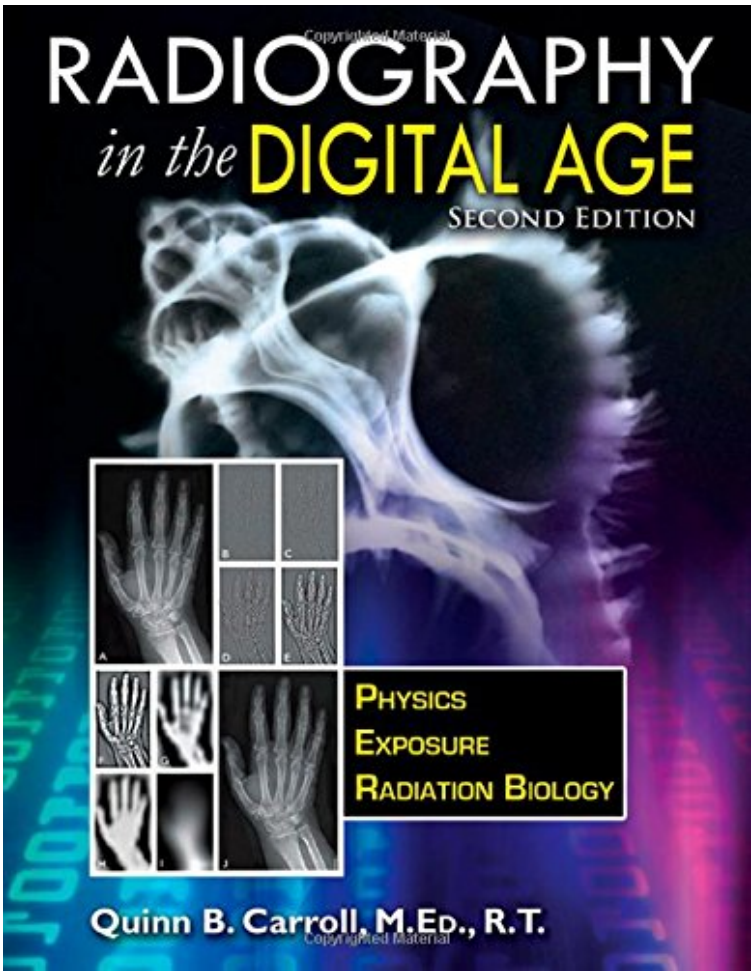
Radiography In the Digital Age: Physics - Exposure - Radiation Biology (2nd Ed.)

Quinn B. Carroll



#489153 in Books 2014-08-18Original language:EnglishPDF # 1 11.20 x 1.80 x 8.70l, #File Name: 0398080968888 pages | File size: 73.Mb

Quinn B. Carroll : Radiography In the Digital Age: Physics - Exposure - Radiation Biology (2nd Ed.) before purchasing it in order to gage whether or not it would be worth my time, and all praised Radiography In the Digital Age: Physics - Exposure - Radiation Biology (2nd Ed.):

0 of 0 people found the following review helpful. Five StarsBy awaGood buy, it looks as described.0 of 0 people found the following review helpful. Five StarsBy Elaine H.Very comprehensive.

Long overdue, this new work provides just the right focus and scope for the practice of radiography in this digital age, covering four entire courses in a typical radiography program. The entire emphasis of foundational physics has been adjusted in order to properly support the specific information on digital imaging that will follow. The paradigm shift in

imaging terminology is reflected by the careful phrasing of concepts, accurate descriptions and clear illustrations throughout the book. There are 713 illustrations, including meticulous color line drawings, numerous photographs and stark radiographs. The two chapters on digital image processing alone include 60 beautifully executed illustrations. Foundational chapters on math and basic physics maintain a focus on energy physics. Obsolete and extraneous material has been eliminated, while concepts supporting digital imaging are more thoroughly discussed. All discussion of electricity is limited to only those concepts, which bear directly upon the production of x-rays in the x-ray tube. Following is a full discussion of the x-ray beam and its interactions within the patient, the production and characteristics of subject contrast, and an emphasis on the practical application of radiographic technique. This is conventional information, but the terminology and descriptions used have been adapted with great care to the digital environment. No fewer than ten chapters are devoted directly to digital imaging, providing extensive coverage of the physics of digital image capture, digital processing techniques, and the practical applications of both CR and DR. Image display systems are brought up to date with the physics of LCD screens and of electronic images. Chapters on Radiation Biology and Protection include an unflinching look at current issues and radiation protection in practice. The radiation biology is clearly presented with numerous lucid illustrations, and a balanced perspective on radiation and its medical use is developed. To reinforce mathematical concepts for the student, dozens of practice exercises are strategically dispersed throughout the chapters, with answer keys provided in the appendix. Extensive review questions at the end of each chapter give a thorough, comprehensive review of the material learned. The Instructor Resources for Radiography in the Digital Age, available on disc, includes the answer key for all chapter review questions and a bank of over 1500 multiple-choice questions for instructors use. It also includes 35 laboratory exercises, including 15 that demonstrate the applications of CR equipment.

