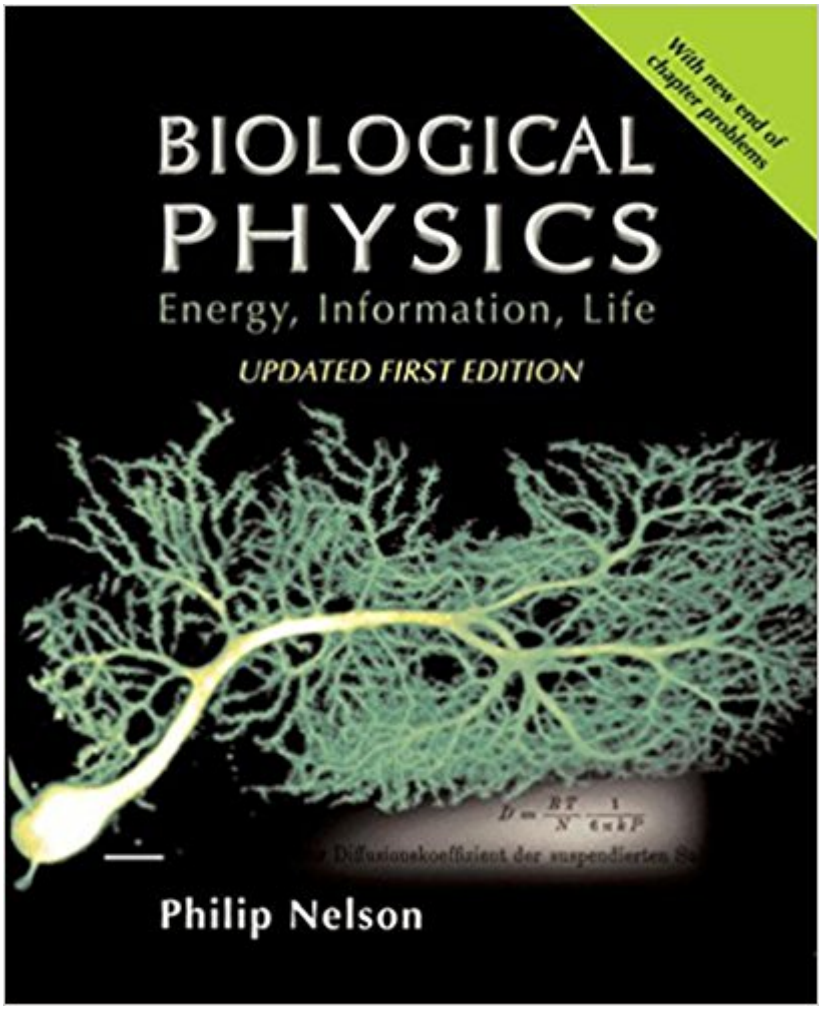
# Biological Physics: With New Art By David Goodsell



## Synopsis

Biological Physics focuses on new results in molecular motors, self-assembly, and single-molecule manipulation that have revolutionized the field in recent years, and integrates these topics with classical results. The text also provides foundational material for the emerging field of nanotechnology.Biological Physics is built around a self-contained core geared toward undergraduate students who have had one year of calculus-based physics. Additional â œTrack-2â • sections contain more advanced material for senior physics majors and graduate students.

## Book Information

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## Customer Reviews

Dr. Nelson has done a splendid job conveying how principles of physics apply to biological systems. -- Donald Jacobs, California State University-NorthridgeDr. Nelson succeeds in explaining difficult concepts in words and then presents the mathematics in a clear way. -- Daniel Kim-Shapiro, Physics Department, Wake Forest UniversityHe is an excellent writer, being both entertaining and clear. -- Fred MacKintosh, Department of Physics, Princeton UniversityOverall I found the choise of topics to be quite interesting and appropriate, and the presentation of the material attractive. -- Steve Hagen, University of FloridaThe proposed book by Nelson will fill a clear need. Discussion revolves around central ideas, which are developed clearly. -- William Parke, Physics Department, George Washington University --This text refers to an out of print or unavailable edition of this title.

Philip Nelson is Professor of Physics at the University of Pennsylvania. He received his A.B. from

Princeton University (1980) and Ph.D. from Harvard University (1984). Dr. Nelson serves on the Biophysical Society s Education Committee; he received Penn s highest teaching award in 2001, in part for creating the course that formed the basis for this book. Dr. Nelson was recently elected a Fellow of the American Physical Society."

