

Book review

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## Review of "Introduction to Biomedical Engineering, Second Edition", Edited by John Enderle, Susan Blanchard, and Joseph Bronzino Amit Gefen\*

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### Book details

*Introduction to Biomedical Engineering* Second edition. Edited by: Enderle J, Blanchard S, Bronzino J. Burlington MA: Elsevier Academic Press Series; 2005. ISBN 0-12-238662-0, xxi+1118 pages. US\$89.95 (Hardback).

The popular book by Drs. Enderle, Blanchard and Bronzino was now published in a second edition. The first edition, published in 1999, became the major textbook in many introductory courses given in the first or second year of Biomedical Engineering (BME) undergraduate programs. The second edition is aimed at serving the same purpose as the first one, i.e. to provide in depth and in breadth overview of the continuously growing field of BME. The dynamics of the field since the first edition was released is reflected in major changes in the second edition.

Specifically, the authors kept the division into two gross parts: (i) core biomedical engineering areas (chapters 4–10: biomechanics, rehabilitation, biomaterials, tissue engineering, bioinstrumentation, sensors and biosignal processing), and (ii) biomedical technology (chapters 12–17: modeling, genomics, computational biology, imaging, lasers and optics). The additions to part (ii), biomedical technology, are a chapter on genomics and bioinformatics (chapter 13, which replaces "biotechnology" in the first edition), and a chapter on computational biology and complexity (chapter 14). The new chapter on genomics (chapter 13) is motivated by the recent sequencing of the human genome (as well as numerous viruses, microbes, eukaryotes, yeast and rice). The second new

chapter on computational biology and complexity (chapter 14) includes examples of cellular process models in individual cells, as well as in cell populations and systems. On the other hand, the texts on imaging were reduced and condensed, so that the technologies of ultrasound and MRI, each occupying a separate chapter in the first edition, are now surveyed under one chapter of "medical imaging".

The major parts (i, ii) follow background of basic anatomy, physiology and cell theory (chapter 1, which, as in the previous edition, serves a limited purpose of providing the terminology used in later chapters), and of moral and ethical issues (chapter 2). The chapter on moral and ethical issues had been extended and now includes practical sections on marketing medical devices in the US, and on the role of biomedical engineers in the process for FDA approval. Real and hypothetical case studies were also added here, to illustrate ethical issues, patient privacy concerns, and medical liability questions.

Overall, this remains an excellent textbook for BME students, and the progress in the field over the last 6 years is well reflected. Each chapter includes example problems with solutions and some 10–30 exercises. The list of suggested additional reading material, which concludes each chapter, was updated to cover literature published since the first edition was released. Figures are of good quality and are informative. Particularly useful is the new appendix on Matlab and Simulink software tools, which are required for solving some of the problems and exercises in

# Introduction Biomedical Engineering S

**Ying-Ying Zheng**



## **Introduction Biomedical Engineering S:**

## **Introduction Biomedical Engineering S** Book Review: Unveiling the Power of Words

In a global driven by information and connectivity, the ability of words has become much more evident than ever. They have the ability to inspire, provoke, and ignite change. Such is the essence of the book **Introduction Biomedical Engineering S**, a literary masterpiece that delves deep to the significance of words and their impact on our lives. Published by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we will explore the book's key themes, examine its writing style, and analyze its overall effect on readers.

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