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By using the de Rham theory of differential forms as a prototype of cohomology, the machineries of algebraic topology are made easier to assimilate. With its stress on concreteness, motivation, and readability, "Differential Forms in Algebraic Topology" should be suitable for self-study or for a one-semester course in topology.

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The guiding principle in this book is to use differential forms as an aid in exploring some of the less digestible aspects of algebraic topology. Accord ingly, we move primarily in the realm of smooth manifolds and use the de Rham theory as a prototype of all of cohomology. For applications to homotopy theory we also discuss by way of analogy cohomology with arbitrary coefficients.

Differential Forms in Algebraic Topology | Raoul Bott ...

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Differential Forms in Algebraic Topology. Raoul Bott, Loring W. Tu (auth.) The guiding principle in this book is to use differential forms as an aid in exploring some of the less digestible aspects of algebraic topology. Accord ingly, we move primarily in the realm of smooth manifolds and use the de Rham theory as a prototype of all of cohomology.

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Differential Forms in Algebraic Topology: Bott, Raoul, Tu ...

In mathematics, an open cover of a topological space is a family of open subsets such that is the union of all of the open sets. A good cover is an open cover in which all sets and all intersections of finitely-many sets are contractible (Petersen 2006).. The concept was introduced by André Weil in 1952 for differentiable manifolds, demanding the … to be differentiably contractible.

Good cover (algebraic topology) - Wikipedia

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Differential Forms in Algebraic Topology: Bott, Raoul, Tu ...

Differential Forms in Algebraic Topology (with Raoul Bott), third corrected printing, Graduate Text in Mathematics, Springer, New York, 1995. The third printing published in 1995 corrects misprints in earlier printings; after that, the book has remained stable. Any printing dated 1995 or later should be fine. Earlier printings should be discarded.

Errata for Bott and Tu's book "Differential Forms in ...

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Developed from a first-year graduate course in algebraic topology, this text is an informal introduction to some of the main ideas of contemporary homotopy and cohomology theory. The materials are structured around four core areas: de Rham theory, the Cech-de Rham complex, spectral sequences, and characteristic classes. By using the de Rham theory of differential forms as a prototype of cohomology, the machineries of algebraic topology are made easier to assimilate. With its stress on concreteness, motivation, and readability, this book is equally suitable for self-study and as a one-semester course in topology.

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In this volume the authors seek to illustrate how methods of differential geometry find application in the study of the topology of differential manifolds. Prerequisites are few since the authors take pains to set out the theory of differential forms and the algebra required. The reader is introduced to De Rham cohomology, and explicit and detailed calculations are present as examples. Topics covered include Mayer-Vietoris exact sequences, relative cohomology, Pioncare duality and Lefschetz's theorem. This book will be suitable for graduate students taking courses in algebraic topology and in differential topology. Mathematicians studying relativity and mathematical physics will find this an invaluable introduction to the techniques of differential geometry.

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'.

This book presents a geometric introduction to the homology of topological spaces and the cohomology of smooth manifolds. The author introduces a new class of stratified spaces, so-called stratifolds. He derives basic concepts from differential topology such as Sard's theorem, partitions of unity and transversality. Based on this, homology groups are constructed in the framework of stratifolds and the homology axioms are proved. This implies that for nice spaces these homology groups agree with ordinary singular homology. Besides the standard computations of homology groups using the axioms, straightforward constructions of important homology classes are given. The author also defines stratifold cohomology groups following an idea of Quillen. Again, certain important cohomology classes occur very naturally in this description, for example, the characteristic classes which are constructed in the book and applied later on. One of the most fundamental results, Poincare duality, is almost a triviality in this approach. Some fundamental invariants, such as the Euler characteristic and the signature, are derived from (co)homology groups. These invariants play a significant role in some of the most spectacular results in differential topology. In particular, the author proves a special case of Hirzebruch's signature theorem and presents as a highlight Milnor's exotic 7-spheres. This book is based on courses the author taught in Mainz and Heidelberg. Readers should be familiar with the basic notions of point-set topology and differential topology. The book can be used for a combined introduction to differential and algebraic topology, as well as for a quick presentation of (co)homology in a course about differential geometry.

This completely revised and corrected version of the well-known Florence notes circulated by the authors together with E. Friedlander examines basic topology, emphasizing homotopy theory. Included is a discussion of Postnikov towers and rational homotopy theory. This is then followed by an in-depth look at differential forms and de Tham's theorem on simplicial complexes. In addition, Sullivan's results on computing the rational homotopy type from forms is presented. New to the Second Edition: *Fully-revised appendices including an expanded discussion of the Hirsch lemma *Presentation of a natural proof of a Serre spectral sequence result *Updated content throughout the book, reflecting advances in the area of homotopy theory With its modern approach and timely revisions, this second edition of Rational Homotopy Theory and Differential Forms will be a valuable resource for graduate students and researchers in algebraic topology, differential forms, and homotopy theory.

This monograph provides an introduction to, as well as a unification and extension of the published work and some unpublished ideas of J. Lipman and E. Kunz about traces of differential forms and their relations to duality theory for projective morphisms. The approach uses Hochschild-homology, the definition of which is extended to the category of topological algebras. Many results for Hochschild-homology of commutative algebras also hold for Hochschild-homology of topological algebras. In particular, after introducing an appropriate notion of completion of differential algebras, one gets a natural transformation between differential forms and Hochschild-homology of topological algebras. Traces of differential forms are of interest to everyone working with duality theory and residue symbols. Hochschild-homology is a useful tool in many areas of k-theory. The treatment is fairly elementary and requires only little knowledge in commutative algebra and algebraic geometry.

This book is a well-informed and detailed analysis of the problems and development of algebraic topology, from Poincaré and Brouwer to Serre, Adams, and Thom. The author has examined each significant paper along this route and describes the steps and strategy of its proofs and its relation to other work. Previously, the history of the many technical developments of 20th-century mathematics had seemed to present insuperable obstacles to scholarship. This book demonstrates in the case of topology how these obstacles can be overcome, with enlightening results.... Within its chosen boundaries the coverage of this book is superb. Read it! —MathSciNet