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Medical Instrument Design and Development CRC Press
The previous edition of the International Encyclopedia of Ergonomics and Human Factors made history as the first unified source of reliable information drawn from many realms of science and technology and created specifically with ergonomics professionals in mind. It was also a winner of the Best Reference Award 2002 from the Engineering Libraries Division, American Society of Engineering Education, USA, and the Outstanding Academic Title 2002 from Choice Magazine. Not content to rest on his laurels, human factors and ergonomics expert Professor Waldemar Karwowski has overhauled his standard-setting resource, incorporating coverage of tried and true methods, fundamental principles, and major paradigm shifts in philosophy, thought, and design. Demonstrating the truly interdisciplinary nature of this field, these changes make the second edition even more comprehensive, more informative, more, in a word, encyclopedic. Keeping the format popularized by the first edition, the new edition has been completely revised and updated. Divided into 13 sections and organized alphabetically within each section, the entries provide a clear and simple outline of the topics as well as precise and practical information. The book reviews applications, tools, and innovative concepts related to ergonomic research. Technical terms are defined (where possible) within entries as well as in a glossary. Students and professionals will find this format invaluable, whether they have ergonomics, engineering, computing, or psychology backgrounds. Experts and researchers will also find it an excellent source of information on areas beyond the range of their direct interests.
Human-Robot Interaction CRC Press
Medical Electrical EquipmentGuidance and interpretation--considerations of unaddressed safety aspects in the third edition of IEC 60601-1 and proposals for new requirementsIntroduction to Biomedical Engineering Technology, Third EditionCRC Press
EMC for Product Designers IGI Global
This immensely valuable book provides a comprehensive, easy-to-understand, and up-to-date glossary of technical and scientific terms used in the fields of bioengineering and biotechnology, including terms used in agricultural sciences. The volume also includes terms for plants, animals, and humans, making it a unique, complete, and easily accessible reference. Scientific and Technical Terms in Bioengineering and Biological Engineering opens with an introduction to bioengineering and biotechnology and presents an informative timeline covering the important developments and events in the fields, dating from 7000 AD to the present, and it even makes predictions for developments up the year 2050. From ab initio gene prediction to zymogen and from agrobacterium to zoonosis, this volume provides concise definitions for over 5400 specialized terms peculiar to the fields of bioengineering and biotechnology, including agricultural sciences. The use of consistent terminology is critical in presenting clear and meaningful information, and this helpful reference manual will be essential for graduate and undergraduate students of biomedical engineering, biotechnology, nanotechnology, nursing, and medicine and health sciences as well as for professionals who work with medicine and health sciences.
Clinical and Engineering Aspects World Scientific
Kinanthropometrics is the study of the human body size and somatotypes and their quantitative relationships with exercise and nutrition. This is the third edition of a successful text on the subject.
For Regulatory Purposes John Wiley & Sons
Anesthesia Equipment: Principles and Applications, 2nd Edition, by Dr. Jan Ehrenwerth and Dr. James B. Eisenkraft, offersexpert, highly visual, practical guidance on the full range of delivery systems and technology used in practice today. It equips you with theobjective, informed answers you need to ensure optimal patient safety. Make informed decisions by expanding your understanding of the physical principles of equipment, the rationale for its use, delivery systems for inhalational anesthesia, systems monitoring, hazards and safety features, maintenance and quality assurance, special situations/equipment for non-routine adult anesthesia, and future directions for the field. Ensure patient safety with detailed advice on risk management and medicolegal implications of equipment use. Apply the most complete and up-to-date information available on machines, vaporizers, ventilators, breathing systems, vigilance, ergonomics, and simulation. Visualize the safe and effective use of equipment thanks to hundreds of full-color line drawings and photographs. Access the complete text and images online, fully searchable, at www.expertconsult.com.
Electrical Product Compliance and Safety Engineering, Volume 2 CRC Press
CEI/IEC 60601-2-5:2009 applies to the basic safety and essential performance of ultrasonic physiotherapy equipment employing a single plane unfocused circular transducer per treatment head, producing static beams perpendicular to the face of the treatment head. This standard can also be applied to ultrasonic physiotherapy equipment used for compensation or alleviation of disease, injury or disability. This third edition cancels and replaces the second edition published in 2000. This edition constitutes a technical revision. The numbering was revised to agree with IEC 60601-1:2005 (third edition). Beyond this, essential performance characteristics are defined in 201.4.3.101, guidance on maintenance is added in 201.7.9.2.1, a new requirement regarding dielectric withstand was added in 201.8.8.3. The clause on transducer surface temperature rise, 201.11, has been modified to allow for simulated use conditions. Measurements of ultrasound-related parameters are now referenced to IEC 61689:2007 (second edition). The most important change in the ultrasound-related parameters is the definition of effective radiating area, 201.3.207. This change will also affect the value of the effective intensity and its uncertainty.
International Encyclopedia of Ergonomics and Human Factors, Second Edition - 3 Volume Set CRC Press
As modern technologies continue to develop and evolve, the ability of users to interface with new systems becomes a paramount concern. Research into new ways for humans to make use of advanced computers and other such technologies is necessary to fully realize the potential of 21st century tools. Human-Computer Interaction: Concepts, Methodologies, Tools, and Applications gathers research on user interfaces for advanced technologies and how these interfaces can facilitate new developments in the fields of robotics, assistive technologies, and computational intelligence. This four-volume reference contains cutting-edge research for computer scientists; faculty and students of robotics, digital science, and networked communications; and clinicians invested in assistive technologies. This seminal reference work includes chapters on topics pertaining to system usability, interactive design, mobile interfaces, virtual worlds, and more.
