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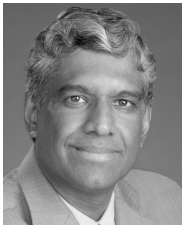

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Engineering Mechanics 1

Statics

2nd Edition

Springer

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ISBN 978-3-642-30318-0 e-ISBN 978-3-642-30319-7
DOI 10.1007/ 978-3-642-30319-7
Springer Dordrecht Heidelberg New York London
Library of Congress Control Number: 2012941504

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Statics is the first volume of a three-volume textbook on Engineering Mechanics. Volume 2 deals with *Mechanics of Materials*; Volume 3 contains *Particle Dynamics and Rigid Body Dynamics*. The original German version of this series is the bestselling textbook on mechanics for nearly three decades and its 11th edition has already been published.

It is our intention to present to engineering students the basic concepts and principles of mechanics in the clearest and simplest form possible. A major objective of this book is to help the students to develop problem solving skills in a systematic manner.

The book developed out of many years of teaching experience gained by the authors while giving courses on engineering mechanics to students of mechanical, civil and electrical engineering. The contents of the book correspond to the topics normally covered in courses on basic engineering mechanics at universities and colleges. The theory is presented in as simple a form as the subject allows without being imprecise. This approach makes the text accessible to students from different disciplines and allows for their different educational backgrounds. Another aim of the book is to provide students as well as practising engineers with a solid foundation to help them bridge the gaps between undergraduate studies, advanced courses on mechanics and practical engineering problems.

A thorough understanding of the theory cannot be acquired by merely studying textbooks. The application of the seemingly simple theory to actual engineering problems can be mastered only if the student takes an active part in solving the numerous examples in this book. It is recommended that the reader tries to solve the problems independently without resorting to the given solutions. To demonstrate the principal way of how to apply the theory we deliberately placed no emphasis on numerical solutions and numerical results.

As a special feature the textbook offers the TM-Tools. Students may solve various problems of mechanics using these tools. They can be found at the web address <www.springer.com/engineering/grundlagen/tm-tools>.

In the second edition the text was revised and part of the notation was changed to make it compatible with the usual notation in English speaking countries. To provide the students with more material to develop their skills in solving problems, additional Supplementary Examples are supplied.

We gratefully acknowledge the support and the cooperation of the staff of Springer who were responsive to our wishes and helped to create the present layout of the books.

Darmstadt, Essen, Munich and Vancouver,
Summer 2012

D. Gross
W. Hauger
J. Schröder
W.A. Wall
N. Rajapakse

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