The many illustrations and over 350 exercises will prove invaluable as a teaching aid This account will be welcomed by advanced students of pure mathematics at colleges and universities **Algebraic Topology** Marvin J. Greenberg, John R. Harper, 1981 *Algebraic Topology* Allen Hatcher, 2002 In most mathematics departments at major universities one of the three or four basic first year graduate courses is in the subject of algebraic topology This introductory textbook in algebraic topology is 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 four main chapters present the basic material of the subject

fundamental group and covering spaces homology and cohomology higher homotopy groups and homotopy theory generally The author emphasizes the geometric aspects of the subject which helps students gain intuition A unique feature of the book is the inclusion of many optional topics which are not usually part of a first course due to time constraints and for which elementary expositions are sometimes hard to find Among these are Bockstein and transfer homomorphisms direct and inverse limits H spaces and Hopf algebras the Brown representability theorem the James reduced product the Dold Thom theorem and a full exposition of Steenrod squares and powers Researchers will also welcome this aspect of the book

FIRST COURSE IN ALGEBRAIC TOPOLOGY. C. KOSNIOWSKI, 1980 A Basic Course in Algebraic Topology William S. Massey, 2019-06-28 This textbook is intended for a course in algebraic topology at the beginning graduate level The main topics covered are the classification of compact 2 manifolds the fundamental group covering spaces singular homology theory and singular cohomology theory These topics are developed systematically avoiding all unnecessary definitions terminology and technical machinery The text consists of material from the first five chapters of the author's earlier book Algebraic Topology an Introduction GTM 56 together with almost all of his book Singular Homology Theory GTM 70 The material from the two earlier books has been substantially revised corrected and brought up to date *More Concise Algebraic Topology* J. P. May, K. Ponto, 2011-12-05 With firm foundations dating only from the 1950s algebraic topology is a relatively young area of mathematics There are very few textbooks that treat fundamental topics beyond a first course and many topics now essential to the field are not treated in any textbook J Peter May's A Concise Course in Algebraic Topology addresses the standard first course material such as fundamental groups covering spaces the basics of homotopy theory and homology and cohomology In this sequel May and his coauthor Kathleen Ponto cover topics that are essential for algebraic topologists and others interested in algebraic topology but that are not treated in standard texts They focus on the localization and completion of topological spaces model categories and Hopf algebras The first half of the book sets out the basic theory of localization and completion of nilpotent spaces using the most elementary treatment the authors know of It makes no use of simplicial techniques or model categories and it provides full details of other necessary preliminaries With these topics as motivation most of the second half of the book sets out the theory of model categories which is the central organizing framework for homotopical algebra in general Examples from topology and homological algebra are treated in parallel A short last part develops the basic theory of bialgebras and Hopf algebras A First Course in Topology John McCleary, 2006 How many dimensions does our universe require for a comprehensive physical description In 1905 Poincare argued philosophically about the necessity of the three familiar dimensions while recent research is based on 11 dimensions or even 23 dimensions The notion of dimension itself presented a basic problem to the pioneers of topology Cantor asked if dimension was a topological feature of Euclidean space To answer this question some important topological ideas were introduced by Brouwer giving shape to a subject whose development dominated the twentieth century The basic notions in

topology are varied and a comprehensive grounding in point set topology the definition and use of the fundamental group and the beginnings of homology theory requires considerable time The goal of this book is a focused introduction through these classical topics aiming throughout at the classical result of the Invariance of Dimension This text is based on the author's course given at Vassar College and is intended for advanced undergraduate students It is suitable for a semester long course on topology for students who have studied real analysis and linear algebra It is also a good choice for a capstone course senior seminar or independent study

A First Course In Algebraic Topology B. K. Lahiri, 2000 [A User's Guide to Algebraic Topology](#) C. T. J. Dodson, C.T. Dodson, P.E. Parker, Phillip E. Parker, 1997-01-31 This book arose from courses taught by the authors and is designed for both instructional and reference use during and after a first course in algebraic topology It is a handbook for users who want to calculate but whose main interests are in applications using the current literature rather than in developing the theory Typical areas of applications are differential geometry and theoretical physics We start gently with numerous pictures to illustrate the fundamental ideas and constructions in homotopy theory that are needed in later chapters We show how to calculate homotopy groups homology groups and cohomology rings of most of the major theories exact homotopy sequences of fibrations some important spectral sequences and all the obstructions that we can compute from these Our approach is to mix illustrative examples with those proofs that actually develop transferable calculational aids We give extensive appendices with notes on background material extensive tables of data and a thorough index Audience Graduate students and professionals in mathematics and physics [Algebraic Topology](#) Mx K. Agoston, 1976 **Algebraic Topology** Kevin P. Knudson, 2024-08-19 This book is ideal as an introduction to algebraic topology and applied algebraic topology featuring a streamlined approach including coverage of basic categorical notions simplicial cellular and singular homology persistent homology cohomology groups cup products Poincare Duality homotopy theory and spectral sequences The focus is on examples and computations and there are many end of chapter exercises and extensive student projects

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Algebraic Topology A First Course Book Review: Unveiling the Magic of Language

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