

1. Record Nr.	UNISA996418275703316
Autore	Axler Sheldon
Titolo	Measure, Integration & Real Analysis [[electronic resource] /] / by Sheldon Axler
Pubbl/distr/stampa	Cham, : Springer Nature, 2020 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, , 0072-5285 ; ; 282
Disciplina	515.42
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 $\mathbb{R}^n$ . Chapters on Banach spaces, $L^p$ 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 is freely available online.

---