Technical Fundamentals of Radiology and CT

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Dedicated to biomedical engineering students, for choosing a specialty with the highest social utility

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Preface

The justification of this text is the need to deliver to a wide circle of readers—biomedical engineers, engineering students, physicians, medical students, radiographers and related professionals—a basic tool to understand the basics of all aspects involved in the radiology of today.

The decision to write it arises from the proven fact that there exist almost no texts referring specifically to the technical aspects of radiology, while the literature concerning medical or diagnostics aspects in radiology are abundant. Therefore, a lot of information has been gathered to realize this work in two parts. The first deals with the basic concepts in radiology, the technique of radiographic films, the basic equipment, and a description of almost all components of the equipment used for these purposes. The second part concerns exclusively computed tomography, or CT scan. It is reviewed from the basics to the most common diagnostic applications, through the technical description of all components and elements used in the most revolutionary technique developed since the discovery of x-rays.

This book aims to give only the basics, and so many specialized items have had to be omitted, because the purpose is not to make an encyclopedia of radiology or a design manual. Consequently, we have tried to compensate for the lack of technical aspects with a concern for the didactical aspects and careful explanation of concepts, keeping in mind, as previously stated, the wide range of users.

Acknowledgement

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Author biography

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Guillermo Avendaño Cervantes is a Chilean engineer, a specialist in biomedical engineering with over 40 years of professional performance in class biomedical equipment companies and Professor at seven Universities in Latin American countries. He is the author of numerous articles and several specialist biomedical engineering books, creator of 38 innovative items of electromedical equipment, has several patents and is a member of five international scientific societies.