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Nota di contenuto	§0. Preliminaries -- 1: Rings, Modules and Homomorphisms -- §1. Review of Rings and their Homomorphisms -- §2. Modules and Submodules -- §3. Homomorphisms of Modules -- §4. Categories of Modules; Endomorphism Rings -- 2: Direct Sums and Products -- §5. Direct Summands -- §6. Direct Sums and Products of Modules -- §7. Decomposition of Rings -- §8. Generating and Cogenerating -- 3: Finiteness Conditions for Modules -- §9. Semisimple Modules—The Sode and the Radical -- §10. Finitely Generated and Finitely Cogenerated Modules—Chain Conditions -- §11. Modules with Composition Series -- §12. Indecomposable Decompositions of Modules -- 4: Classical Ring-Structure Theorems -- §13. Semisimple Rings -- §14. The Density Theorem -- §15. The Radical of a Ring—Local Rings and Artinian Rings -- 5: Functors Between Module Categories -- §16. The Horn Functors and Exactness—Projectivity and Injectivity -- §17. Projective Modules and Generators -- §18. Injective Modules and Cogenerators -- §19. The Tensor Functors and Flat Modules -- §20. Natural Transformations -- 6: Equivalence and Duality for Module Categories -- §21. Equivalent Rings -- §22. The Morita Characterizations of Equivalence -- §23. Dualities -- §24. Morita Dualities -- 7: Injective Modules, Projective Modules, and Their Decompositions -- §25. Injective Modules and Noetherian Rings—The Faith-Walker Theorems -- §26. Direct Sums of Countably Generated Modules—With Local Endomorphism Rings -- §27. Semiperfect Rings -- §28. Perfect Rings -- §29. Modules with Perfect Endomorphism

Rings -- 8: Classical Artinian Rings -- §30. Artinian Rings with Duality -- §31. Injective Projective Modules -- §32. Serial Rings -- References.

Sommario/riassunto

This book is intended to provide a reasonably self-contained account of a major portion of the general theory of rings and modules suitable as a text for introductory and more advanced graduate courses. We assume the famil- iarity with rings usually acquired in standard undergraduate algebra courses. Our general approach is categorical rather than arithmetical. The continuing theme of the text is the study of the relationship between the one-sided ideal structure that a ring may possess and the behavior of its categories of modules. Following a brief outline of set-theoretic and categorical foundations, the text begins with the basic definitions and properties of rings, modules and homomorphisms and ranges through comprehensive treatments of direct sums, finiteness conditions, the Wedderburn-Artin Theorem, the Jacobson radical, the hom and tensor functions, Morita equivalence and duality, de- composition theory of injective and projective modules, and semi perfect and perfect rings. In this second edition we have included a chapter containing many of the classical results on artinian rings that have hdped to form the foundation for much of the contemporary research on the representation theory of artinian rings and finite dimensional algebras. Both to illustrate the text and to extend it we have included a substantial number of exercises covering a wide spectrum of difficulty. There are, of course" many important areas of ring and module theory that the text does not touch upon.