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Sinopsis

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Developed from the author's course on the subject, *Elements of Differential Topology* explores the vast and elegant theories in topology developed by Morse, Thom, Smale, Whitney, Milnor, and others. It begins with differential and integral calculus, leads you through the intricacies of manifold theory, and concludes with discussions on algebraic topology, algebraic/differential geometry, and Lie groups.

The first two chapters review differential and integral calculus of several variables and present fundamental results that are used throughout the text. The next few chapters focus on smooth manifolds as submanifolds in a Euclidean space, the algebraic machinery of differential forms necessary for studying integration on manifolds, abstract smooth manifolds, and the foundation for homotopical aspects of manifolds. The author then discusses a central theme of the book: intersection theory. He also covers Morse functions and the basics of Lie groups, which provide a rich source of examples of manifolds. Exercises are included in each chapter, with solutions and hints at the back of the book.

A sound introduction to the theory of smooth manifolds, this text ensures a smooth transition from calculus-level mathematical maturity to the level required to understand abstract manifolds and topology. It contains all standard results, such as Whitney embedding theorems and the Borsuk-Ulam theorem, as well as several equivalent definitions of the Euler characteristic.