



# Engineering Optimization: Theory and Practice, 3rd Edition

By Singiresu S. Rao

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A rigorous mathematical approach to identifying a set of design alternatives and selecting the best candidate from within that set, engineering optimization was developed as a means of helping engineers to design systems that are both more efficient and less expensive and to develop new ways of improving the performance of existing systems. Thanks to the breathtaking growth in computer technology that has occurred over the past decade, optimization techniques can now be used to find creative solutions to larger, more complex problems than ever before. As a consequence, optimization is now viewed as an indispensable tool of the trade for engineers working in many different industries, especially the aerospace, automotive, chemical, electrical, and manufacturing industries.

In *Engineering Optimization*, Professor Singiresu S. Rao provides an application-oriented presentation of the full array of classical and newly developed optimization techniques now being used by engineers in a wide range of industries. Essential proofs and explanations of the various techniques are given in a straightforward, user-friendly manner, and each method is copiously illustrated with real-world examples that demonstrate how to maximize desired benefits while minimizing negative aspects of project design.

Comprehensive, authoritative, up-to-date, *Engineering Optimization* provides in-depth coverage of linear and nonlinear programming, dynamic programming, integer programming, and stochastic programming techniques as well as several breakthrough methods, including genetic algorithms, simulated annealing, and neural network-based and fuzzy optimization techniques.

Designed to function equally well as either a professional reference or a graduate-level text, *Engineering Optimization* features many solved problems taken from several engineering fields, as well as review questions, important figures, and helpful references.

An indispensable working resource for practicing engineers

Engineering Optimization

Providing engineers with a rigorous, systematic method for rapidly zeroing in on the most innovative, cost-effective solutions to some of today's most challenging engineering design problems, optimization is a powerful tool of the trade for engineers in virtually every discipline. Now, in his latest book, *Engineering Optimization*, Singiresu S. Rao provides you with the most practical, up-to-date, and comprehensive coverage of new and classical optimization techniques currently in use throughout a wide range of industries. Designed to serve as both a daily working resource and an excellent graduate-level text, *Engineering Optimization* gives you:

- \* In-depth coverage of linear and nonlinear programming, dynamic programming, integer programming, and stochastic programming techniques
- \* New or recently developed methods, including genetic algorithms, simulated annealing, neural network-based and fuzzy optimization techniques
- \* Dozens of real-world design optimization examples taken from a wide range of industries
- \* Numerous solved problems and review questions
- \* An extensive bibliography

*Engineering Optimization* is a valuable working resource for engineers employed in practically all technological industries. It is also a superior didactic tool for graduate students of mechanical, civil, electrical, chemical, and aerospace engineering.

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### Editorial Review

#### Review

"He presents an updated textbook addressing the techniques and applications of engineering optimization for the efficient and economical design and production of products and systems. The material has been used extensively by the author to teach optimum design and engineering optimization courses at the advanced-undergraduate and graduate levels at a number of universities." (*Book News*, August 2009)

#### From the Publisher

Contains linear, nonlinear, integer, dynamic and stochastic programming. Every technique is illustrated with examples from authentic engineering designs to demonstrate how it is possible to maximize the desired benefit and minimize negative aspects of project design. This edition includes increased emphasis on applications for mechanical and aerospace industries as well as new computer programs to solve both linear and nonlinear problems.

#### From the Back Cover

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