Kinanthropometry and Exercise Physiology Laboratory Manual: Tests, Procedures and Data, Third Edition Springer Science & Business Media
EMC for Product Designers, Fifth Edition, provides all the key information needed to meet the requirements of the EMC compliance standards. More importantly, it shows how to incorporate EMC principles into the product design process, avoiding cost and performance penalties to meet the needs of specific standards that produce a better overall product. As well as covering the 2016 versions of the EU EMC and Radio Directives, this new edition has been thoroughly updated to be in line with the latest best practices in EMC compliance and product design. Coverage now includes extra detail on the main automotive, military, and aerospace standards requirements, as well as a discussion of the issues raised by COTS equipment in military applications. New to this edition are chapters on functional safety, design and installation aspects of switchmode power converters with an introduction to EMC testing of integrated circuits, new details on CISPR 32/35, updates to new versions of the Directives DEF STAN 59-411, DO-160 and MIL STD 461, with more commentary on the implications and requirements of military and aerospace standards, and an added reference to CE Marking for military and problems of COTS. In addition, new sections on IC emissions measurements per IEC 61967 are included, along with new coverage of FFT/time domain receivers, an expanded section on military/aerospace transients, special references to DO160 lightning, added material on MIL STD 461 CE101, RE101, and RS101, the latest practice in PCB layout with a discussion of slots in ground planes, current practice on decoupling, extended coverage of DC-DC converters and motor drives, and a new section on switching inverter (motor drives, renewable energy converters, etc.) installation, and the latest 2016 mandatory regulations of the RTTE and EMC Directives. Presents a complete introduction to EMC for product design from a practicing consultant in the field Includes short case studies that demonstrate how EMC product design is put into practice Provides the latest 2016 mandatory regulations of both the RTTE Directive and EMC Directive
Volume Two: Physiology Newnes
Comprehensive in scope, this totally revamped edition of a bestseller is the ideal desk reference for anyone tasked with hazard control and safety management in the healthcare industry. Presented in an easy-to-read format, Healthcare Hazard Control and Safety Management, Third Edition examines hazard control and safety management as proactive functions of an organization. Like its popular predecessors, the book supplies a complete overview of hazard control, safety management, compliance, standards, and accreditation in the healthcare industry. This edition includes new information on leadership, performance improvement, risk management, organizational culture, behavioral safety, root cause analysis, and recent OSHA and Joint Commission Emergency Management requirements and regulatory changes. The book illustrates valuable insights and lessons learned by author James T. Tweedy, executive director of the International Board for Certification of Safety Managers. In the text, Mr. Tweedy touches on the key concepts related to safety management that all healthcare leaders need to understand. Identifies common factors that are often precursors to accidents in the healthcare industry Examines the latest OSHA and Joint Commission Emergency Management Requirements and Standards Covers facility safety, patient safety, hazardous substance safety, imaging and radiation safety, infection control and prevention, and fire safety management Includes references to helpful information from federal agencies, standards organizations, and voluntary associations Outlining a proactive hazard control approach based on leadership involvement, the book identifies the organizational factors that support accident prevention. It also examines organizational dynamics and supplies tips for improving organizational knowledge management. Complete with accompanying checklists and sample management plans that readers can immediately put to use, this text is currently the primary study reference for the Certified Healthcare Safety Professional Examination.
Medical Device Use Error John Wiley & Sons
This book offers all countries a guide to implementing verification systems for medical devices to ensure they satisfy their regulations. It describes the processes, procedures and need for integrating medical devices into the legal metrology framework, addresses their independent safety and performance verification, and highlights the associated savings for national healthcare systems, all with the ultimate goal of increasing the efficacy and reliability of patient diagnoses and treatment. The book primarily focuses on diagnostic and therapeutic medical devices, and reflects the latest international directives and regulations. Above all, the book demonstrates that integrating medical devices into the legal metrology system and establishing a fully operational national laboratory for the inspection of medical devices could significantly improve the reliability of medical devices in diagnosis and patient care, while also reducing costs for the healthcare system in the respective country.
Safety Risk Management for Medical Devices Newnes
In vivo magnetic resonance imaging (MRI) has evolved into a versatile and critical, if not ‘ gold standard ’ , imaging tool with applications ranging from the physical sciences to the clinical ‘ -ology ’ . In addition, there is a vast amount of accumulated but unpublished inside knowledge on what is needed to perform a safe, in vivo MRI. The goal of this comprehensive text, written by an outstanding group of world experts, is to present information about the effect of the MRI environment on the human body, and tools and methods to quantify such effects. By presenting such information all in one place, the expectation is that this book will help everyone interested in the Safety and Biological Effects in MRI find relevant information relatively quickly and know where we stand as a community. The information is expected to improve patient safety in the MR scanners of today, and facilitate developing faster, more powerful, yet safer MR scanners of tomorrow. This book is arranged in three sections. The first, named ‘ Static and Gradient Fields ’ (Chapters 1-9), presents the effects of static magnetic field and the gradients of magnetic field, in time and space, on the human body. The second

