

**GENERALIZED FRACTIONAL CALCULUS
AND APPLICATIONS
(Annotation of an Old Book)**

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Book's Information: Virginia Kiryakova, "*Generalized Fractional Calculus and Applications*", First Publ.: by Longman Sci. & Technical, Harlow, UK (1994), ISBN 0-582-21977-9; Copubl. in USA: by J. Wiley & Sons, Inc., N. York, ISBN 0-470-23376-1; pp. 388.

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From the Longman Leaflet: "Recently, an increasing interest in *Fractional Calculus* (a misnomer of theory and applications of operators of integration and differentiation of fractional order) has been shown through many international conferences and publication of their proceedings, encyclopaedic expositions of its history and development, books and articles on the classical aspects and various applications.

Virginia Kiryakova's book takes a different approach. It is devoted to a systematic and unified development of a new *Generalized Fractional Calculus*, related to many special cases (most of the generalized and the classical operators of FC introduced by different authors) and several applications. The basic operators in this GFC are the generalized (multiple Erdélyi-Kober) fractional integrals and derivatives, considered as a single object and involving Meijer's G -functions (or Fox's H -functions) as kernels.

Various applications are discussed, in particular to:

- the hyper-Bessel differential operators and equations;
- Dzhrbashjan-Gelfond-Leontiev operators and Borel type transforms;
- convolutions;
- new representations of hypergeometric functions;
- solutions to classes of differential and integral equations;

- transmutation method;
- generalized integral transforms (of Laplace type), etc.

Some open problems are also posed.”

Contents:

- Introduction
- Generalized operators of fractional integration and differentiation
- Recent aspects of classical Erdélyi-Kober operators
- Hyper-Bessel differential and integral operators and equations
- Applications to the generalized hypergeometric functions
- Further generalizations and applications
- Appendix: Definitions, examples and properties of the special functions used in this book
- References, Citation Index

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