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Titolo	Measure and Integration : An Introduction // by Satya N. Mukhopadhyay, Subhasis Ray
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Descrizione fisica	1 online resource (647 pages)
Collana	University Texts in the Mathematical Sciences, , 2731-9326
Altri autori (Persone)	RaySubhasis
Disciplina	515.42
Soggetti	Measure theory Associative rings Associative algebras Functions of real variables Measure and Integration Associative Rings and Algebras Real Functions Teoria de la mesura Anells associatius Àlgebres associatives Funcions de variables reals Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	Preliminaries -- Lebesgue Measure on Real Line -- Measurable Functions -- More about Sets and Functions -- The Lebesgue Integral -- Differentiation of Functions -- Lebesgue measure and integration in $\mathbb{R}^n$ -- General Measure and Outer Measure -- Function Spaces -- Signed Measure and Complex Measure.
Sommario/riassunto	Designed for senior undergraduate and graduate students in mathematics, this textbook offers a comprehensive exploration of measure theory and integration. It acts as a pivotal link bridging the Riemann integral and the Lebesgue integral, with a primary focus on tracing the evolution of measure and integration from their historical roots. A distinctive feature of the book is meticulous guidance,

providing a step-by-step journey through the subject matter, thus rendering complex concepts more accessible to beginners. A fundamental grasp of differential and integral calculus, as well as Riemann integration, is recommended to ensure a smoother comprehension of the material. This textbook comprises 10 well-structured chapters, each thoughtfully organized to lead students from fundamental principles to advanced complexities. Beginning with the establishment of Lebesgue's measure on the real line and an introduction to measurable functions, the book then delves into exploring the cardinalities of various set classes. As readers progress, the subtleties of the Lebesgue integral emerge, showcasing its generalization of the Riemann integral and its unique characteristics in higher dimensions. One of the book's distinctive aspects is its in-depth comparison of the Lebesgue integral, improper Riemann integral, and Newton integral, shedding light on their distinct qualities and relative independence. Subsequent chapters delve into the realm of general measures, Lebesgue-Stieltje's measure, Hausdorff's measure, and the concept of measure and integration in product spaces. Furthermore, the book delves into function spaces, such as  $L^p$  spaces, and navigates the intricacies of signed and complex measures, providing students with a comprehensive foundation in this vital area of mathematics.

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