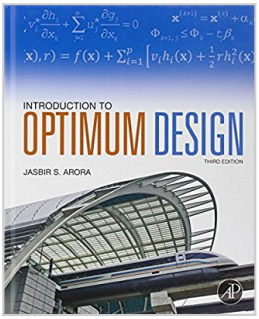

Introduction to Optimum Design, Third Edition

By Jasbir Arora

Introduction to Optimum Design, Third Edition By Jasbir Arora

Introduction to Optimum Design, Third Edition describes an organized approach to engineering design optimization in a rigorous yet simplified manner. It illustrates various concepts and procedures with simple examples and demonstrates their applicability to engineering design problems. Formulation of a design problem as an optimization problem is emphasized and illustrated throughout the text. Excel and MATLAB® are featured as learning and teaching aids.

- Basic concepts of optimality conditions and numerical methods are described with simple and practical examples, making the material highly teachable and learnable
- Includes applications of optimization methods for structural, mechanical, aerospace, and industrial engineering problems
- Introduction to MATLAB Optimization Toolbox
- Practical design examples introduce students to the use of optimization methods early in the book
- New example problems throughout the text are enhanced with detailed illustrations
- Optimum design with Excel Solver has been expanded into a full chapter
- New chapter on several advanced optimum design topics serves the needs of instructors who teach more advanced courses

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Editorial Review

Review
"I feel that Dr. Arora presented significant amounts of material in a clear and straightforward manner. The book is definitely a reference that practitioners would like to have and depend upon, especially with the plethora of examples and applications. As an educator, Dr. Arora's book also has a tremendous number of problems at the end of the chapters and examples that I would try to use in class...the book is a solid introduction to optimization algorithms." - Georges Fadel, Associate Editor, Journal of Mechanical Design

"Arora's introduction of a much-anticipated second edition of Introduction to Optimum Design will not only satisfy established users of his well-received first edition, but moreover, significant updates, supplementary material, and fine-tuning of the pedagogical aspects of the presentation will certainly broaden its appeal…among some of the distinguishing characteristics of Arora's book are its adaptability to audiences with diverse backgrounds, as well as the extent to which it makes the topic clear and approachable...The book would also be excellent as a self-study reference for the practicing engineer…In summary, when considering the pedagogical refinements of the book, the expanded and updated software examples, as well as the extended survey of emerging computational methods, Arora's Introduction to Optimum Design, 2nd Ed., furthers its goal of
describing engineering design optimization in a rigorous yet simplified manner which is both highly accessible to and useful for a wide audience." - David F. Thompson, Graduate Program Director, University of Cincinnati

"I have used several optmization books over the past 10 years to support my various graduate optimization courses. Of all the books that I have used, I prefer Dr. Arora's Introduction to Optimum Design, 2nd Ed…The strength of this book lies in his attention to detail using numeric exercises to demonstrate the numerical processes used in the various optimization methods. I particularly like his choice of nomenclature throughout the book, as it conforms to the standard symbols and function names used in classical optimization literature. The application exercises presented cover a broad range in technologies, which makes it a good textbook for any engineering discipline." - Tom R. Mincer, California State University

"...this book is well written and covers just about every topic that one needs to know about the optimum design process. It includes a good balance of theory and application. The book will therefore be appealing to all users." - Practice Periodical On Structural Design and Construction - ASCE, Nov. 2005

From the Back Cover

Introduction to Optimum Design 3e, the most widely used textbook in its field, is intended for use in a first course on engineering design and optimization. Classroom tested for many years, the basic approach of the text is to describe an organized approach to engineering design optimization in a rigorous yet simplified manner. It illustrates various concepts and procedures with simple examples and demonstrates their applicability to engineering design problems. Formulation of a design problem as an optimization problem is emphasized and illustrated throughout the text. Excel and MATLAB® are featured as learning and teaching aids.

