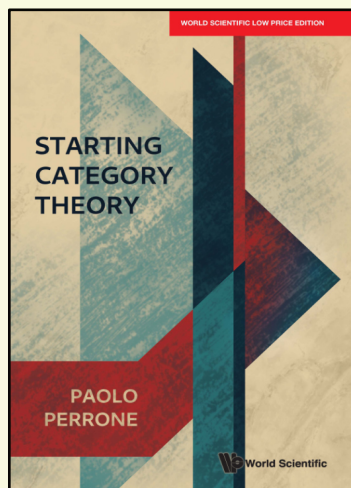


# Starting Category Theory



By **Paolo Perrone**  
(University of Oxford, UK)

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## ABOUT THE BOOK

One of the central highlights of this work is the exploration of the Yoneda lemma and its profound implications, during which intuitive explanations are provided, as well as detailed proofs, and specific examples. This book covers aspects of category theory often considered advanced in a clear and intuitive way, with rigorous mathematical proofs. It investigates universal properties, coherence, the relationship between categories and graphs, and treats monads and comonads on an equal footing, providing theorems, interpretations and concrete examples. Finally, this text contains an introduction to monoidal categories and to strong and commutative monads, which are essential tools in current research but seldom found in other textbooks.

Starting Category Theory serves as an accessible and comprehensive introduction to the fundamental concepts of category theory. Originally crafted as lecture notes for an undergraduate course, it has been developed to be equally well-suited for individuals pursuing self-study. Most crucially, it deliberately caters to those who are new to category theory, not requiring readers to have a background in pure mathematics, but only a basic understanding of linear algebra.

## READERSHIP

This book is primarily targeted towards undergraduate and graduate students in mathematics and related fields (physics, computer science, statistics, engineering), and is suitable for either course adoption for category theory and discrete mathematics, or for self-study. More broadly, this book can appeal to researchers in related fields and professionals working in technology (machine learning, etc.).

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## ABOUT THE AUTHOR

**Paolo Perrone** is a researcher at the University of Oxford (UK). After completing his PhD at the University of Leipzig (Germany), he has worked at the Max Planck Institute for Mathematics in the Sciences (Leipzig, Germany), at the York University (Toronto ON, Canada), and at MIT (Cambridge MA, USA). His research focuses on category theory, probability, and information theory.

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