

## ***This Week's Citation Classic***

Goldstein H. *Classical mechanics*. Cambridge, MA: Addison-Wesley, 1950. 399 p.  
[Harvard University, Cambridge, MA]

**An extensive advanced exposition of classical mechanics is given with emphasis on the modern physics view-point. Newtonian, Lagrangian, and Hamilton formulations are described. Canonical transformation theory is discussed in detail. Chapters on canonical perturbation theory (in the second edition<sup>1</sup>) and classical field theory conclude the book. [The SCI® indicates that this book has been cited over 1,435 times since 1961.]**

Herbert Goldstein  
Department of Applied Physics  
and Nuclear Engineering  
Columbia University  
New York, NY 10027

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"The genesis of *Classical Mechanics* lay in a PhD education disturbed by the exigencies of wartime research at MIT. When, immediately after the war, I was appointed an instructor in the physics department at Harvard, I hoped to continue my education by teaching courses in just those fields that I wanted to know more about. To start, I asked if I could give the graduate course in analytical dynamics. The authorities were taken aback at the temerity of a mere instructor wanting to teach a graduate course, but returning veterans were flooding the schools and unusual measures were needed in any case. I have often wondered, however, whether the rescheduling of the course to 9 am was intended as a mark of reproof at my presumption! In any case, the students were indignant, and when I repeated the course the following year, it was quietly returned to its usual gentlemanly hour of 11 am. The course was well received,

and opportunities for other courses followed.

"About that time, Addison-Wesley Publishing Company, then a small publishing firm in Cambridge, offered to reproduce notes for class use inexpensively. I was thus spurred to rewrite my notes on classical mechanics, and a preliminary edition appeared in 1948. The favorable notice of my students (though not of all my colleagues) led, after several further rewritings, to formal publication in 1950.

"Looking back, it's easy to see that *Classical Mechanics* appeared at just the right time. Physics as a profession was in favor, and the rolls of graduate students in the field seemed to be increasing exponentially. Available texts in analytical dynamics were all prewar in date, and for their inspiration looked back mostly to the pedanticism of the 19th-century British treatments. A fresh approach oriented instead around the formalisms and techniques of quantum mechanics and other modern applications could not fail to meet with approval. That it has continued over the years to be used and taught from is something I'm grateful for, even if I'm not quite sure of the reasons for its success. The number and nature of the citations indicate the book has been useful as a standard reference for a variety of topics. A significant fraction of the citations, for example, are to the definition of the Euler angles, even though the convention I chose is different from that which subsequently became entrenched in quantum mechanics.

"A second edition of *Classical Mechanics*<sup>1</sup> has been in the making for many years. After long gestation pains, it finally appeared in July 1980, almost 30 years to the month after the publication of the first edition. The text has been considerably expanded, with a new chapter on canonical perturbation theory, and the number of exercises increased by 250 percent. May it receive as good a reception as the first edition!"

1. Goldstein H. *Classical Mechanics*, Reading, MA: Addison-Wesley. 1980. 672 p.