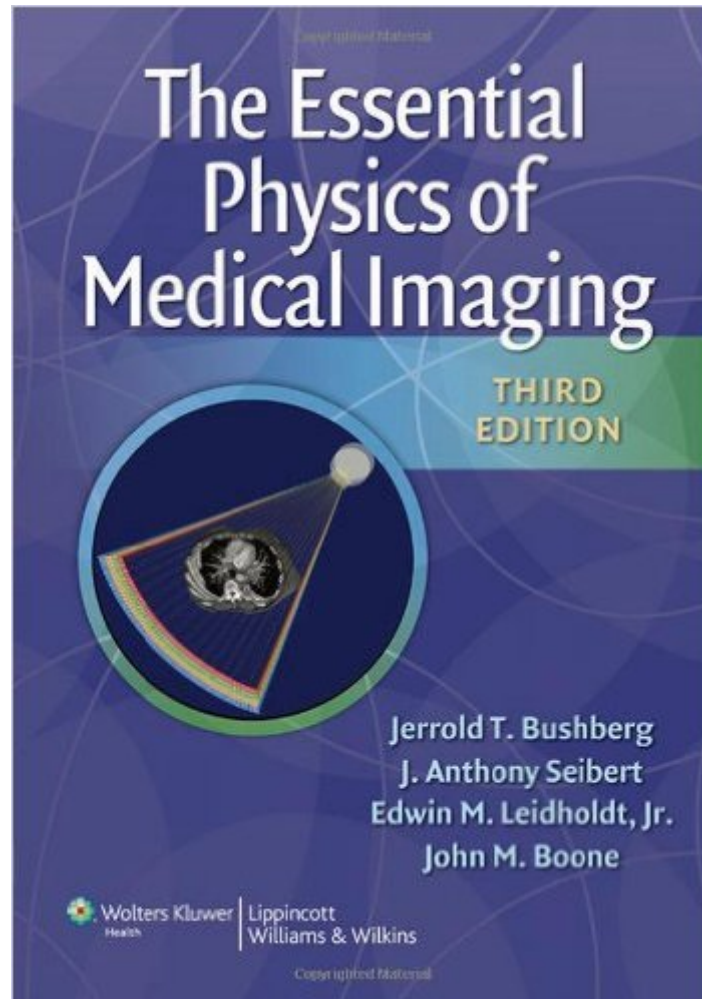


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# The Essential Physics Of Medical Imaging, Third Edition



## Synopsis

This renowned work is derived from the authors' acclaimed national review course ("Physics of Medical Imaging") at the University of California-Davis for radiology residents. The text is a guide to the fundamental principles of medical imaging physics, radiation protection and radiation biology, with complex topics presented in the clear and concise manner and style for which these authors are known. Coverage includes the production, characteristics and interactions of ionizing radiation used in medical imaging and the imaging modalities in which they are used, including radiography, mammography, fluoroscopy, computed tomography and nuclear medicine. Special attention is paid to optimizing patient dose in each of these modalities. Sections of the book address topics common to all forms of diagnostic imaging, including image quality and medical informatics as well as the non-ionizing medical imaging modalities of MRI and ultrasound. The basic science important to nuclear imaging, including the nature and production of radioactivity, internal dosimetry and radiation detection and measurement, are presented clearly and concisely. Current concepts in the fields of radiation biology and radiation protection relevant to medical imaging, and a number of helpful appendices complete this comprehensive textbook. The text is enhanced by numerous full color charts, tables, images and superb illustrations that reinforce central concepts. The book is ideal for medical imaging professionals, and teachers and students in medical physics and biomedical engineering. Radiology residents will find this text especially useful in bolstering their understanding of imaging physics and related topics prior to board exams.

