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Nota di contenuto	1 Introduction -- 2 The s-Cobordism Theorem -- 3 Whitehead Torsion -- 4 The Surgery Step and -Bordism -- 5 Poincaré Duality -- 6 The Spivak Normal Structure -- 7 Normal Maps and the Surgery Problem -- 8 The Even-Dimensional Surgery Obstruction -- 9 The Odd-Dimensional Surgery Obstruction -- 10 Decorations and the Simple Surgery Obstruction -- 11 The Geometric Surgery Exact Sequence -- 12 Homotopy Spheres -- 13 The Geometric Surgery Obstruction Group

and Surgery Obstruction -- 14 Chain Complexes -- 15 Algebraic Surgery -- 16 Brief Survey of Computations of L-Groups -- 17 The Homotopy Type of G/TOP, G/PL, and G/O -- 18 Computations of Topological Structure Sets of some Prominent Closed Manifolds -- 19 Topological Rigidity -- 20 Modified Surgery -- 21 Solutions of the Exercises.

Sommario/riassunto

This monograph provides a comprehensive introduction to surgery theory, the main tool in the classification of manifolds. Surgery theory was developed to carry out the so-called Surgery Program, a basic strategy to decide whether two closed manifolds are homeomorphic or diffeomorphic. This book provides a detailed explanation of all the ingredients necessary for carrying out the surgery program, as well as an in-depth discussion of the obstructions that arise. The components include the surgery step, the surgery obstruction groups, surgery obstructions, and the surgery exact sequence. This machinery is applied to homotopy spheres, the classification of certain fake spaces, and topological rigidity. The book also offers a detailed description of Ranicki's chain complex version, complete with a proof of its equivalence to the classical approach developed by Browder, Novikov, Sullivan, and Wall. This book has been written for learning surgery theory and includes numerous exercises. With full proofs and detailed explanations, it also provides an invaluable reference for working mathematicians. Each chapter has been designed to be largely self-contained and includes a guide to help readers navigate the material, making the book highly suitable for lecture courses, seminars, and reading courses.