Chapter 1 : Online Solutions Manual for "Engineering Mechanics: Statics" by J.L. Meriam

Find all the study resources for Engineering Mechanics Statics & Dynamics by Anthony Bedford; Wallace L. Fowler.

About This Product Description For introductory dynamics courses found in mechanical engineering, civil engineering, aeronautical engineering, and engineering mechanics departments. Dynamics to answer the question: How can textbooks be restructured to help students learn mechanics more effectively and efficiently? Based on classroom experience and feedback from users of the text, the authors developed an approach featuring the following elements: Active Example â€" This new example format encourages students to spend more time thinking critically about the concepts. Students also find the breakdown of the equations with explanations of steps most helpful. Full Solutions at the back to each Practice Problem give students additional motivation to check their understanding. Example-Focused Problems - Homework problems are designed to encourage students to return to a previous example in the section and study it to expand their understanding of the concept. Lecturers can easily identify and assign these problems to encourage further study of particular examples. Results â€" Subsections that present essential contents of each section. Explanations and their associated figures are presented in the same enhanced visuals as the Active Example. Students will find it easier to understand the explanations. Lecturers now have more questions to select from, and these can be easily modified and added as new questions to their test banks. This Mind Map feature is also available online. Depending on their style of revision, students can expand branches of the Mind Maps to their preferences. This allows them to revise concepts either briefly over a chapter or two or more widely over Statics and Dynamics. The range of Mind Maps is endless. They help students visualise the concepts that are important to this discipline. Table of Contents Motion of a Point Force, Mass, and Acceleration Planar Kinematics of Rigid Bodies Planar Dynamics of Rigid Bodies Energy and Momentum in Rigid-Body Dynamics Vibrations Appendix A. Properties of Areas and Lines. Properties of Volumes and Homogeneous Objects.

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throughout the book, theory is applied in a simplified way in order to illustrate some of its more important conceptual features and instill the physical meaning of many Preface of the terms used in the equations. These simplified applications increase interest in the subject matter and better prepare the student to understand the examples and solve problems. Apart from the Fundamental and Conceptual type problems mentioned previously, other types of problems contained in the book include the following: Some sections of the book contain introductory problems that only require drawing the free-body diagram for the specific problems within a problem set. These assignments will impress upon the student the importance of mastering this skill as a requirement for a complete solution of any equilibrium problem. The majority of problems in the book depict realistic situations encountered in engineering practice. Some of these problems come from actual products used in industry. Furthermore, in any set, an attempt has been made to arrange the problems in order of increasing difficulty except for the end of chapter review problems, which are presented in random order. An effort has been made to include some problems that may be solved using a numerical procedure executed on either a desktop computer or a programmable pocket calculator. The many homework problems in this edition, have been placed into two different categories. Problems that are simply indicated by a problem number have an answer and in some cases an additional numerical result given in the back of the book. As with the previous editions, apart from the author, the accuracy of the text and problem solutions has been thoroughly checked by four other parties: In a general sense, each principle is applied first to a particle, then a rigid body subjected to a coplanar system of forces, and finally to three-dimensional force systems acting on a rigid body. Chapter 1 begins with an introduction to mechanics and a discussion of units. The vector properties of a concurrent force system are introduced in Chapter 2. This theory is then applied to the equilibrium of a particle in Chapter 3. Chapter 4 contains a general discussion of both concentrated and distributed force systems and the methods used to simplify them. The principles of rigid-body equilibrium are developed in Chapter 5 and then applied to specific problems involving the equilibrium of trusses, frames, and machines in Chapter 6, and to the analysis of internal forces in beams and cables in Chapter 7. Applications to problems involving frictional forces are discussed in Chapter 8, and topics related to the center of gravity and centroid are treated in Chapter 9. Most of these topics are included in Chapter 10 area and mass moments of inertia and Chapter 11 virtual work and potential energy. Note that this material also provides a suitable reference for basic principles when it is discussed in more advanced courses. Finally, Appendix A provides a review and list of mathematical formulas needed to solve the problems in the book. At the discretion of the instructor, some of the material may be presented in a different sequence with no loss of continuity. For example, it is possible to introduce the concept of a force and all the necessary methods of vector analysis by first covering Chapter 2 and Section 4. Then after covering the rest of Chapter 4 force and moment systems , the equilibrium methods of Chapters 3 and 5 can be discussed. Dynamics The book is divided into 11 chapters, in which the principles are first applied to simple, then to more complicated situations. The kinematics of a particle is discussed in Chapter 12, followed by a discussion of particle kinetics in Chapter 13 Equation of Motion , Chapter 14 Work and Energy , and Chapter 15 Impulse and Momentum. A similar sequence of presentation is given for the planar motion of a rigid body: If time permits, some of the material involving three-dimensional rigid-body motion may be included in the course. The kinematics and kinetics of this motion are discussed in Chapters 20 and 21, respectively. Chapter 22 Vibrations may Preface be included if the student has the necessary mathematical background. Finally, Appendix A provides a list of mathematical formulas needed to solve the problems in the book, Appendix B provides a brief review of vector analysis, and Appendix C reviews application of the chain rule. Acknowledgments The author has endeavored to write this book so that it will appeal to both the student and instructor. Through the years, many people have helped in its development, and I will always be grateful for their valued suggestions and comments. 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