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Biomedical Instruments, Second Edition

Sid Deutsch, Walter Welkowitz
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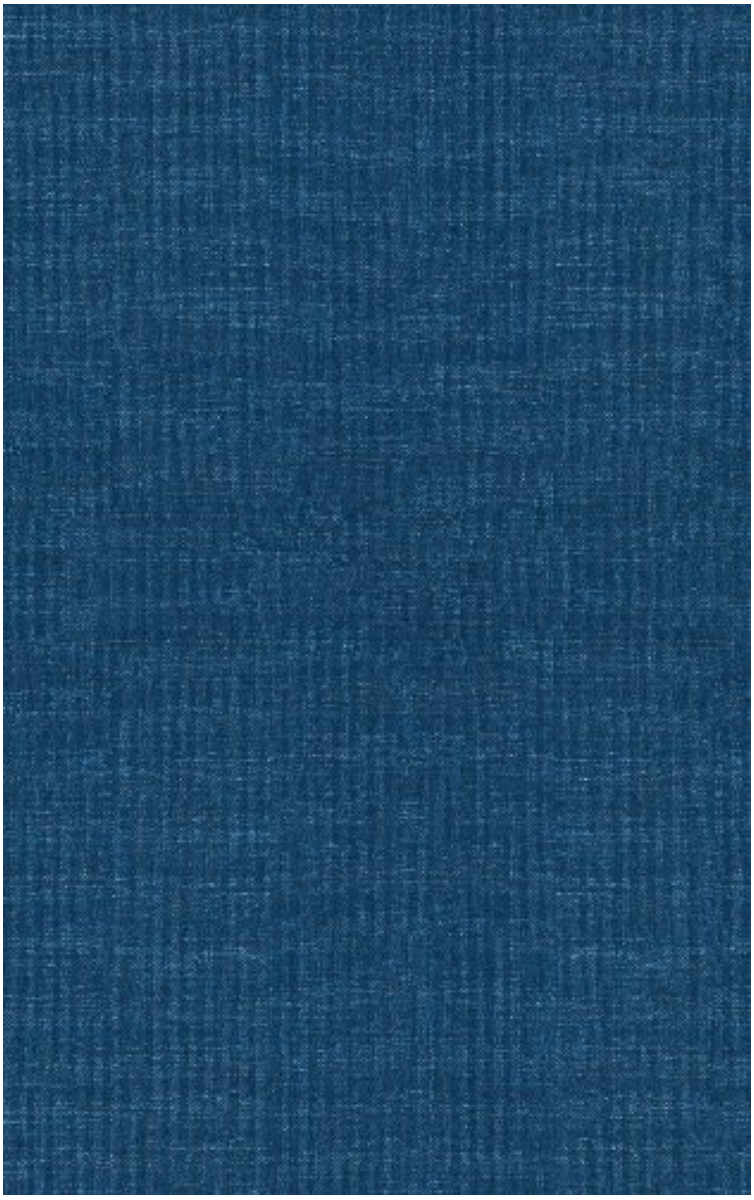

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Sid Deutsch, Walter Welkowitz : Biomedical Instruments, Second Edition before purchasing it in order to gage whether or not it would be worth my time, and all praised Biomedical Instruments, Second Edition:

This sourcebook offers all the information you need to understand and design biomedical instruments. Biomedical

Instruments contains extensive analysis of signal processing electronic design for medical instruments, in-depth descriptions of design methods for medical transducers, and an introduction to medical imaging and tomographic algorithms. Transducers covered include variable R, L, and C, piezoelectric, electrodynamic and magnetostrictive, force balance, and fiber optic. Operational amplifiers, analog filters, biotelemetry, discriminators, phase-locked loops, and microprocessors are covered in a comprehensive section on circuitry. Exercises and problems accompany each chapter of the text.This is the first paragraph of the preface...either the paragraph above, or this paragraph can be used for the blurb_From the Preface:The book aims at (a) presenting a physical explanation for the behavior of various transducer, (b) developing the mathematical theory applicable to these transducers, and (c) discussing the practical design of biomedical instruments. Our hope is that the book will serve as a text for biomedical engineering students who will be engaged in the design of instruments, as a reference book for medical instrument designers, and as a source of ideas for the large numbers of biomedical research workers who, at one time or another, must build a gadget to implement their research. Numerous examples of medical instrument design are presented in order to clarify the mathematical analyses.Brings the volume up-to-date with new material on microprocessor applications, fiber optic instruments, and modern imaging systemsExplains behavior of transducersDevelops mathematical theory for transducersDiscusses the design of biomedical instrumentsServes as a text for biomedical engineers or a reference for medical instrument designersProvides suitable homework problems at the end of each chapter

"The combination of senior-level mathematics, engineering design principles, and actual biomedical instrument applications is developed in a very clear, concise, and powerful manner throughout the book. The student will gain a wealth of applied and realistic engineering design experience by studying this text...In every section of the book, each design idea is carefully developed in a clear and helpful way. The examples are relevant and timely to invoke further interest and insight into the design process...I would enthusiastically recommend the book to alll undergraduate programs in biomedical engineering." --THOMAS M. JUDD, Healthcare Technology Consultant The key element for acquiring the physiological signal in biomedical instruments--that is, vital signs or other biomedical measurements--is a well designed transducer. The underlying theory and operational principles for many of the transducers in use in modern biomedical instruments are detailed in Part One. Once the physiological data has been appropriately acquired, signal conditioning techniques are applied in modern instruments to convert the information to a form ready for use by equipment operators or computer interface. Part Two clearly presents most of the techniques utilized by current biomedical equipment designers.From the Back CoverThe book aims at (a) presenting a physical explanation for the behavior of various transducers, (b) developing the mathematical theory applicable to these transducers, and (c) discussing the practical design of biomedical instruments. Our hope is that the book will serve as a text for biomedical engineering students who will be engaged in the design of instruments, as a reference book for medical instrument designers, and as a source of ideas for the large number of biomedical research workers who, at one time or another, must build a gadget to implement their research.