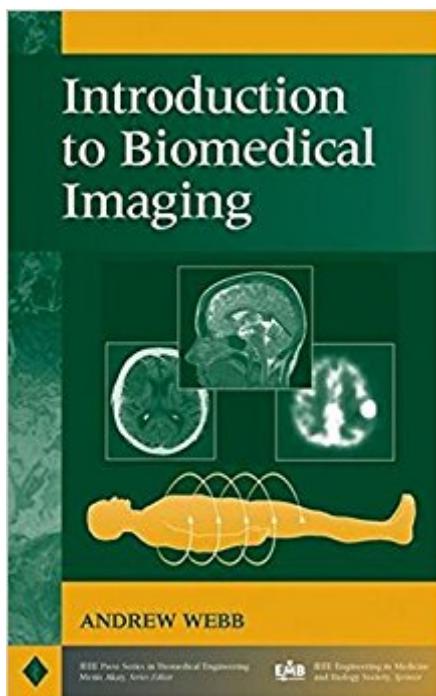


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# Introduction To Biomedical Imaging



## Synopsis

An integrated, comprehensive survey of biomedical imaging modalities An important component of the recent expansion in bioengineering is the area of biomedical imaging. This book provides in-depth coverage of the field of biomedical imaging, with particular attention to an engineering viewpoint. Suitable as both a professional reference and as a text for a one-semester course for biomedical engineers or medical technology students, *Introduction to Biomedical Imaging* covers the fundamentals and applications of four primary medical imaging techniques: magnetic resonance imaging, ultrasound, nuclear medicine, and X-ray/computed tomography. Taking an accessible approach that includes any necessary mathematics and transform methods, this book provides rigorous discussions of: The physical principles, instrumental design, data acquisition strategies, image reconstruction techniques, and clinical applications of each modality Recent developments such as multi-slice spiral computed tomography, harmonic and sub-harmonic ultrasonic imaging, multi-slice PET scanning, and functional magnetic resonance imaging General image characteristics such as spatial resolution and signal-to-noise, common to all of the imaging modalities

## Book Information

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## Customer Reviews

"We recommend this book to anyone with an interest in the challenging and expanding field of biomedical imaging." (Annals of Biomedical Engineering, December 2003) "a useful resource for

anyone working in biomedical imagingâ |recommended to anyone with an interest in the challenging and expanding fieldâ |" (Annals of Biomedical Engineering, Issue 31:11) "I recommend this book as a reference and education guide..." (Biomedical Instrumentation & Technology, July-August 2003) "...a well-written book for allâ |highly recommended..." (Medical Physics, August 2003)

An integrated, comprehensive survey of biomedical imaging modalities An important component of the recent expansion in bioengineering is the area of biomedical imaging. This book provides in-depth coverage of the field of biomedical imaging, with particular attention to an engineering viewpoint. Suitable as both a professional reference and as a text for a one-semester course for biomedical engineers or medical technology students, Introduction to Biomedical Imaging covers the fundamentals and applications of four primary medical imaging techniques: magnetic resonance imaging, ultrasound, nuclear medicine, and X-ray/computed tomography. Taking an accessible approach that includes any necessary mathematics and transform methods, this book provides rigorous discussions of: \* The physical principles, instrumental design, data acquisition strategies, image reconstruction techniques, and clinical applications of each modality \* Recent developments such as multi-slice spiral computed tomography, harmonic and sub-harmonic ultrasonic imaging, multi-slice PET scanning, and functional magnetic resonance imaging \* General image characteristics such as spatial resolution and signal-to-noise, common to all of the imaging modalities

This book appears to be a write up of some presentation materials that the author may have given on the topic of medical imaging to general audiences. The text presents a high level overview of the key technologies but fails to follow through in how they are actually implemented. For example:CAT imaging is an inverse Fourier transform process that requires some significant mathematical tools which other authors have developed well in their texts over the past thirty years. This text glosses over these issues. In fact there is no clear presentation of the processes, methods, and limitations.Ultrasound has some complexities beyond the transducers. The images from ultrasound are created by a complex set of mathematical manipulations of the time and spatial signals received back from the sensing pulses. The details of these processes are totally missing from the text.If you want to get a feeling for how the sensors work at a high level then this is a useful text. If you are seeking to understand how the image processing works then this is clearly not worth the time and money.It is not clear who the author was writing for. Clearly it was not for the engineer who was attempting to develop such systems. It may have been for the technicians who want a visceral

understanding of the technology. There is a need for a comprehensive and well written text on methods of medical imaging. Such a text must combine three things. First it must deal with the physical phenomena which are used to sample the tissues. Second, it must clearly and completely articulate the methods for processing the data collected into images. This section must be expansive to include 3D and temporal images. Third the book must detail the limitations of the methods employed. Such a book may likely find a large audience for those who design and develop such systems.

Great read and perfect introduction to Imaging.

This was an excellent book for biomedical imaging. It wasn't difficult to understand, and I found it really helpful. I was using it with a class, and it was probably one of my favorite biomedical books.

Great book.

I love this product. I have a home based bakery and I was missing a good bread product. I like the design and quality of it! give my parents , so fast, receive it next day . I will recommend it to my friend. OK

Not sure what the reviewer who gave this book 1 star was using it for, but I've had this textbook for a class before- and it served it's purpose well. It's designed to be a reading supplement for a one semester, introductory 400/500 level course on medical imaging, so it reviews the principles and mathematics behind the 4 major types of medical imaging: x-ray, nuclear, ultrasound, and mri. If you wanted more specialized knowledge on one subject, buy either a textbook specifically on that subject or maybe realize that ~250 9"x6" pages covering all 4 probably isn't going to get into all the subtlety you're interested in. Like I said, it's for an introductory imaging class.

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