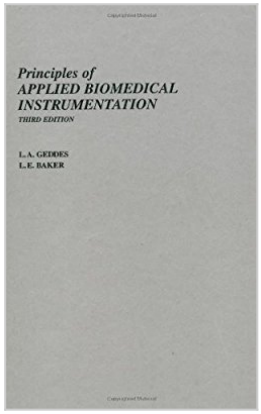

Principles of Applied Biomedical Instrumentation

By L. A. Geddes, L. E. Baker

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Encyclopedia of Medical Devices and Instrumentation John G. Webster, Editor-in-Chief This comprehensive encyclopedia, the work of more than 400 contributors, includes 266 articles on devices and instrumentation that are currently or likely to be useful in medicine and biomedical engineering. The four volumes include 3,022 pages of text that concentrates on how technology assists the branches of medicine. The articles emphasize the contributions of engineering, physics, and computers to each of the general areas of medicine, and are designed not for peers, but rather for workers from related fields who wish to take a first look at what is important in the subject. Highly recommended for university biomedical engineering and medical reference collections, and for anyone with a science background or an interest in technology. Includes a 78-page index, cross-references, and high-quality diagrams, illustrations, and photographs. 1988 (0 471-82936-6) 4-Volume Set Introduction to Radiological Physics and Radiation Dosimetry Frank Herbert Attix provides complete and useful coverage of radiological physics. Unlike most treatments of the subject, it encompasses radiation dosimetry in general, rather than discussing only its applications in medical or health physics. The treatment flows logically from basics to more advanced topics. Coverage extends through radiation interactions to cavity theories and dosimetry of X-rays, charged particles, and neutrons. Several important subjects that have never been thoroughly analyzed in the literature are treated here in detail, such as charged-particle equilibrium, broad-beam attenuation and geometries, derivation of the Kramers X-ray spectrum, and the reciprocity theorem, which is also extended to the nonisotropic homogeneous case. 1986 (0 471-01146-0) 607 pp. Medical Physics John R. Cameron and James G. Skofronick This detailed text describes medical physics in a simple, straightforward manner. It discusses the physical principles involved in the control and functon of organs and organ systems such as the eyes, ears, lungs, heart, and circulatory system. There is also coverage of the application of mechanics, heat, light, sound, electricity, and magnetism to medicine, particularly of the various instruments used for the diagnosis and treatment of disease. 1978 (0 471-13131-8) 615 pp.

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Editorial Review

From the Inside Flap

Earlier editions of this outstanding work dealt mainly with the measurement of physiological events. This Third Edition goes much further, not only revising the first two editions by presenting new applications of basic principles and a broader overall perspective, but also by including coverage of the latest therapeutic and rehabilitative devices. Four new chapters have been added dealing with stimulation and stimulators (Chapter 10), radiant-energy devices (Chapter 13), ventilators (Chapter 14), and anesthesia (Chapter 15). Chapter 10 covers the principles of excitation, monopolar and bipolar stimulation, and describes various output circuits such as constant-voltage, constant-current, and isolated-output. Numerous examples are presented, including cardiac pacing, ventricular defibrillation, and functional electrical stimulation. The radiant-energy devices in Chapter 13 cover light-emitting diodes, blackbody radiation, gas-discharge lamps, lasers, X-rays, lithotripsy, diathermy, the CT scanner, and electrosurgery. The different ways of providing artificial respiration are presented in Chapter 14 with specific coverage of how inspiration can be manipulated electrically by stimulating the nerves that control the inspiratory muscles. Chapter 15 covers inhalation anesthesia and the anesthetic machine from basic fundamental principles. The chapter also examines the method of delivering anesthetic. gases, estimating the depth of anesthesia, and anesthetic monitoring. Revised and expanded throughout, Principles of Applied Biomedical Instrumentation, Third Edition is designed for both the life scientist and physical scientist. Students will find the material easy to read, and teachers will find many examples of theory to be useful for lectures. For psychophysiology, nursing, and medical and veterinary students, the material explains new applications using biomedical instruments based on simple operating principles. Physicians and veterinarians preparing for board exams will find the nonmathematical presentation of instrumentation helpful, and engineering students will discover a wealth of new principles and techniques that can be used to design new instruments. The first edition appeared in 1968 and the second in 1975. Both explored the knowledge available at that time. Principles of Applied Biomedical Instrumentation, Third Edition reflects not only today’s technology, but points toward tomorrow’s.

From the Back Cover

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About the Author
About the authors L. A. Geddes is the Showalter Distinguished Professor of Bioengineering and Director of the Hillenbrand Biomedical Engineering Center at Purdue University. Born in Scotland and educated in Canada, Dr. Geddes has documented research in electromyography, cardiac output, cardiopulmonary resuscitation, ventricular defibrillation, blood pressure, and stimulating and recording electrodes. Along with his colleagues, Dr. Geddes developed several new techniques for teaching in medical education and has written six books and over 600 scientific papers. He is a member of the IEEE (Fellow), the American College of Cardiology (Fellow), and the Australasian College of Physical Scientists in Medicine (Fellow). He serves as consultant to numerous scientific journals and to the NIH, FDA, and NSF Dr. Geddes is listed in Who's Who, Leaders in the Southwest, American Men of Science, and The Royal Blue Book. He earned his PhD in physiology at Baylor University College of Medicine, and his bachelor's and master's degrees and DSc Honoris Causa at McGill University. LEE E. BAKER received the B.S. degree in electrical engineering from the University of Kansas, the M.S. in electrical engineering from Rice Institute, and the PhD in physiology from Baylor College of Medicine. He is the Robert L. Parker Sr. Centennial Professor in Engineering and Director of the Biomedical Engineering Program at the University of Texas at Austin.

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