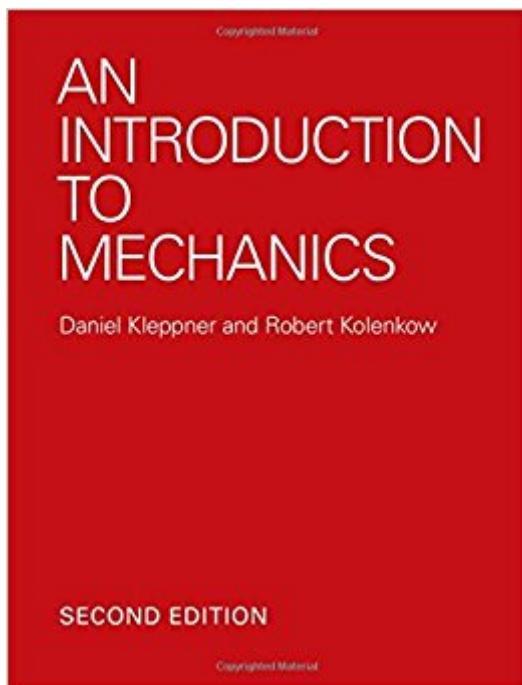


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An Introduction To Mechanics



Synopsis

For 40 years, Kleppner and Kolenkow's classic text has introduced students to the principles of mechanics. Now brought up to date, this revised and improved second edition is ideal for classical mechanics courses for first- and second-year undergraduates with foundation skills in mathematics. The book retains all the features of the first edition, including numerous worked examples, challenging problems and extensive illustrations, and has been restructured to improve the flow of ideas. It now features new examples taken from recent developments, such as laser slowing of atoms, exoplanets and black holes; a 'Hints, Clues and Answers' section for the end-of-chapter problems to support student learning; and a solutions manual for instructors at www.cambridge.org/kandk.

Book Information

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Customer Reviews

It's important to say outright, there is no book that comes close to the quality of the discourse and problems that are in this book. It is truly in a class by itself and is not for the feign of heart. This is a difficult introductory text to digest and the difficulty of the problems are notorious. I used the first edition to supplement my AP Physics C Mechanics class. My students were split between loathing and loving it, and sometimes both simultaneously. The highlights of this text and its first edition are: the mathematical framework that leads the textbook, the proper treatment of the primacy of setting up coordinate systems for dynamics, the subtleties associated with dealing with variable mass systems, Newton's shell theorem, the treatment of the harmonic oscillator and its applications, the expansive treatment of angular momentum as a prerequisite to understanding torque, the thorough

treatment of the central force problem and last but not least, the excellent presentation of special relativity that closes the book. The only thing I believe this text is missing, is the Gauss's Law of gravitation and the potential formulation of gravitation. I think this is important to include because students generally take an introductory E&M class following this class, and it never hurts to introduce students to these topics for gravitation because students tend to have a much better conceptual grasp of the gravitational field than the electric field. Furthermore, Gauss's Law allows students to attack a broader set of problems in gravitation and reformulate Newton's Shell theorem in a much simpler way. The reason this edition gets 4 stars instead of 5 is because I feel that the second edition was a disappointment.

These days I teach physics for a living, but in 1982 I used this book as a freshman in an honors class. Here are some impressions from going back over the book three decades later. For a long time, I don't think there was any alternative to Kleppner and Kolenkow for a student who really wanted to know the whys and wherefores of freshman mechanics. The big-selling texts like Halliday may carefully derive certain things, but in other cases they just pop an equation onto the page and expect the student to use it without question. Today, however, there are many free, online alternatives to the big-budget commercial texts, and some of these do provide a level of intellectual honesty similar to K&K's. In addition, there is a recent commercial text by Morin that targets the same type of student as K&K. There are many challenging problems that are of very high quality. The focus of these problems is on symbolic rather than numerical computation. The book includes many topics that are not typically included in a freshman text, e.g., nutation, the moment of inertia tensor, and relativistic four-vectors. The book is designed for highly motivated and talented students, at schools with highly selective admissions, who have already taken a rigorous high school physics course, and who have already completed about a year of calculus. It would be a disaster to try to use this book with a less highly selected population. The book was originally published in 1973. McGraw-Hill kept it in print over the decades, but hiked the price outrageously and showed no interest in bringing out a new edition.

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