section, named ' Radiofrequency Fields ' (Chapters 10-30), presents ways to quantify radiofrequency (RF) field induced heating in patients undergoing MRI. The effect of the three fields of MRI environment (i.e. Static Magnetic Field, Time-varying Gradient Magnetic Field, and RF Field) on medical devices, that may be carried into the environment with patients, is also included. Finally, the third section, named ' Engineering ' (chapters 31-35), presents the basic background engineering information regarding the equipment (i.e. superconducting magnets, gradient coils, and RF coils) that produce the Static Magnetic Field, Time-varying Gradient Magnetic Field, and RF Field. The book is intended for undergraduate and post-graduate students, engineers, physicists, biologists, clinicians, MR technologists, other healthcare professionals, and everyone else who might be interested in looking into the role of MRI environment on patient safety, as well as those just wishing to update their knowledge of the state of MRI safety. Those, who are learning about MRI or training in magnetic resonance in medicine, will find the book a useful compendium of the current state of the art of the field.

Practical Guide to Catheter Ablation of Atrial Fibrillation McGraw Hill Professional

International conference supported by Indian Statistical Institute, held at Bangalore, 20-22 December, 2011; selected papers.

Improving Health Care Through a Multidisciplinary Approach CRC Press

The Biomedical Quality Auditor Handbook was developed by the ASQ Biomedical Division in support of its mission to promote the awareness and use of quality principles, concepts, and technologies in the biomedical community. This third edition correlates to the 2013 exam Body of Knowledge (BoK) and reference list for ASQ s Certified Biomedical Auditor program. It includes updates and corrections to errors and omissions in the second edition. Most notably it has been re-organized to align more closely with the BoK.

The Biomedical Quality Auditor Handbook, Third Edition John Wiley & Sons

At an early stage of the development, the design teams should ask questions such as, "How reliable will my product be?" "How reliable should my product be?" And, "How frequently does the product need to be repaired / maintained?" To answer these questions, the design team needs to develop an understanding of how and why their products fails; then, make only those changes to improve reliability while remaining within cost budget. The body of available literature may be separated into three distinct categories: "theory" of reliability and its associated calculations; reliability analysis of test or field data – provided the data is well behaved; and, finally, establishing and managing organizational reliability activities. The problem remains that when design engineers face the question of design for reliability, they are often at a loss. What is missing in the reliability literature is a set of practical steps without the need to turn to heavy statistics. Executing Design for Reliability Within the Product Life Cycle provides a basic approach to conducting reliability-related streamlined engineering activities, balancing analysis with a high-level view of reliability within product design and development. This approach empowers design engineers with a practical understanding of reliability and its role in the design process, and helps design team members assigned to reliability roles and responsibilities to understand how to deploy and utilize reliability tools. The authors draw on their experience to show how these tools and processes are integrated within the design and development cycle to assure reliability, and also to verify and demonstrate this reliability to colleagues and customers.

