



Basic Introduction to Bioelectromagnetics, Second Edition

By Cynthia Furse, Douglas A. Christensen, Carl H. Durney

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Although classical electromagnetic (EM) field theory is typically embedded in vector calculus and differential equations, many of the basic concepts and characteristics can be understood with precursory mathematical knowledge. Completely revised and updated, **Basic Introduction to Bioelectromagnetics, Second Edition** facilitates the process of interdisciplinary research by introducing life scientists to the basic concepts of EM fields.

This new edition outlines elements of EM that are helpful to life scientists working with physicists and electrical engineers. Each concept is presented with an associated application and discussion. Example applications include hyperthermia, neural stimulation, MRI, NMR, ultrasound, and cardiac pacing/defibrillation. With the liberal use of diagrams and graphs, this qualitative and illustrative point of access:

- Covers the entire frequency spectrum from direct current (DC) up through optical frequencies
- Includes more than 200 illustrations with 40 medical applications
- Incorporates examples from real applications to explain concepts
- Concentrates on the qualitative explanation of the key concepts, fundamental principles, and characteristic behaviors of EM fields, without mathematical rigor
- Offers practical rules of thumb to understand real situations
- Requires only an algebra background, in contrast to typical EM books that require vector calculus and partial differential equations

Offering a simplified view of a very complex subject, this second edition provides an accessible introduction for life scientists and medical technologists on how EM fields work, what controls them, and the factors important to experimental setups.

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