Radiography in the Digital Age. second edition, by Carroll. Published by Charles C Thomas, price $109.95. student workbook $44.95.This is the second edition of Quinn B Carroll's peer-reviewed work on digital radiography and contains some updates and chapter restructuring. The book is aimed primarily at the American market and has been written with students in radiology technology in mind. It is a very wide-ranging book. 44 chapters and over 800 pages in total, dealing with the underpinning physics behind digital radiography.The author takes a new approach. starting out with basic principles and building on these over the course of the book to explain how they relate to all aspects of modern radiographic practice. The author's philosophy recognises that digital radiography is a paradigm shift that requires a rethink on how the physics is presented. Carroll postulates that learners will benefit from a bottom-up rethink about which concepts are required to best understand image production from a digital viewpoint, rather than attempting to holt new concepts onto a traditional model. I think he largely succeeds in this approach. The writing is very user-friendly, and provides the novice with a very good tour of the physical principles applied to radiography in an unpretentious and easy to grasp tone.The maths is introduced gradually and there are helpful analogies provided to aid understanding. Physics is not always the favourite topic for a student radiographer but for a learner coming into the field with no pre-existing knowledge I think this book provides a gentle enough learning curve to maintain interest while covering all of the important theory. This is no easy feat and I think the main strength of the writing is in the way that theoretical principles are strongly applied to practice and real-world scenarios.The content includes: background history, basic physics, units, atomic structure, electromagnetism,electrodynamics, radiographic equipment (generators and tubes), image production (and image optimisation), computer basics, digital image processing and post-processing, image capture, archiving. QA, radiation biology and radiation protection. This may seem an overly ambitious range of topics for one book, but due to its sheer physical size there is both depth and breadth to the content.The general quality of the images and diagrams is excellent and they have been chosen to illustrate every important concept presented as well as some thrown in for general interest (including a fish with scoliosis). Every chapter concludes with review questions allowing the student to take a formative assessment of knowledge before moving on. There is also a student workbook to accompany the main text that allows the learner to fill in the missing words without having to write in the textbook itself.For radiography educators, the publisher includes a range of ready-made resources to accompany the book. These are provided on PC and Mac-compatible CD-ROM including test questions, lab exercises and slide presentations. These are all presented as Microsoft Word documents and PowerPoint presentations. The graphical style of the PowerPoint slideshows may not be to everyone's taste, but the author has used template formatting so it is relatively easy to change the style to match your own preference.Priced at around 150 this is likely to appeal to the lecturer/educator rather than to the practitioner, but would make a useful addition to the library of any radiography department with students --John Talbot/ RAD Magazine 41, 480, pg 38Radiography in the Digital Age was created to help students learn the complex conceptsof physics, exposure technique, and biology as they relate to the world of digital imaging. The book is an invaluable resource for radiography students, but it also benefits radiographers who have transitioned from film screen to digital imaging. The information is organized into 5 major sections, allowing the reader to gradually learn and understand the concepts. Also helpful is the presentation of digital concepts alongside conventional ones, demonstrating to the reader how things have changed and how they need to be changed to enhance image production. Current terminology is used throughout, but conventional terminology is

referenced to enhance understanding.The well-written textbook provides a wealth of information on topics from the use of contrast and the effects of kVp to chapters on mobile imaging, fluoroscopy, quality control, radiation biology, and radiation protection. Clear and visually pleasing diagrams, illustrations, and images complement the presented concepts.The accompanying workbook (sold separately) helps students recall and memorize material. Although the textbook covers much of the American Registry of Radiologic Technologists content specifications for the radiography examination, the workbook questions do not correlate to the style of questions used on the examination. Instructor resources such as question banks, laboratory exercises, and PowerPoint slides are available but were not assessed as part of this review.Overall, Radiography in the Digital Age is accurate and appropriate for students learning radiography in the modern world of digital imaging, for those educating them on the subject, and for practicing professionals transitioning to digital technology. --Linda DeRenzis, MSEd, R.T., RADIOLOGIC TECHNOLOGY, July/August 2015, Volume 86, Number 6