Optimization is one of the most important areas of modern applied mathematics, with applications in fields from engineering and economics to finance, statistics, management science, and medicine. While many books have addressed its various aspects, Nonlinear Optimization is the first comprehensive treatment that will allow graduate students and researchers to understand its modern ideas, principles, and methods within a reasonable time, but without sacrificing mathematical precision. Andrzej Ruszczynski, a leading expert in the optimization of nonlinear stochastic systems, integrates the theory and the methods of nonlinear optimization in a unified, clear, and mathematically rigorous fashion, with detailed and easy-to-follow proofs illustrated by numerous examples and figures.

The book covers convex analysis, the theory of optimality conditions, duality theory, and numerical methods for solving unconstrained and
constrained optimization problems. It addresses not only classical material but also modern topics such as optimality conditions and numerical methods for problems involving nondifferentiable functions, semidefinite programming, metric regularity and stability theory of set-constrained systems, and sensitivity analysis of optimization problems.

Based on a decades worth of notes the author compiled in successfully teaching the subject, this book will help readers to understand the mathematical foundations of the modern theory and methods of nonlinear optimization and to analyze new problems, develop optimality theory for them, and choose or construct numerical solution methods. It is a must for anyone seriously interested in optimization.

**Personal Review: Nonlinear Optimization by Andrzej Ruszczynski**
This outstanding book fills the need for a recent introductory graduate textbook in nonlinear convex optimization. The book is divided into 2 parts: Part I deals with theory while Part II deals with algorithms for nonlinear convex optimization. Topics covered in Part I include basic convex analysis, optimality conditions, and Lagrangian duality. There are a number of interesting examples distributed throughout the discussions in Part I - some of these examples include recent concepts like semidefinite programming. The author also highlights the importance of DIFFERENTIABILITY in convex optimization - in fact he devotes separate sections for the optimality conditions of smooth convex and nonsmooth convex problems. Part II discusses algorithms for smooth unconstrained and constrained optimization and finally subgradient, bundle, and trust region schemes for nondifferentiable optimization. The discussion on algorithms for nondifferentiable optimization is new and an important ingredient in this book - for more details one can refer to the 2 volume set by Hiriart-Urruty and Lemarechal. However, there is no discussion on INTERIOR POINT METHODS and this is the only notable omission in the book. For more on interior point methods in nonlinear optimization, one can refer to the recent book by Nocedal and Wright. Personally, I enjoyed this book immensely, and I look forward to using it in a graduate course on nonlinear optimization.

For More 5 Star Customer Reviews and Lowest Price:
[Nonlinear Optimization by Andrzej Ruszczynski 5 Star Customer Reviews and Lowest Price!](https://example.com)