DESCRIPTION

A concise introduction to the major concepts of functional analysis

Requiring only a preliminary knowledge of elementary linear algebra and real analysis, *A First Course in Functional Analysis* provides an introduction to the basic principles and practical applications of functional analysis. Key concepts are illustrated in a straightforward manner, which facilitates a complete and fundamental understanding of the topic.

This book is based on the author's own class-tested material and uses clear language to explain the major concepts of functional analysis, including Banach spaces, Hilbert spaces, topological vector spaces, as well as bounded linear functionals and operators. As opposed to simply presenting the proofs, the author outlines the logic behind the steps, demonstrates the development of arguments, and discusses how the concepts are connected to one another. Each chapter concludes with exercises ranging in difficulty, giving readers the opportunity to reinforce their comprehension of the discussed methods. An appendix provides a thorough introduction to measure and integration theory, and additional appendices address the background material on topics such as Zorn's lemma, the Stone-Weierstrass theorem, Tychonoff's theorem on product spaces, and the upper and lower limit points of sequences. References to various applications of functional analysis are also included throughout the book.
A First Course in Functional Analysis is an ideal text for upper-undergraduate and graduate-level courses in pure and applied mathematics, statistics, and engineering. It also serves as a valuable reference for practitioners across various disciplines, including the physical sciences, economics, and finance, who would like to expand their knowledge of functional analysis.

ABOUT THE AUTHOR

S. David Promislow, PhD, is Professor Emeritus of Mathematics at York University in Toronto, Canada. Dr. Promislow has over thirty-five years of teaching experience in the areas of functional analysis, group theory, measure theory, and actuarial mathematics. He is the author of Fundamentals of Actuarial Mathematics, also published by Wiley.

FEATURES

• Presents a unique coverage of the essential topics of functional analysis, based on successful lecture notes used by the author, for a concise one-semester course.

• Explains the theories behind the concepts, taking the reader through the logic behind each argument’s development.

• Features an array of exercises throughout the book, ranging from introductory to advanced, to enhance the reader’s learning experience.

• Requires minimal previous knowledge and no background in either measure theory or general topology.

SERIES

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