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Imaging Science

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BOOK REVIEW

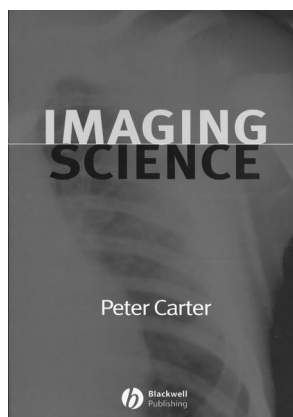
Imaging Science

P. Carter, ed. Malden, Mass: Blackwell Publishing; 2007, 240 pages, 73 illustrations. \$49.95.

Imaging Science, written by Peter Carter and published by Blackwell Science in 2007, provides a basic review of diagnostic imaging physics and equipment. Its content may be sufficient for the undergraduate diagnostic radiography student, its intended audience. The text may also be helpful for a radiologist interested in reviewing a very basic primer of x-ray imaging physics. It is not useful for the radiology resident preparing for the physics board examination or as a reference book for the general radiologist.

This book is concise, allowing the reader to finish the book in less than 8 hours. Combined with a 1- or 2-week lecture series, the content provides a good background of basic imaging physics appropriate for any undergraduate technology student to build on. The diagrams are well done, sophisticated, and yet easily understood. Their captions are also descriptive and concise.

The first 4 chapters include commentary that occupies every other page and continues in parallel with the text. The reader has to flip back and forth to read both commentary and text, as both continue to subsequent pages. This is both annoying and distracting and is the least appealing feature of this book. In addition, some information in the commentary was helpful as a supplement to the text, but other information was either too elementary or out of place. Examples include descriptions of the terms “heterogeneous” (page 42); “mode,” “mean,” and “median” (page 44); “fluctuation” (page 58); and “mathematical products” (page 74). The commentary did not provide insight into those terms that an average middle school student should not already know. Although much of the information in the commentary was useful, it would have been better to incorporate



that information in the text. The items that do not naturally extend from the topic should have been left out.

Subtracting the commentary, the book essentially dedicates approximately 80 pages to basic x-ray physics, only 1 page of which covers fluoroscopy, 15 pages to CT, 10 pages to nuclear medicine, 15 pages to sonography, and 20 pages to MR. The abbreviated coverage of nuclear medicine, sonography, and MR are insufficient for anyone hoping to gain minimal depth in their understanding of those modalities.

Information this book is missing that would provide more value to a radiology resident or general radiologist follows.

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- 1) More in-depth explanation of x-ray physics, including all aspects of image acquisition, film development/processing, fluoroscopy/spot film radiography, etc.;
- 2) More information on nuclear medicine, including radiopharmaceuticals, image acquisition, and therapy;
- 3) Expanded explanation on ultrasound and MR physics;
- 4) An expanded discussion of digital and computed radiology, including all modalities and their interface with RIS/PACS;
- 5) Discussion on the types of contrast media, its uses, contraindications, and cost;
- 6) Radiobiology, explaining the genetic basis for radiation damage, the proposed theories explaining what happens, and the necessary safety precautions to protect patients, staff, and the public;
- 7) Objectives at the beginning of each chapter, or questions at the end of each chapter to reinforce key learning points.

Review of Radiologic Physics by Huda and Slone, most recently published in January 2003, has been used successfully by radiology residents to prepare for the physics board examination and includes much, though not all, of the information that this book lacks. Its coverage of some of the topics is minimal, and for a more thorough explanation one should turn to a dedicated text. It is also used by radiology technologist students in preparation for their boards, suggesting that *Imaging Science* lacks information essential to the technology student.

In summary, *Imaging Physics* is a basic text appropriate for an entry-level undergraduate radiography student and is not very useful for the radiology resident or general radiologist. Although adequate for its intended audience, the book may not be sufficient to help the aspiring technologist pass his/her board examination.

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