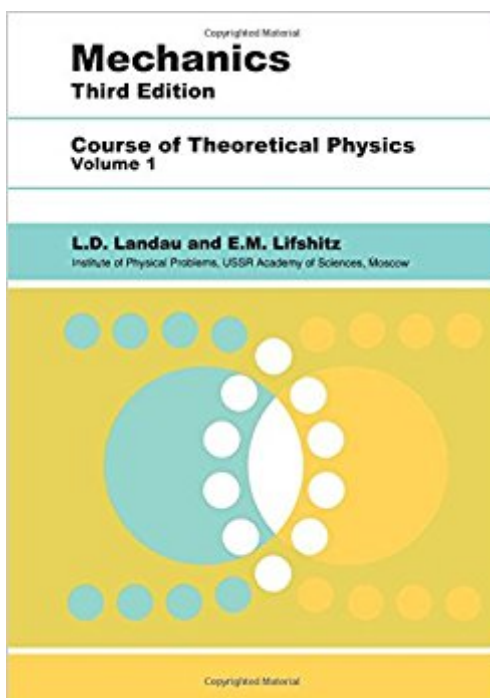


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Mechanics, Third Edition: Volume 1 (Course Of Theoretical Physics S)



Synopsis

Devoted to the foundation of mechanics, namely classical Newtonian mechanics, the subject is based mainly on Galileo's principle of relativity and Hamilton's principle of least action. The exposition is simple and leads to the most complete direct means of solving problems in mechanics. The final sections on adiabatic invariants have been revised and augmented. In addition a short biography of L D Landau has been inserted.

Book Information

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"An outstanding book for advanced students"John H LienhardMIT UniversityUSA

Text: English, Russian (translation) --This text refers to an out of print or unavailable edition of this title.

Used this for a graduate classical mechanics course. Imagine an entire semester worth of graduate level material smashed down into 30 pages of text with forty steps missing from each evaluation. Then drink a half gallon of coffee punch yourself in the face a few times. That's pretty much what this book offers.

which is why I bought it (again). I used this book back in college, but got rusty and couldn't find it. It doesn't make physics any easier (maybe a bit harder, even), but nothing is taken for granted. L&L tries to prove as much as possible from first principles. The author takes an alternative approach to so many other texts. Even within the first few pages, the most fundamental conservation principles (i.e. energy, momentum) are motivated through intuition coupled with the principle of least action. Amazing development.

Arguably, everything that could possibly be said about the L&L textbook on classical mechanics (L&L-I for short) have already been said here in these reviews and elsewhere. But I would like to add my voice to the crowd that really likes this textbook. I am fond of classical mechanics, and I hold a host of "classics" in the field in my personal library: L&L-I, Goldstein, Kibble, Siegel & Moser, Sommerfeld, Arnold, Lanczos, Whittaker, and Mach, besides some general relativity texts (you may be missing Abraham & Marsden and Gallavotti's "The Elements of Mechanics" from the list, but I am not -- I miss the exquisite text by Sudarshan & Mukunda). In every one of these texts I can find something that I dislike---excessive rigour, lack of figures, verbosity, crazy exercises, etc. (sometimes in combination...)---, but I can hardly find any fault in L&L-I. The choice of topics in L&L-I is just exactly (imho) what a working physicist must know by heart. Some complain that it does not deal adequately with nonlinear dynamics, chaos, etc., but this critique is unfair: the book does not cover all you may want know about classical mechanics, but definitely covers everything you *must* know about classical mechanics. Moreover, it was written ~70 years ago, way before the "chaos revival" of the 1980's. Recently, I came across at the library with a little book that I found well written, concise, rigorous, and with a very nice blend of classical and modern subjects: "Lagrangian and Hamiltonian Mechanics," by M. G. Calkin. Nowadays, if I had to teach a second course on classical mechanics for undergraduates I would use L&L I + Calkin (despite the somewhat picky review by Robert Weinstock on Calkin's textbook on Am. J. Phys. 66(3), 261-262 (1998)]. P.S.: The printing quality is very uneven and disappointing. Some of the smaller printing (in the exercises) is barely readable. The book is not a cheap \$9.99 paperback, so the puny printing quality is unacceptable. Guess what: printed and bound in China... I will feel lucky if the ink does not contain lead, mercury, wasted nuclear material, etc. Attention, editorial houses: come printing your books in Brazil!

I like to read this book before bed. That does NOT mean that it is boring! It's rather dense; you might spend 30 minutes reading one page. You'll have to think about every sentence in the book because he's explaining some important insight. You need to have a good background in calculus

of variations to even begin to read the book. Could have done a better job at canonical transformations but overall far superior to other books on the subject. Definitely not for undergraduates.

This book is super complicated in comparison to newer approaches to the material. However Landau expands on mechanics in ways that may help readers get a broader understanding of the material.

Landau-Lifshitz "Course of Theoretical Physics" is, probably, one of the most important book series on theoretical physics. If you can find one printed in Britain, better.

good

L&L's mechanics is masterfully concise, and the physics is beautifully presented

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