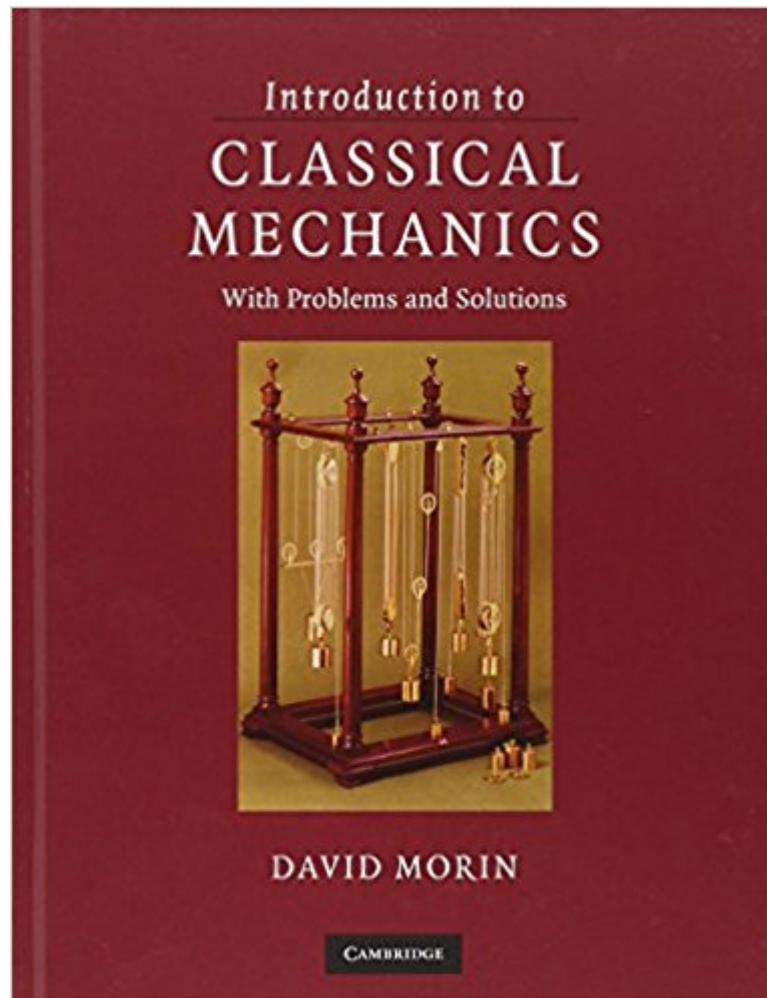




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# Introduction To Classical Mechanics: With Problems And Solutions



## Synopsis

This textbook covers all the standard introductory topics in classical mechanics, including Newton's laws, oscillations, energy, momentum, angular momentum, planetary motion, and special relativity. It also explores more advanced topics, such as normal modes, the Lagrangian method, gyroscopic motion, fictitious forces, 4-vectors, and general relativity. It contains more than 250 problems with detailed solutions so students can easily check their understanding of the topic. There are also over 350 unworked exercises which are ideal for homework assignments. Password protected solutions are available to instructors at [www.cambridge.org/9780521876223](http://www.cambridge.org/9780521876223). The vast number of problems alone makes it an ideal supplementary text for all levels of undergraduate physics courses in classical mechanics. Remarks are scattered throughout the text, discussing issues that are often glossed over in other textbooks, and it is thoroughly illustrated with more than 600 figures to help demonstrate key concepts.

## Book Information

Hardcover: 734 pages

Publisher: Cambridge University Press; 1 edition (February 4, 2008)

Language: English

ISBN-10: 0521876222

ISBN-13: 978-0521876223

Product Dimensions: 7.4 x 1.6 x 9.7 inches

Shipping Weight: 3.8 pounds (View shipping rates and policies)

Average Customer Review: 4.0 out of 5 stars 40 customer reviews

Best Sellers Rank: #104,946 in Books (See Top 100 in Books) #79 in Books > Science & Math > Physics > Mechanics #116 in Books > Textbooks > Science & Mathematics > Mechanics #428 in Books > Textbooks > Science & Mathematics > Physics

## Customer Reviews

"I think all undergraduate physics majors will own a copy of this book within a year. It's that good." Professor Krsna Dev, Middlebury College "This textbook serves as an introduction to standard undergraduate classical mechanics topics, including Newton's laws, energy, momentum, oscillators, rotational dynamics and angular momentum. ... The real value of this book, however, lies in the extensive set of problems and worked solutions that many students tend to crave and as such is sure to be warmly welcomed." Contemporary Physics

This textbook covers all the standard introductory topics in classical mechanics, as well as exploring more advanced topics. With more than 250 problems with detailed solutions, and over 350 unworked exercises, this is an ideal supplementary text for all levels of undergraduate physics courses in classical mechanics.