Biological Physics by Philip Nelson manages to connect a physicist to relevant names and problems in biology, and a biologist to the methods and tools of physics. Either task is formidable. Philip Nelson manages it by articulating the contexts nicely, and by employing friendly language and plethora of well-thought examples. Nelson has compiled a textbook that provides both the basic concepts and the latest results from biophysics world. I would personally prefer a revision or rewrite in the way thermodynamics and statistical mechanics is introduced and conceptualized here. (For example, the concepts of high vs low quality energy, or limited space awarded to partition functions may be addressed in next revision). Physical Biochemistry by van Holde is a classic text that can be used in conjunction with this text. The book has lots of good problems that help one to become comfortable with the kind of questions that a biophysicist encounters and/or seeks to answer. All the papers cited in the examples or problems included herein have become necessary reads in their respective fields. The power of this text is fully revealed when you follow up and read those theoretical or experimental articles. As such, the book is more suitable for beginners, and the discussions seem too verbose for a physicist or engineer in me. Yet knowing how disparate the audience of this book is bound to be, I consider it to be an immensely valuable treatise.(11 December 2007)

The book is a clear survey of statistical physics applied to biology, discussing how organisms use molecular machines driven by chemical differences in contrast to more familiar machines driven by temperature differences. The book is mainly self-contained in both the physics and biology, and provides interesting connections between those fields. Particularly helpful is using osmosis as a major example throughout the text to connect physical ideas with processes inside cells. Although assuming readers are comfortable with calculus, chapters have big picture summaries and examples so the key ideas are not lost among the derivations.The book helpfully connects abstract theory with experiments, particularly extending derivations to the the point of reaching experimentally measurable quantities, as for example in relating dissipation and fluctuations. These discussions show how statistical physics applies to biological machines described qualitatively in more introductory books such asÂ Cats' Paws and Catapults: Mechanical Worlds of Nature and

People.The publisher web site for the book, including errata, is only available to instructors. This limits independent study with the book. There is some nonstandard notation and definition, such as for chemical potential and avoiding partial derivatives. While these are mentioned in the text when first introduced, they could be confusing to readers who skip to later chapters.

This is a great book for students who really want to learn some real biophysics. You do have to have the appropriate math and physical science background in areas like physics, physical chemistry and rudimentary mathematics.

Great book. Very good teaching method

This is a solid book on physics as applied to biological situations. It does not break new ground but does cover in one place topics that should be familiar to anyone studying quantitative biology. As a researcher, I would have liked to see more applications to problems that students are facing today. But overall, this is a worthwhile book.

I wanted more but still this is great as a primer. You must take advance courses to even get a course on this.

excelent book for physics and also for biological students - mix biological view with theoretical physics, math and bio-models, good didactic, photos and organization.

the book gives a physical basis of science and how to understand it using layman examples and experiments.

Theoretical Physics (Cambridge Monographs on Particle Physics, Nuclear Physics and Cosmology) Six Ideas That Shaped Physics: Unit R - Laws of Physics are Frame-Independent (WCB Physics) Problem-Solving Exercises in Physics: The High School Physics Program (Prentice Hall Conceptual Physics Workbook) [ Cystic Fibrosis: A Guide for Patient and Family [ CYSTIC FIBROSIS: A GUIDE FOR PATIENT AND FAMILY BY Orenstein, David M. ( Author ) Aug-10-2011 ] By Orenstein, David M. ( Author ) [ 2011 ) [ Paperback ] David Bowei: 40 Greatest Song of David Bowie (Music, Pop, Rock, Concert, Vinyl) David Busch's Compact Field Guide for the Nikon D810 (David Busch's Digital Photography Guides) David BuschÃ¢â ¬â„¢s Canon Powershot G15 Guide to Digital Photography (David Busch's Digital Photography Guides) David Busch's Flash Photography Compact Field Guide (David Busch's Digital Photography Guides) David BuschÃ¢â ¬â„¢s Guide to Canon Flash Photography (David Busch's Digital Photography Guides) David Busch's Guide to Canon Flash Photography, 1st ed. (David Busch's Digital Photography Guides) David BuschÃ¢â ¬â„¢s Canon EOS 7D Guide to Digital SLR Photography (David Busch's Digital Photography Guides) David Busch's Canon Powershot G12 Guide to Digital Photography (David Busch's Digital Photography Guides) David Smells!: A Diaper David Book