1.	Record Nr.	UNINA9910372749003321
	Autore	Axler Sheldon
	Titolo	Measure, Integration & Real Analysis / / by Sheldon Axler
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
	ISBN	3-030-33143-1
	Edizione	[1st ed. 2020.]
	Descrizione fisica	1 online resource (411)
	Collana	Graduate Texts in Mathematics, , 2197-5612 ; ; 282
	Disciplina	515.42 515
	Soggetti	Measure theory Measure and Integration
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	About the Author -- Preface for Students -- Preface for Instructors -- Acknowledgments -- 1. Riemann Integration -- 2. Measures -- 3. Integration -- 4. Differentiation -- 5. Product Measures -- 6. Banach Spaces -- 7. L^p Spaces -- 8. Hilbert Spaces -- 9. Real and Complex Measures -- 10. Linear Maps on Hilbert Spaces -- 11. Fourier Analysis -- 12. Probability Measures -- Photo Credits -- Bibliography -- Notation Index -- Index -- Colophon: Notes on Typesetting.
	Sommario/riassunto	This open access textbook welcomes students into the fundamental theory of measure, integration, and real analysis. Focusing on an accessible approach, Axler lays the foundations for further study by promoting a deep understanding of key results. Content is carefully curated to suit a single course, or two-semester sequence of courses, creating a versatile entry point for graduate studies in all areas of pure and applied mathematics. Motivated by a brief review of Riemann integration and its deficiencies, the text begins by immersing students in the concepts of measure and integration. Lebesgue measure and abstract measures are developed together, with each providing key insight into the main ideas of the other approach. Lebesgue integration links into results such as the Lebesgue Differentiation Theorem. The development of products of abstract measures leads to Lebesgue measure on Rn. Chapters on Banach spaces, Lp spaces, and Hilbert spaces showcase major results such as the Hahn–Banach Theorem,

Hölder's Inequality, and the Riesz Representation Theorem. An in-depth study of linear maps on Hilbert spaces culminates in the Spectral Theorem and Singular Value Decomposition for compact operators, with an optional interlude in real and complex measures. Building on the Hilbert space material, a chapter on Fourier analysis provides an invaluable introduction to Fourier series and the Fourier transform. The final chapter offers a taste of probability. Extensively class tested at multiple universities and written by an award-winning mathematical expositor, Measure, Integration & Real Analysis is an ideal resource for students at the start of their journey into graduate mathematics. A prerequisite of elementary undergraduate real analysis is assumed; students and instructors looking to reinforce these ideas will appreciate the electronic Supplement for Measure, Integration & Real Analysis that isfreely available online.