World Congress on Medical Physics and Biomedical Engineering September 7 - 12, 2009 Munich, Germany CRC Press

The field of mechatronics integrates modern engineering science and technologies with new ways of thinking, enhancing the design of products and manufacturing processes. This synergy enables the creation and evolution of new intelligent human-oriented machines. The Handbook of Research on Advancements in Robotics and Mechatronics presents new findings, practices, technological innovations, and theoretical perspectives on the the latest advancements in the field of mechanical engineering. This book is of great use to engineers and scientists, students, researchers, and practitioners looking to develop autonomous and smart products and systems for meeting today ' s challenges.

Safety, Standardization, and Benchmarking Springer

As medical devices become even more intricate, concerns about efficacy, safety, and reliability continue to be raised. Users and patients both want the device to operate as specified, perform in a safe manner, and continue to perform over a long period of time without failure. Following in the footsteps of the bestselling second edition, Reliable Design of Medical Devices, Third Edition shows you how to improve reliability in the design of advanced medical devices. Reliability engineering is an integral part of the product development process and of problem-solving activities related to manufacturing and field failures. Mirroring the typical product development process, the book is organized into seven parts. After an introduction to the basics of reliability engineering and failures, it takes you through the concept, feasibility, design, verification and validation, design transfer and manufacturing, and field activity phases. Topics covered include Six Sigma for design, human factors, safety and risk analysis, and new techniques such as accelerated life testing (ALT) and highly accelerated life testing (HALT). What ' s New in This Edition Updates throughout, reflecting changes in the field An updated software development process Updated hardware test procedures A new layout that follows the product development process A list of deliverables needed at the end of each development phase Incorporating reliability engineering as a fundamental design philosophy, this book shares valuable insight from the author ' s more than 35 years of experience. A practical guide, it helps you develop a more effective reliability engineering program—contributing to increased profitability, more satisfied customers, and less risk of liability.

Reliable Design of Medical Devices, Third Edition Medical Electrical EquipmentGuidance and interpretation--considerations of unaddressed safety aspects in the third edition of IEC 60601-1 and proposals for new requirementsIntroduction to Biomedical Engineering Technology, Third Edition

This handbook covers medical device regulatory systems in different countries, ISO standards for medical devices, clinical trial and regulatory requirements, and documentation for application. It is the first to cover the medical device regulatory affairs in Asia. Experts from influential international regulatory bodies, including the US Food and Drug Administration (FDA), UK Medicines and Healthcare Products Regulatory Agency, Japan Pharmaceuticals and Medical Devices Agency, Saudi Food and Drug Authority, Korea Testing Laboratory, Taiwan FDA, World Health Organization, Asian Harmonization Working Party, Regulatory Affairs Professionals Society, and British Standards Institution, have contributed to the book. Government bodies, the medical device industry, academics, students, and general readers will find the book immensely useful for understanding the global regulatory environment and in their research and development projects.

Root Cause Analysis John Wiley & Sons

Safety Risk Management for Medical Devices, Second Edition teaches the essential safety risk management methodologies for medical devices compliant with the requirements of ISO 14971:2019. Focusing exclusively on safety risk assessment practices required in the MedTech sector, the book outlines sensible, easily comprehensible, state-of the-art methodologies that are rooted in current industry best practices, addressing safety risk management of medical devices, thus making it useful for those in the MedTech sector who are responsible for safety risk management or need to understand risk management, including design engineers, product engineers, development engineers, software engineers, Quality assurance and regulatory affairs. Graduate-level engineering students with an interest in medical devices will also benefit from this book. The new edition has been fully updated to reflect the state-of-the-art in this fast changing field. It offers guidance on developing and commercializing medical devices in line with the most current international standards and regulations. Includes new coverage of ISO 14971:2019, ISO/TR 24971 Presents the latest information on the history of risk management, lifetime of a medical device, risk management review, production and post production activities, post market risk management Provides practical, easy-to-understand and state-of the-art methodologies that meet the requirements of international regulation

Computer Safety, Reliability, and Security Quality Press

Preceded by A practical approach to catheter ablation of atrial fibrillation / editors, Hugh Calkins, Pierre Jaeis, Jonathan S. Steinberg. c2008.

From Requirements to Market Placements Academic Press

Medical device regulation in Asia has gained more importance than ever. Governments and regulatory bodies across the region have put in place new regulatory systems or refined the existing ones. A registered product requires a lot of technical documentation to prove its efficacy, safety, and quality. A smooth and successful registration process demands soft skills for dealing with various key stakeholders in the government, testing centers, and hospitals and among doctors. This handbook covers medical device regulatory systems in different countries, ISO standards for medical devices, clinical trial and regulatory requirements,