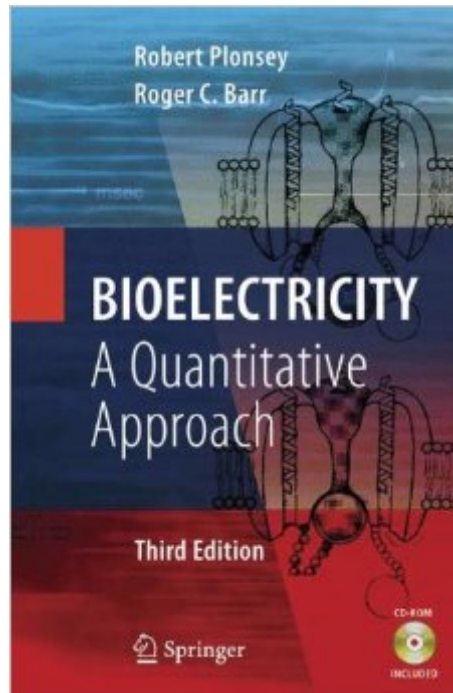


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# Bioelectricity: A Quantitative Approach



## Synopsis

This is the new edition of the classic introductory text to electrophysiology. It covers many topics that are central to the field including the electrical properties of the cell membrane and cardiac electrophysiology. Organized as a textbook for the student needing to acquire the core competencies, this book meets the demands of advanced undergraduate or graduate coursework in biomedical engineering and biophysics. New features include extra, detailed illustrations. The book is authored by two eminent biomedical engineering professors at Duke University who discuss many topics that are central to biophysics and bioengineering and the quantitative methods employed.

## Book Information

Hardcover: 528 pages

Publisher: Springer; 3rd edition (June 21, 2007)

Language: English

ISBN-10: 0387488642

ISBN-13: 978-0387488646

Product Dimensions: 6.1 x 1.2 x 9.2 inches

Shipping Weight: 2.1 pounds (View shipping rates and policies)

Average Customer Review: 2.8 out of 5 stars [See all reviews](#) (5 customer reviews)

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## Customer Reviews

I think this book has the potential to be successful. It's fairly well written with explanations that are usually clear, even to persons with minimal biological background. However, it suffers tremendously from the errors that pervade each chapter. From the trivial errors such as misspellings and significant errors like incorrect formulae, it seems that nobody bothered to proofread this edition of the book (3rd). Derivations also tend to be rather difficult to follow, either due to errors, unclear assumptions, or mislabeled or missing equations. I suspect that much of the book was scanned and edited from the previous edition since there are numerous typos that are substitutions of similar looking letters (e.g. l->I). Even worse, many of the original figures in the book are awfully unclear, confusing the subject rather than clarifying it. In many graphs, axis are missing labels and captions

are no more helpful. Many of the figures look like they were drawn in MS Word. All in all, a disappointing textbook, especially for a 3rd edition.

Not that it will necessarily help you with your class, but it is good form to buy the book of the person who is teaching you something for free. With that in mind, I wanted to rate this higher, and I am probably being a little generous with 4 stars. The book is missing some pieces....The sample problems seem to be an afterthought. They are collected in the last chapter of the book, and none are worked out. There is a PDF for the answers. The answers are overly terse and don't provide complete coverage. There are also too few figures and explanatory drawings. Way too little. I was also disappointed with the xerographic b/w printing. Picky yes, but not so much for an expensive book. On the positive side, this is a very mathematical book and it certainly lives up to its quantitative billing. You will do well to remember your Calc3. Also, this 3rd edition is very logically organized and shows years of mastery teaching the material. I would also give high marks for the passion of the authors and the occasional, but useful, commentary about the novelty of certain systems. It helps increase interest in the material. PS Coursera Class The Coursera class is perhaps 1/5 as technical as this book. The class uses math that you would expect a biology student to know, whereas this book is clearly based on engineering mathematics. Being mathematical, I find the book quite understandable, with the math supporting the message. For non-mathematicians, the opposite effect may prevail. In my case, the book is definitely a big help in the course, if only to see the material in a different format and with a different approach. Evidently, there is much more to bioelectricity than what is in the course.

Begins with the necessary physics and vector calculus. Steps logically and clearly through the physics of diffusing ions in solution separated by membranes. Presents classic Hodgkin-Huxley formulation and develops analytic and computer models of excitable axon. Covers basics of ECG and heart vector rotation. All exercises in the book focus on extension of topics and experimentation. Written for the engineer/scientist at the senior undergrad level.

Just go look up the Erratum for this thing. The publisher has known about how error prone this book is and still hasn't reissued or issued a better version. Some of my favorites include page 25 where the author writes the equation  $R = \rho \cdot A/L$  instead of  $R = \rho \cdot L/A$  (resistance of a wire, elementary stuff), page 133 where the conductive equivalents wrongfully have potential differences, and the majority of the solution manual to be just plain wrong. Seriously, don't even bother using the dang

thing. This book is horribly edited and I implore professors looking to assign this book to look elsewhere unless they want their office hours filled with confused students. It is a scam at \$70.

This book is next only to "From Neuron to Brain" to understand Neuroscience Basics. It covers a bunch of other topics other than Neuroscience. Worth a reading!

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