New key features

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Contents

Introduction to Design Optimization; Optimum Design Problem Formulation; Graphical Optimization and Basic Concepts; Optimum Design Concepts: Optimality Conditions; More on Optimum Design Concepts: Optimality Conditions; Optimum Design with Excel Solver; Optimum Design with MATLAB®; Linear Programming Methods for Optimum Design; More on Linear Programming Methods for Optimum Design; Numerical Methods for Unconstrained Optimum Design; More on Numerical Methods for Unconstrained Optimum Design; Numerical Methods for Constrained Optimum Design; More on Numerical Methods for Constrained Optimum Design; Practical Applications of Optimization; Discrete Variable Optimum Design Concepts and Methods; Genetic Algorithms for Optimum Design; Multi-objective Optimum Design Concepts and Methods; Global Optimization Concepts and Methods; Nature-Inspired Search Methods; Additional Topics on Optimum Design; Appendix A: Vector and Matrix Algebra; Appendix B: Sample Computer Programs

About the Author
Jasbir Singh Arora is an F. Wendell Miller Professor of Engineering, a Professor of Civil and Environmental Engineering, and a Professor of Mechanical and Industrial Engineering at the University of Iowa. He obtained his PhD in Mechanics and Hydraulics from the University of Iowa. Dr. Arora is the Associate Director of the Center for Computer Aided Design. He is a Senior Advisor for the International Journal of Structural and Multidisciplinary Optimization and he is on the Editorial Board of the International Journal for Numerical Methods in Engineering. He is a Fellow of the American Society of Civil Engineers and the American Society of Mechanical Engineers, and a Senior Member of the American Institute of Aeronautics and Astronautics. Dr. Arora is an internationally recognized researcher in the field of optimization and his book Introduction to Optimum Design, 3rd Edition (Academic Press, 2012, 978-0-12-381375-6) is used worldwide. Jasbir Singh Arora is an F. Wendell Miller Professor of Engineering, a Professor of Civil and Environmental Engineering, and a Professor of Mechanical and Industrial Engineering at the University of Iowa. He obtained his PhD in Mechanics and Hydraulics from the University of Iowa. Dr. Arora is the Associate Director of the Center for Computer Aided Design. He is a Senior Advisor for the International Journal of Structural and Multidisciplinary Optimization and he is on the Editorial Board of the International Journal for Numerical Methods in Engineering. He is a Fellow of the American Society of Civil Engineers and the American Society of Mechanical Engineers, and a Senior Member of the American Institute of Aeronautics and Astronautics. Dr. Arora is an internationally recognized researcher in the field of optimization and his book Introduction to Optimum Design, 3rd Edition (Academic Press, 2012, 978-0-12-381375-6) is used worldwide.

Users Review

From reader reviews:

Rafael Runyan:

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resources included can be true or not call for people to be aware of each facts they get. How many people to be smart in acquiring any information nowadays? Of course the answer then is reading a book. Examining a book can help men and women out of this uncertainty Information mainly this Introduction to Optimum Design, Third Edition book since this book offers you rich facts and knowledge. Of course the info in this book hundred per-cent guarantees there is no doubt in it you may already know.

Maria Scully:

The book Introduction to Optimum Design, Third Edition has a lot of information on it. So when you read this book you can get a lot of gain. The book was compiled by the very famous author. The writer makes some research previous to write this book. That book very easy to read you can get the point easily after perusing this book.

William Martin:

Introduction to Optimum Design, Third Edition can be one of your starter books that are good idea. We all recommend that straight away because this e-book has good vocabulary that can increase your knowledge in vocab, easy to understand, bit entertaining but nevertheless delivering the information. The writer giving his/her effort to set every word into delight arrangement in writing Introduction to Optimum Design, Third Edition however doesn't forget the main point, giving the reader the hottest as well as based confirm resource data that maybe you can be considered one of it. This great information can certainly drawn you into fresh stage of crucial contemplating.

Kirsten Ferguson:

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