

1. Record Nr.	UNINA9910828274203321
Autore	Do Carmo Manfredo P
Titolo	Differential Forms and Applications // by Manfredo P. Do Carmo
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 1994
ISBN	3-642-57951-5
Edizione	[1st ed. 1994.]
Descrizione fisica	1 online resource (X, 118 p.)
Collana	Universitext, , 0172-5939
Disciplina	515/.37
Soggetti	Differential geometry Mathematical analysis Analysis (Mathematics) Mathematical physics Physics Differential Geometry Analysis Theoretical, Mathematical and Computational Physics Mathematical Methods in Physics Numerical and Computational Physics, Simulation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (page 115) and index.
Nota di contenuto	1. Differential Forms in R^n -- 2. Line Integrals -- 3. Differentiable Manifolds -- 4. Integration on Manifolds; Stokes Theorem and Poincaré's Lemma -- 1. Integration of Differential Forms -- 2. Stokes Theorem -- 3. Poincaré's Lemma -- 5. Differential Geometry of Surfaces -- 1. The Structure Equations of R^n -- 2. Surfaces in R^3 -- 3. Intrinsic Geometry of Surfaces -- 6. The Theorem of Gauss-Bonnet and the Theorem of Morse -- 1. The Theorem of Gauss-Bonnet -- 2. The Theorem of Morse -- References.
Sommario/riassunto	This is a free translation of a set of notes published originally in Portuguese in 1971. They were translated for a course in the College of Differential Geometry, ICTP, Trieste, 1989. In the English translation we omitted a chapter on the Frobenius theorem and an appendix on the nonexistence of a complete hyperbolic plane in euclidean 3-space

(Hilbert's theorem). For the present edition, we introduced a chapter on line integrals. In Chapter 1 we introduce the differential forms in \mathbb{R}^n . We only assume an elementary knowledge of calculus, and the chapter can be used as a basis for a course on differential forms for "users" of Mathematics. In Chapter 2 we start integrating differential forms of degree one along curves in \mathbb{R}^n . This already allows some applications of the ideas of Chapter 1. This material is not used in the rest of the book. In Chapter 3 we present the basic notions of differentiable manifolds. It is useful (but not essential) that the reader be familiar with the notion of a regular surface in \mathbb{R}^3 . In Chapter 4 we introduce the notion of manifold with boundary and prove Stokes theorem and Poincaré's lemma. Starting from this basic material, we could follow any of the possible routes for applications: Topology, Differential Geometry, Mechanics, Lie Groups, etc. We have chosen Differential Geometry. For simplicity, we restricted ourselves to surfaces.
