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**Título:** Introduction To Optimization And Semidifferential Calculus

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**Sinopsis**

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This primarily undergraduate textbook focuses on finite-dimensional optimization.

Readers will find:

- ? an original and well integrated treatment of semidifferential calculus and optimization;
- ? emphasis on the Hadamard semidifferential, introduced at the beginning of the 20th century and somewhat overlooked for many years, with references to original papers by Hadamard (1923) and Fréchet (1925);
- ? fundamentals of convex analysis (convexification, Fenchel duality, linear and quadratic programming, two-person zero-sum games, Lagrange primal and dual problems, semiconvex and semiconcave functions);
- ? complete definitions, theorems, and detailed proofs, even though it is not necessary to work through all of them;
- ? commentaries that put the subject into historical perspective;
- ? numerous examples and exercises throughout each chapter, and answers to the exercises provided in an appendix.

**Audience**

This book is primarily intended as a textbook for a one-term course in optimization and semidifferential calculus for undergraduate students in mathematics, physics, engineering, economics, and other disciplines who have a basic knowledge of mathematical analysis and linear algebra. It also contains advanced material that makes it suitable for a first year graduate course or as a companion to other textbooks.

Michel Delfour is a Guggenheim, Killam, and SIAM Fellow. His areas of research are shape optimal design, analysis and control of delay and distributed parameter systems, control and stabilization of large flexible space structures, and numerical methods in differential equations and optimization. His recent interests include modeling of thin and asymptotic shells, design of endoprotheses in interventional cardiology, and frequency spectrum assignments to land mobile

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systems. He is the author or coauthor of 13 books and more than 165 journal and proceedings papers. He is a Fellow of the Royal Society of Canada, was president of the Canadian Mathematical Society, and has served on numerous Canadian advisory boards and granting committees as well as on international panels and committees. He has been a professional engineer since 1966 and is actively involved in consulting for Canadian organizations.

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**Keywords**

optimization, semidifferentiable calculus, convex and differentiable programming