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★**Metrics, norms, inner products, and operator theory.**

Applied and Numerical Harmonic Analysis.
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This textbook is an introduction to the main types of structures to be found in analysis, namely metric, normed and inner product spaces. The target audience is the set of motivated students that have some basic knowledge of undergraduate real analysis and linear algebra and who are ready to take an undergraduate level, proof-based mathematics course. No knowledge of measure theory or advanced real analysis is assumed.

The book is organized as follows. Chapter 1 is a quick reference guide to notation, terminology and background information that will be used in the remainder of the text. Chapter 2 introduces metric spaces, Chapters 3 and 4 focus on normed spaces, and Chapter 5 deals with inner product spaces. Chapter 6 focuses on operators, and Chapter 7 discusses those operators that map a Hilbert space into another Hilbert space. An optional Chapter 8 (posted online) covers related results and extensions that do require measure theory. Notable features of the book are the presentation of theorems in both real and complex settings, and its coverage of Schauder bases for Banach spaces, the dual of ℓ^2, topological isomorphisms, the Baire Category Theorem, the Uniform Boundedness Principle, the Spectral Theorem, and the Singular Value Decomposition for operators and matrices.

The text is clearly and carefully written and is enhanced by an extensive list of problems, presented in increasing order of difficulty.

The list of references consists of thirty one books and articles suitable for further study, including several by the author. *R. A. Zalik*