This is an exceptional textbook for statics and dynamics. I regret not purchasing it when I was taking the course, because it is vastly superior to the recommended textbook we used. Unlike the required book, it is concise and succinct. The problem sets are one of the best features of this book. They're challenging. Each problem is given 1 to 3 stars to denote the difficulty level, and the three star problems definitely are difficult. However, there are well written solutions to a large number of the problems included, which is a nice touch. I would highly recommend getting this textbook as a supplement when taking this class, even if it is only for the extra problems. This book also has a sense of humor. There are limericks throughout the book, as well as conversational asides that provide clarifications and helpful hints. For example, the section explaining linearity and the superposition principle includes: "For equations with one main condition (Those linear), you have permission To take your solutions, With firm resolutions, And add them in superposition."

One of my favorite textbooks on classical mechanics. I enjoy this textbook because it doesn't shy away from the derivations of the equations used and it has a lot of insightful footnotes. Some of them point out common misunderstandings of the concepts presented, and others are just interesting ways of looking at the topics presented. I wouldn't recommend this as a first college textbook on classical mechanics, though. I think it functions better as a second read on classical mechanics. David Morin's book will help you flesh out the fine details of classical mechanics and really solidify your knowledge. The chapters themselves are very good, but the problems at the end of the chapters are my favorite part. David Morin did a fantastic job collecting what you would call "cute" problems. The problems will really help you build your problem solving skills. You will be forced to be creative (figuring out how to correctly set up the problem), and systematic (checking limits and such). I repeat, the material itself is introductory classical mechanics, but the problems are tougher and not "plug and chug" problems and, in my opinion, should be attempted after already learning from an easier textbook and doing easier problems from another textbook. To reiterate once again... A lot of reviews might complain about this book and give it less stars because they feel like it isn't introductory. However, the material really is standard classical mechanics. The low reviews are, in my opinion, by people who are frustrated by some of the tougher problems and who don't have as

strong problem solving skills as they initially thought they did. Buy this book if you are looking to really work out your problem solving skills and are aiming to become a physicist. Those who simply want to learn classical mechanics and do simple "plug and chug" problems will have to look elsewhere.

Excellent coverage and hand-holding explanations of what will be, for most undergrad physics majors, their first truly difficult class. Morin knows from the outset what things will be confusing and tells you not to worry, the full meaning/import of a definition or equation will come later in the chapter or else he just explains right there after introducing it. Compared to Marion and Thornton and Goldstein, Morin does the best job of introducing Lagrangian mechanics, angular momentum, special relativity, and orbital mechanics I've seen, even if at the time I was taking my undergrad CM the material seemed REALLY REALLY difficult! The examples in the book help you solve the end-of-chapter problems. Many of the worked-out problems are very good preparation for graduate preliminary exams for CM. It is essential to understand every example problem and worked-out example, and to be able to solve a lot of the solution-less problems as well. When I took CM as a grad student this book came in very handy. It's somewhat more advanced than the more common undergrad CM texts, and introduces a lot of concepts that Goldstein covers in a very obtuse, formalism-laden way. I think this book is very very good preparation for Goldstein. Even if you are past your undergrad class and about to take a Goldstein-based CM class, buy this book and refer to it often. It's only real weakness is the less in-depth coverage of Lagrangian and Hamiltonian mechanics as compared to Goldstein. There is a freely-downloadable extra chapter on Hamiltonians on the author's web site, which helps to make up for this a bit.

This is simply one of the best books available on Classical Physics and its extension into Relativity. I would put this on the reading list of any undergraduate physics student.

This is a great book for upper level physics students. His limericks are the best part and is the only thing that got me interested in reading a text book.

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