- NEW! Four-color throughout--NEW! Companion website with fully searchable text and images--Basic line drawings help to explain concepts--Comprehensive coverage of diagnostic imaging modalities--Superb writing style of the author team helps make a difficult subject approachable and engaging

## Book Information

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## Customer Reviews

After reading several chapters of this new edition, I am compelled by my excitement about it to write this review here. The 3rd Edition of "Bushberg" is not just a newer version of the already-classic textbook; it is entirely a new book. Its contents are largely rewritten, with vivid illustrations added for almost every concept mentioned in the text. For example, the chapter of Computed Tomography (Chapter 10) now contains 72 figures, without even counting figure subsets; that is more than one figure per page. Everything is illustrated. The reorganization of content and addition of numerous colorful figures have fundamentally improved this book, and may set a new standard for future medical physics textbooks. Now those physics concepts in medical imaging are much easier to understand. After reading the institutional copy in preparation for teaching a class, I decided to order a copy for myself to replace my old edition (and come here to tell everybody about it). In my opinion, the 3rd Edition of this book will set a high standard for future medical physics textbooks.

The third edition of "The Essential Physics of Medical Imaging" contains a thousand pages of text, tables, and figures. The layout of the book is very attractive, with full color used throughout and to good effect. The authors have done an excellent job communicating the underlying physics through liberal use of diagrams. One or more figures appear on nearly every page spread. The text makes strong efforts to explain the physics behind the phenomena, which is geared at the level of a first year physics course, while the handful of calculus equations are explained in the text. The required physics knowledge is nicely summarized in the first Appendix. The book is targeted for a clinical audience and should be comprehensible to anyone in medical imaging willing to invest the effort. A good example is the section on magnetic resonance imaging, which is methodically explained without distracting jargon or lengthy equations. It is not a mathematically driven text. For that material I would turn to Kak and Slaney's "Principles of Computerized Tomographic Imaging" or Epstein's "Introduction to the Mathematics of Medical Imaging." It also does not focus on the instrumentation used, for which Bronzino's "The Biomedical Engineering Handbook" is a good resource. These comments aside, the text delivers on its promise to elucidate the relationship between medical imaging and the underlying physics it employs.

This text book is the most up to date and comprehensive text book available for radiology residents preparing for the ABR exam as of this date 3/12/2002. I have recommended this text for my most serious students and they have done quite well on the ABR exam. ( Most have scored in the > 90th percentile in the U.S.) For residents who want to just pass the exam, I recommend Sprawls text. Edward J. Goldschmidt Jr., M.S., DABMP, ...

Opening the pages to this textbook is like stepping into a classroom. These authors obviously are not only experts in their respective subspecialties of medical physics, but they are also seasoned teachers of the art and science of this field of medicine. This is easily evidenced by the clarity of thought and completeness with which they treat each topic in this comprehensive, easily readable textbook. I highly recommend this textbook to all who have a need for such a clear, concise teaching of the many aspects of medical physics covered in this work.

Nice book with tons of colorful pictures on this new edition, the pictures really help understand the physics. Good job explaining things for most of it, at times though it makes it a bit more confusing then it need to be but overall very helpful and new edition is a pleasure to look at and read.

This book is a must-read for anyone studying for the new ABR Core exam. Anyone who has met them will attest the authors are extremely dedicated educators who personally go to great lengths to help residents master the fundamentals of imaging physics. They listened to our feedback and this new edition constitutes a substantial upgrade over the previous one, as other reviewers have commented. The addition of many graphs & images makes the complex subjects much more approachable & easily understood. More importantly, the authors have taken great pains to make the discussions clinically relevant to the general radiologist. The authors are leaders in their respective fields, and this book is the de facto standard for medical imaging physics in the academic radiology community. Ideally, the book should be read throughout first & second years of residency for comprehension with the opportunity for reinforcement with knowledgeable medical physicists and/or staff radiologists. However, even if (or especially if) you're lacking the latter, the book provides a comprehensive treatment of every relevant physics subject needed to succeed on the Core exam. This book serves well as a primary reference throughout the general radiology residency and should be the starting point for Core exam physics preparation. I found re-reading the book indispensable for board preparation and it served best when used as a reference to explore

questions from other sources (i.e., Huda, RAPHEX exams, UCD physics course by the authors, RSNA modules etc.). A few of the more complex and evolving imaging techniques in MRI (e.g., phase-contrast, SWI, functional MRI) may require supplemental reading, but even these areas are treated adequately for a basic understanding. Finally, with the revisions made in this updated edition, skimming the graphs/figures also made for a useful last minute physics review before the test.

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